HSS/Labor Union Meeting

HSS
Office of Health, Safety and Security

Strategic Initiatives
Aging Workforce

November 6, 2008

UNITED STEELWORKERS
USW
UNITY AND STRENGTH FOR WORKERS

The information contained in this package is intended to be reference materials pertaining to the November 6, 2008 HSS/Union working group meeting. The informational pieces have been retrieved from the Internet or submitted by HSS and Union representatives for inclusion in the package, and does not necessarily reflect the view, support, or endorsement of all of the participating organizations.

HSS/Union Working Group Meeting
November 6, 2008
1:00 – 3:00 pm EST
FORS 7E-069
Call-in: 301-903-9196

SUBJECT: STRATEGIC INITIATIVES

Meeting Facilitation

Ron Ault/Tom Schaffer……Metal Trades Department AFL-CIO
Chico McGill/Jim Tomaseski…….IBEW

Agenda

I. Federal Acquisition and Contracts
   1. M&I versus M&O Contracting
   2. Limited Liability Company Contracting
   3. Small Business Contracts

II. Institutionalization of Safety Culture
   1. Standardization of Operations/Implementation
      - Across sites, facilities, complex
      - Transfer of skills

III. Human Capital Sustainability
   1. Demographics/Retirement Issues
      - Physical demands/limited displacement potential (e.g., IAFF)
      - Delayed retirement impacts [benefits availability/affordability]
   2. Sustainability of Skilled Workforce
      - Retention of institutional knowledge/experience
      - Succession planning
      - Portability
      - Recruitment
      - Education and training/retraining

IV. Maintaining/Sustaining U.S. Industrial Base

V. Meeting Recap
   1. Key points/actions
   2. Other topical interface developments of interest

Comparison of Government-Owned Contractor-Operated (GOCO) Facilities and Management and Operating (M&O) Contractors

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DEFINITION

GOCO: (Government-Owned, Contractor Operated) facility is a manufacturing plant that is owned by the Government and operated under contract by a non-government, private firm. Source: Department of Defense Joint Publication (JP) 1-02.

M&O: (Management and operating contract) means an agreement under which the Government contracts for the operation, maintenance, or support, on its behalf, of a Government-owned or-controlled research, development, special production, or testing establishment wholly or principally devoted to one or more major programs of the contracting Federal agency. Source: FAR 17.601

COMPARISONS			
GOCO	**M&O**	**REFERENCE**	**FUNCTIONS**
			1. Type of Contract
X		FAR 16.101	a. Fixed price
	X	FAR 16.300	b. Cost reimbursable
			2. Relationship with Federal Agency
X			a. Organizationally separate from contracting federal agency operations
X		FAR 17.604	b. Fully integrated with contracting federal agency operations
	X	FAR 17.601/17.604	c. Performs major function or program of contracting federal agency
			3. Normal Type of Work
X			a. Performs routine production (All categories minus nuclear related)
	X	FAR 17.601	b. Conducts Research and Development (R&D)
	X	Atomic Energy Act	c. Performs Special Production (Nuclear)
	X	Stevenson-Wyler Tech. Act	d. PerformsSpecial Production (non-Nuclear technology invention or application)

	X	FAR 17.601	e. Operates a Testing Establishment
	X	FAR 35.001	f. Operates a Federally Funded Research and Development Center (FFRDC)
	X	FAR 35.005/35.006	g. Does work on Level of Effort (LOE) status
X	X	FAR 35.005/35.006	h. Designs firmly established so that risks are reduced
X	X	FAR 35.005/35.006	i. Uses production tooling, equipment, and processes that are developed and proven
			4. Organizational Conflicts of Interest (OCI)
	X	FAR 35.001/35.017	a. Has special access to Government and supplier data, employees, and facilities beyond that which is common in a normal contractual relationship
X			b. Has operations that are commingled with commercial operations
X			c. Can compete in the private, commercial sector
	X	FAR 35.017	d. Accepts cost-reimbursable work from other federal agencies through federal sponsor
	X	FAR 35.017	e. Has Special OCI restrictions on communicating with parent company
			5. Contractor Changeover after New Contract Award
X			a. Wholesale replacement of personnel; may hire some previous contractor personnel
	X	FAR 17.604(d)	b. Retains en masse the trained scientific and technical staff; may replace senior management
			6. Use by Federal Agencies (Sample only)
X			a. Department of Defense (DOD)
	X		b. Department of Energy (DOE)
X			c. Internal Revenue Service (IRS)
X			d. General Services Agency (GSA)
X	X		e. National Aeronautics and Space Administration (NASA)

REFERENCE

Current Version through Federal Acquisition Circular 2001-09 (03 September 2002)

17.600 -- Scope of Subpart.

This subpart prescribes policies and procedures for management and operating contracts for the Department of Energy and any other agency having requisite statutory authority.

17.601 -- Definition.

"Management and operating contract" means an agreement under which the Government contracts for the operation, maintenance, or support, on its behalf, of a Government-owned or-controlled research, development, special production, or testing establishment wholly or principally devoted to one or more major programs of the contracting Federal agency.

17.602 -- Policy.

(a) Heads of agencies, with requisite statutory authority, may determine in writing to authorize contracting officers to enter into or renew any management and operating contract in accordance with the agency's statutory authority, or the Competition in Contracting Act of 1984, and the agency's regulations governing such contracts. This authority shall not be delegated. Every contract so authorized shall show its authorization upon its face.

(b) Agencies may authorize management and operating contracts only in a manner consistent with the guidance of this subpart and only if they are consistent with the situations described in 17.604.

(c) Within 2 years of the effective date of this regulation, agencies shall review their current contractual arrangements in the light of the guidance of this subpart, in order to --

1. Identify, modify as necessary, and authorize management and operating contracts, and
2. Modify as necessary or terminate contracts not so identified and authorized, except that any contract with less than 4 years remaining as of the effective date of this regulation need not be terminated, nor need it be identified, modified, or authorized unless it is renewed or its terms are substantially renegotiated.

17.603 -- Limitations.

(a) Management and operating contracts shall not be authorized for --

1. Functions involving the direction, supervision, or control of Government personnel, except for supervision incidental to training;
2. Functions involving the exercise of police or regulatory powers in the name of the Government, other than guard or plant protection services;
3. Functions of determining basic Government policies;
4. Day-to-day staff or management functions of the agency or of any of its elements; or

5. Functions that can more properly be accomplished in accordance with Subpart 45.3, Providing Government Property to Contractors.

(b) Since issuance of an authorization under 17.602(a) is deemed sufficient proof of compliance with paragraph (a) immediately above, nothing in paragraph (a) immediately above shall affect the validity or legality of such an authorization.

(c) For use of project labor agreements see 36.202(d).

17.604 -- Identifying Management and Operating Contracts.

A management and operating contract is characterized both by its purpose (see 17.601) and by the special relationship it creates between Government and contractor. The following criteria can generally be applied in identifying management and operating contracts:

(a) Government-owned or-controlled facilities must be utilized; for instance, --

1. In the interest of national defense or mobilization readiness;
2. To perform the agency's mission adequately; or
3. Because private enterprise is unable or unwilling to use its own facilities for the work.

(b) Because of the nature of the work, or because it is to be performed in Government facilities, the Government must maintain a special, close relationship with the contractor and the contractor's personnel in various important areas (e.g., safety, security, cost control, site conditions).

(c) The conduct of the work is wholly or at least substantially separate from the contractor's other business, if any.

(d) The work is closely related to the agency's mission and is of a long-term or continuing nature, and there is a need --

1. To ensure its continuity; and
2. For special protection covering the orderly transition of personnel and work in the event of a change in contractors.

17.605 -- Award, Renewal, and Extension.

(a) Effective work performance under management and operating contracts usually involves high levels of expertise and continuity of operations and personnel. Because of program requirements and the unusual (sometimes unique) nature of the work performed under management and operating contracts, the Government is often limited in its ability to effect competition or to replace a contractor. Therefore contracting officers should take extraordinary steps before award to assure themselves that the prospective contractor's

technical and managerial capacity are sufficient, that organizational conflicts of interest are adequately covered, and that the contract will grant the Government broad and continuing rights to involve itself, if necessary, in technical and managerial decision-making concerning performance.

(b) The contracting officer shall review each management and operating contract, following agency procedures, at appropriate intervals and at least once every 5 years. The review should determine whether meaningful improvement in performance or cost might reasonably be achieved. Any extension or renewal of an operating and management contract must be authorized at a level within the agency no lower than the level at which the original contract was authorized in accordance with 17.602(a).

(c) Replacement of an incumbent contractor is usually based largely upon expectation of meaningful improvement in performance or cost. Therefore, when reviewing contractor performance, contracting officers should consider --

1. The incumbent contractor's overall performance, including, specifically, technical, administrative, and cost performance;
2. The potential impact of a change in contractors on program needs, including safety, national defense, and mobilization considerations; and
3. Whether it is likely that qualified offerors will compete for the contract.

http://www.ornl.gov/adm/wfo/gocom&o.htm

The information owner is listed below if you have questions, comments, or suggestions. An e-mail form is provided with the appropriate links for your convenience. Please include title, URL, or other document descriptor in your message.

Contact: David W. Bradford, fdb@ornl.gov

Date posted: October 2003 (sas)

Subpart 17.6—Management and Operating Contracts

17.600 Scope of subpart.

This subpart prescribes policies and procedures for management and operating contracts for the Department of Energy and any other agency having requisite statutory authority.

17.601 Definition.

"Management and operating contract" means an agreement under which the Government contracts for the operation, maintenance, or support, on its behalf, of a Government-owned or -controlled research, development, special production, or testing establishment wholly or principally devoted to one or more major programs of the contracting Federal agency.

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(a) Management and operating contracts shall not be authorized for—

(1) Functions involving the direction, supervision, or control of Government personnel, except for supervision incidental to training;

(2) Functions involving the exercise of police or regulatory powers in the name of the Government, other than guard or plant protection services;

(3) Functions of determining basic Government policies;

(4) Day-to-day staff or management functions of the agency or of any of its elements; or

(5) Functions that can more properly be accomplished in accordance with Subpart 45.3, Authorizing the Use and Rental of Government Property.

(b) Since issuance of an authorization under 17.602(a) is deemed sufficient proof of compliance with paragraph (a) immediately above, nothing in paragraph (a) immediately above shall affect the validity or legality of such an authorization.

(c) For use of project labor agreements, see 36.202(d).

17.604 Identifying management and operating contracts.

A management and operating contract is characterized both by its purpose (see 17.601) and by the special relationship it creates between Government and contractor. The following criteria can generally be applied in identifying management and operating contracts:

(a) Government-owned or -controlled facilities must be utilized; for instance—

(1) In the interest of national defense or mobilization readiness;

(2) To perform the agency's mission adequately; or

(3) Because private enterprise is unable or unwilling to use its own facilities for the work.

(b) Because of the nature of the work, or because it is to be performed in Government facilities, the Government must maintain a special, close relationship with the contractor and the contractor's personnel in various important areas (*e.g.,* safety, security, cost control, site conditions).

(c) The conduct of the work is wholly or at least substantially separate from the contractor's other business, if any.

(d) The work is closely related to the agency's mission and is of a long-term or continuing nature, and there is a need—

(1) To ensure its continuity; and

(2) For special protection covering the orderly transition of personnel and work in the event of a change in contractors.

17.605 Award, renewal, and extension.

(a) Effective work performance under management and operating contracts usually involves high levels of expertise and continuity of operations and personnel. Because of program requirements and the unusual (sometimes unique) nature of the work performed under management and operating contracts, the Government is often limited in its ability to effect competition or to replace a contractor. Therefore contracting officers should take extraordinary steps before award to assure themselves that the prospective contractor's technical and managerial capacity are sufficient, that organizational conflicts of interest are adequately covered, and that the contract will grant the Government broad and continuing rights to involve itself, if necessary, in technical and managerial decisionmaking concerning performance.

(b) The contracting officer shall review each management and operating contract, following agency procedures, at appropriate intervals and at least once every 5 years. The review should determine whether meaningful improvement in performance or cost might reasonably be achieved. Any extension or renewal of an operating and management contract must be authorized at a level within the agency no lower than the level at which the original contract was authorized in accordance with 17.602(a).

(c) Replacement of an incumbent contractor is usually based largely upon expectation of meaningful improvement in performance or cost. Therefore, when reviewing contractor performance, contracting officers should consider—

(1) The incumbent contractor's overall performance, including, specifically, technical, administrative, and cost performance;

(2) The potential impact of a change in contractors on program needs, including safety, national defense, and mobilization considerations; and

(3) Whether it is likely that qualified offerors will compete for the contract.

TABLE 3.2

Integrated Subcontracting Strategy Listing

The image below has been captured from the Bechtel Jacobs Company website. The web address for the complete information is:

http://www.bechteljacobs.com/Subcontracts_Info/watershed/watershed080101.htm

INTEGRATED SUBCONTRACTING STRATEGY FYB 01 & 02 - Microsoft Internet Explorer

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Address http://www.bechteljacobs.com/Subcontracts_Info/watershed/watershed080101.htm Links

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INTEGRATED SUBCONTRACTING STRATEGY - FYB 01 & 02

August 2, 2001

The following Bechtel Jacobs Company Integrated Subcontracting Strategy (FY01&FY02) information is provided to share as much general planning information as possible with the supplier community. This information reflects either preliminary recommendations/plans prior to specific scope packages being developed by project and/or functional RFP teams or actual awards made. Because this list represents a "high level overview" no attempt has been made to fully identify work scopes which ultimately will be reserved for Small Businesses, Small Disadvantaged Businesses, Woman owned Businesses, or Historically Black Colleges or Universities. As specific new work scope packages are developed from this list they will be added to the 90 Day Forecast. The following list of Environmental Management and Enrichment Facilities scopes of work, is as accurate as currently possible but should in no way be considered firm or final. It should only be considered a work in progress. The packaging of the work listed may be modified as necessary to respond to changes in prioritization, sequencing, and funding. As changes are made to these recommendations and/or other subcontracting decisions are made, this list will be updated. The list will be maintained at this web site.

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SUBCONTRACTS BY SITE

SITE	SCOPE / SUBCONTRACT NAME (brief description)	AWARD DATE (FY) ESTIMATED OR ACTUAL

Internet zone

TABLE 3.3

ES&H Standard Pre-Qualification Criteria

The image below has been captured from the Bechtel Jacobs Company website. The web address for the complete information is:

http://www.bechteljacobs.com/Subcontracts_Info/prequal/eshprequal.htm

TABLE 3.4

BJC Project Specific Pre-Qualification Criteria

The image below has been captured from the Bechtel Jacobs Company website. The web address for the complete information is:

http://www.bechteljacobs.com/Subcontracts_Info/et102/et102prequal.htm

ETTP UF6 CYLINDER RECOATING PROJECT - Bechtel Jacobs Company - Microsoft Internet Explorer

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Address http://www.bechteljacobs.com/Subcontracts_Info/et102/et102prequal.htm Links

PREQUALIFICATION HOME | INFOCENTER | 90 DAY FORECAST

PROJECT SPECIFIC PREQUALIFICATION CRITERIA
Prequalification No. 23900-MR-ET102

ETTP UF_6 CYLINDER RECOATING PROJECT

Procurement Representative: L. D. Seiber

Due Date EXTENDED: Monday, AUGUST 20, 2001

Bechtel Jacobs Company LLC intends to issue a Request for Proposal (RFP) for award of a subcontract to provide the services generally described below to prequalified bidders only.

Bechtel Jacobs Company is interested in considering any/all innovative commercially available coating system(s) for the coating of a number of cylinders that were originally painted as much as 45 years ago. There are certain constraints imposed on the process by the nature and weight of the material contained in the cylinders, the difficulty of handling the cylinders, and the physical location of the cylinders on a DOE site. Notwithstanding those constraints Bechtel Jacobs Company will consider any innovative coating solution which can be applied in a safe compliant manner, that protects the environment, that meets the requirements of the performance based statement of work, and is competitively priced.

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TABLE 3.5

List of ES&H Pre-Qualified Companies

The image below has been captured from the Bechtel Jacobs Company website. The web address for the complete information is:

http://www.bechteljacobs.com/Subcontracts_Info/supplieradvocate/eshlistsa.htm

ES&H PREQUALIFIERS - Bechtel Jacobs Company LLC - Microsoft Internet Explorer

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Address http://www.bechteljacobs.com/Subcontracts_Info/supplieradvocate/eshlistsa.htm Links

BECHTEL JACOBS HOME | SUBCONTRACTOR/SUPPLIER INFOCENTER | SUPPLIER ADVOCATE HOME

BECHTEL JACOBS

ES&H PREQUALIFIERS

1 A&K Construction	1/11/01
2 Adams, Craft, Herz, Walker	4/16/01
3 AEA Technology	4/10/01
4 AGEC	3/22/01
5 AIMSI	6/18/01
6 AMC Demolition Specialists, Inc	4/10/01
7 API Contractors	1/19/01
8 ARS Technologies, Inc	3/8/01
9 ATL International	1/24/01
10 Avatar Group (The)	5/25/01
11 Avisco, Inc	3/30/01
12 Beltline Electric, Co., Inc	4/2/01
13 BNFL, Inc	1/30/01
14 Bowser Morner	6/14/01
15 Capitol Environmental Services, Inc	3/9/01

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TABLE 3.6

Subcontract Integration and Review Team
10% Review Checklist

- Subcontract objective and scope.
- Subcontract value.
- Subcontract type (fixed price, fixed unit rate, etc.).
- Proposed schedule for subcontracting/procurement process, including planned effective date and duration/period of performance.
- Socioeconomic considerations/Set-asides (SB, SDB, HBCUs, etc.)
- Discussion of how subcontract relates to greater budget requirements (per baseline) and strategic subcontracting issues (per ISS plan *once issued*). Includes discussion of funding availability/timing.
- Overall project schedule, including the schedule for transition of the work from BJC to the subcontractor. (This schedule should be based on the Program template plan/schedule titled *Transitioning Work from Bechtel Jacobs Co LLC to Subcontractor* and should provide specific information about the scope of involvement needed and/or planned from the functional groups to accomplish the needed RFP preparation and workforce transition.)
- The applicability of WFT (if WFT deemed not applicable, an explanation why) and a summary of the workforce to be transitioned (current workforce estimate, current parent company, represented employee scopes/interfaces, etc.)
- Pricing strategy.
- Preliminary Labor standards determination (as applicable).
- Pre-qualification (criteria, timing, etc.).
- Identification of involved/affected BJC LLC organizations.
- Anticipated interfaces with other BJC LLC subcontracts or subcontracting efforts.
- Other anticipated interfaces that will have to be managed by BJC LLC (e.g., interfaces with other DOE Prime Contractors that must be provided through a work authorization).
- Probability for a conflict of interest.
- Community investment (job creation) considerations.
- Possible reindustrialization considerations.
- Regulatory drivers associated with work scope and performance period.
- Consideration given to possible incentive provisions (related to safety, or cost, or schedule, etc.)
- Government-furnished equipment (GFE)/facilities considerations.

TABLE 3.7

Subcontract Integration and Review Team
60% Review Checklist

- Subcontract Scope - Exhibit D
- Subcontract Type (fixed price, fixed unit rate, performance-based, discrete deliverables or performance indicators, etc.)
- Discussion of the role of this subcontract in the project or function core organization execution plan
- Effective Date/Period of Performance
- Financial
  - Subcontract Value
  - FY Budget (including discussion of outyear budgets)
  - Subproject Priority
  - Relation to PBI(s) (if applicable)
  - Milestones (FFA or Other)
  - Pricing Strategy
- Wage Determination
- DOE Notification
- Labor Standards Determination
- Interface Issues and Impact to Subcontract Strategy Plan (Acquisition Plan)
  - Interfaces to Other Subcontractors Within Watershed/Project
  - Interfaces to Other Subcontractors Outside the Watershed/Project (e.g., use of other functional or project subcontractors)
- Schedule Review (in depth)
  - Overall subcontract schedule
  - Transition Activities from Lockheed Martin to Bechtel Jacobs Company LLC (if applicable)
  - Transition Activities from Bechtel Jacobs Company LLC to Subcontractors
- Subcontract Package Review
  - Prequalification
  - Instructions to Offerors
    - Award Basis (orals, technical, price)
    - Set Asides (SB, SDB, HBCUs)
  - Special Conditions - Exhibit B
    - Contractor-Supplied Services (e.g., Lockheed overhead and direct charge services, Radcon, training)
    - Government Furnished Equipment
  - Form A, Schedule of Quantities and Price - Exhibit C

  - Technical Specifications - Exhibit E
    - Summary Information and Critical Assumptions
  - Workforce Transition - Exhibit H
    - Number and Labor Classification of Incumbent Employees
  - Job Creation - Exhibit K
- Division of Risk Between Bechtel Jacobs Company LLC and Subcontractor
  - Environmental
  - Safety
  - Economic
  - Schedule
- Other Issues

APPENDIX A

LINES OF INQUIRY DURING INTERVIEWING ACTIVITY

The purpose of interviewing key personnel from DOE-ORO, Bechtel Jacobs Company (BJC) and the Subcontractors (SC) is to obtain "first-hand" information relative to the FP subcontracting process. Recognizing that all aspects of the contracting process are intertwined, actions must be taken during the concept and solicitation to prevent problems during performance of the contract. We will be talking to individuals who have been involved in the acquisition steps and also the contract performance phase. We will be looking at the "life cycle" of each selected subcontract. Therefore, the interview questions will be categorized by the various phases of a contract acquisition and performance. Certain questions will be asked of only the BJC staff or the SC staff or of both organizations as noted. In addition, due to possible time constraints, the questions are prioritized within each topic as high or low.

General Questions

- BJC/SC, High -- What are your roles and responsibilities for the selected FP subcontract? How long have you been involved with this subcontract? Is there another person in your organization more familiar with the subcontract we should be interviewing?

- BJC/SC, High -- What were the key barriers you encountered in bidding/awarding the FP subcontract work? What suggestions do you have for eliminating these barriers? What additional commercial practices or new reforms should be undertaken to re-direct or strengthen the FP subcontracting effort that could also apply to other DOE contract forms?

- SC, Low -- Based on your experience, does your company plan to continue bidding on fixed-price subcontracts?

- BJC/SC, High -- Is the DOE receiving the best value for the work awarded by Bechtel Jacobs utilizing FP/fixed-unit rate contracting?

Project Definition and Requisition

- BJC, Low -- What baseline was used to develop the project definition for subcontracts awarded in FY 98? In developing the Bechtel Jacobs FY 99 baseline for the subcontract SOW and budget, were there Lockheed Martin staff or other personnel very familiar with the project involved its the development? For this subcontract, was there a significant difference in the LM and BJC project definition and baseline cost estimate?

- BJC, High -- When developing the technical specification for this project, was it prepared by a person very familiar with the scope of work? Was there adequate time to prepare the

technical specification? Was there any initiative to use or request innovative technologies to be used in performing the scope of work?

- BJC, Low -- What impact did Work Force Transition have in the development of the Bechtel Jacobs Baselines? Was there adequate time and staff to develop the first Bechtel Jacobs baseline during or after the transition period?

The Solicitation

- SC, High -- Was the Bechtel Jacobs 90 day forecast and Supplier Information web site helpful in your planning for bidding and proposal preparation? What lessons did your learn from using this information? What best practices may apply to other contracting forms?

- BJC/SC, High -- Describe your experience using the pre-qualification process for meeting general and specific requirements of given procurement actions. Was it relevant for each project subcontract to address past performance; environment, safety & health; quality assurance/quality control?

- SC, High -- Discuss your experience with the pre-bid meeting and the site/facility tour. Was it productive? Did you learn anything about the SOW or other RFP requirements not provided in the solicitation documents? Did it improve your confidence in your FP quote? How can the process be improved?

- SC, High -- Was the SOW for the subcontract defined adequately for fixed price or fixed unit pricing? Did you utilize experienced personnel very familiar with the SOW to develop the proposal? Describe the work and specific circumstances you feel should not be subcontracted as FP.

- SC, High -- Was there adequate time to respond to the RFP? How did the Work Force Transition impact your proposal preparation and submittal? Was there adequate information available prior to bid preparation on the Work Force Transition details? Describe your experience meeting the requirements for substantially equivalent pay, benefits, and related requirements. What can be learned that did work and didn't work?

- BJC/SC, Low -- If oral presentations were required during the solicitation, what was your experience and how can the process be improved?

- BJC/SC, Low -- Did the solicitation require a BAFO? Did it have an impact on your FP confidence?

Proposal Evaluation and Selection

- BJC, Low -- What issues did you encounter with the appropriate use of low price versus go/no go versus best value selection criteria? What was the decision process to use the various criteria? Under what circumstances was the technical approach more important than the price? Did your evaluation criteria inhibit using innovative technologies to improve performance, cost, safety, or schedule?

- BJC, High -- When were the Bechtel Jacobs contract baselines and supplemental cost estimates appropriately used where a range of competitive prices were received? How did you identify if a subcontractor was trying to bid lower than the actual cost of performing the SOW to win the award and then after receiving the award submit change requests? Describe the lessons learned and best practices used?

- BJC/SC, High -- It appears that in some cases a number of pre-qualified subcontractors decided not to bid on some subcontracts. What caused this? If your company decided not to bid after being pre-qualified, what were the no bid factors?

Contract Award

- BJC/SC, Low -- Describe your experience during the contract negotiations. What lessons were learned during this process?

- BJC/SC, Low -- Describe your experience with post-award debriefings. What suggestions do you have for lessons learned and best practices to improve the debriefings and develop a more competitive subcontractor community?

Performance of Subcontract

- BJC/SC, High -- Are you using innovative technologies to improve performance, cost, safety, or schedules? What incentives have worked for you to optimize the use of best technologies? What are the barriers you encounter when suggesting the use of these technologies? What suggestions do you have for eliminating these barriers?

- BJC/SC, High -- What has your experience been regarding change order requests? What caused the changes? How long does it take to gain approval from DOE/Bechtel Jacobs of a change order request? What is the number and value of change orders submitted? How many have been approved? What is the number outstanding?

- BJC/SC, High -- Compared with the contracted price, SOW, and schedule, how does the subcontract rate from a self-assessment/scorecard standpoint?

- BJC, High -- What is the ES&H record to date for the project? Does it meet or exceed the contract requirements? Are corrective actions in place?

Revised: January 2005

BALANCED SCORECARD

PERFORMANCE MEASUREMENT AND

PERFORMANCE MANAGEMENT PROGRAM

FOR

FEDERAL PROCUREMENT
AND
MAJOR SITE AND FACILITY MANAGEMENT CONTRACTOR PURCHASING SYSTEMS

PREFACE

Over the past decade, the Department of Energy (DOE) has reengineered its programs for oversight of Federal and contractor procurement/purchasing systems, replacing Headquarters-based, process-oriented review programs with ones which rely on local assessment of performance against Departmental expectations. Through the use of an assessment approach that focuses on the accomplishment of results designed to achieve strategic goals, DOE and its contractor community have fundamentally redesigned performance assessment.

From the very beginning of the transition from the traditional purchasing system reviews to the redesigned Federal and contractor system assessment approaches that replaced them, it was understood that further refinement and continuous improvement would occur. Consistent with that long-term strategy, and building on the originally redesigned Federal and contractor purchasing assessments, the Department's business system assessment models evolved to bring them more formally into line with the Balanced Scorecard (BSC) approach to performance measurement and management, which is currently in use by many "world class" private corporations.

The following describes the Department's "corporate" business systems assessment program, implementation procedures, evaluation standards, and reporting process as it applies to procurement systems. This document establishes the Departmental conceptual framework for performance management for both Federal and contractor purchasing systems assessments, as well as consistent techniques useful in performing the contract administration and contractor oversight functions. In accordance with these policies and expectations, each Federal and contractor procurement or purchasing component shall develop a tailored balanced "Scorecard" specific to their individual tactical contribution to Departmental strategic objectives and goals.

The core performance measurement approach, strategic objectives, core measures, and national targets outlined in the model program are areas in which the Department intends to achieve consistency and uniformity, to the greatest extent practicable.

Finally, while the program is intended to be a results oriented, systems focused, organization accomplished assessment, the Department of Energy Acquisition Regulation (DEAR) still requires compliance with specific laws, regulations, and contract terms and conditions. Review of compliance procedures is considered an important part of the assessment process as described in the reporting procedures covered in Parts 6, 7, and 8 of this document.

Table of Contents

Page No.

Preface ii

Table of Contents iii

Acronyms v

PART 1: Background 1

1. Business Systems Performance and Oversight 1
2. Mission, Vision, and Strategy 1
3. Business Systems Management Goals 2

PART 2: Business Systems Assessment Program 3

1. Program Objectives 3
2. Program Concept and Scope 3
3. Roles and Responsibilities 4

PART 3: Performance Management Strategy 7

1. What is Performance Management? 7
2. Performance Measures 8

PART 4:The Balanced Scorecard Performance Measurement and Management System 10

1. The Balanced Scorecard Approach 10
2. The Four Perspectives of the Balanced Scorecard 10

PART 5: Selection of Performance Objectives and Measures 12

1. Establishing Measures for an Acquisition System 12
2. The DOE Balanced Scorecard Program 14
3. Initial Selection, Addition, and Deletion of Performance Measures 17

PART 6: Compliance, Operational Awareness, and Reasonable Assurance ...19

1. General 19
2. Quality Assurance 19
3. Risk Assessment 20
4. Compliance Activities 20
5. Peer Review 21
6. Operational Awareness 22
7. Reasonable Assurance 24

PART 7: Balanced Scorecard Assessment Plan 25

1. General 25
2. Planning for and Conducting an Assessment 25
3. Problem Analysis and Business System Improvement Action Planning 26
4. Submission of Assessment Plan to HQ 26
5. Administrative Issues Specific to Compliance 26

PART 8: Balanced Scorecard Assessment Report 28

1. General 28
2. Data Reporting to DOE Headquarters 29
3. Administrative Issues Specific to Compliance 30

PART 9: Using Performance Measurement Results to Effect Change 31

1. Performance Measurement Systems Must Provide Intelligence for Decisionmakers, Not Just Compile Data 31
2. Results Must Be Used or No One Will take Them Seriously 33

Acronyms

BSC	Balanced Scorecard
CAPS	Center for Advanced Purchasing Studies
CO	Contracting Officer
CPSR	Contractor Purchasing System Review
DEAR	Department of Energy Acquisition Regulation
FASA	Federal Acquisition Streamlining Act
FAR	Federal Acquisition Regulation
FPDS-NG	Federal Procurement Data System – Next Generation
GAO	General Accounting Office
GPRA	Government Performance and Results Act
HCA	Head of the Contracting Activity
M&O	Management and Operating
OFPP	Office of Federal Procurement Policy
OMB	Office of Management and Budget
NPR	National Partnership for Reinventing Government (previously known as the National Performance Review)

PART 1

Background

This part provides a brief discussion of the transition from process-oriented to results-oriented business assessment programs, and of the Department's goals for assessing business functions.

1. ***Business Systems Performance and Oversight***

The DOE and its contractors continue to be faced with real and dramatic challenges to improve business systems performance. Federal agencies have been called on to look at commercial models for common-sense business solutions and business systems that work better and cost less. Both Federal and contractor organizations are experiencing quantum increases in the levels of customer expectations for quality, timeliness, and service -- all at a lower cost. Both Federal and contractor organizations are facing continuing budget and resource restrictions, which require fundamentally rethinking approaches to business systems and business relationships.

In 1995, the DOE eliminated the "Federal norm" as the standard against which it evaluates contractor purchasing systems, replacing it with the standards of "best-in-class" purchasing organizations, be they public or private. At the same time, the Department reengineered its programs for oversight of Federal and contractor purchasing systems, replacing Headquarters-based, process-oriented review programs with ones that rely on local assessment of performance against Departmental expectations.

2. Mission, Vision, and Strategy

These are the statements of an organization's highest level purpose, desired end-state, and methodology for achieving that end-state for its business systems. All objectives and measures should support these statements.

MISSION: To provide business services to support accomplishment of the Department's programmatic goals and objectives.

VISION: To deliver on a timely basis the best value product or service to our customers while maintaining the public's trust and fulfilling public policy objectives.

STRATEGY: To develop and maintain an organizational culture, management systems, and line processes in the acquisition system that ensure a focus on results, while emphasizing integrity, fairness, competition, openness, and efficiency.

3. ***Business Systems Management Goals***

The Department seeks to:

- Translate its vision into clear, measurable outcomes that define successes that will be recognized and shared throughout the Department and with its contractors;

- Continue to shift from prescriptive, audit-and compliance-based oversight to an ongoing, forward-looking strategic partnership involving Headquarters, the field, and contractors;

- Provide a tool whereby the overall efficiency, and effectiveness of business systems can be assessed, managed and improved;

- Include measures of quality, cost, speed, customer service, and employee alignment, motivation, and skills to provide an in-depth, predictive performance management system; and

- Continue to replace current business systems assessment models with an improved and more consistent approach to performance measurement and management.

PART 2

Business Systems Assessment Program

This part describes the objectives, concept and scope of the business systems assessment program. It also addresses the roles and responsibilities of key participants in the program.

1. Program Objectives

The objectives of the DOE Federal and contractor business systems assessment programs are to ensure that business systems adhere to the Department's mission, vision and strategy statements; follow recognized "Best Business Management" practices; and comply with applicable statutes, regulations, and contract terms and conditions.

2. Program Concept and Scope

This program requires periodic evaluations of business systems and processes by each intra-organizational component responsible for those systems and processes. This evolutionary approach looks beyond compliance and evaluates performance and operational effectiveness. The program is intended to be an adaptable, reliable tool, which moves from transactional to results-orientation, drives continuous improvement, and which provides for more cost effective oversight.

The assessment program is characterized by the following key features:

- It determines the degree of customer satisfaction with performance;
- It employs measures and trends to determine cost and efficiency of business systems and processes;
- It assesses the organization's strategic information and skills in order to ensure that they are aligned to support critical business systems and processes; and
- It ensures compliance with applicable laws, regulations, and contract terms and conditions.

This assessment program is consistent with and supports DOE's core values and critical success factor strategies as listed in the Department's Strategic Plan, in the following areas:

- *Customer Orientation*. This approach measures how business decisions and actions are responsive to the customer's needs.
- *Teamwork*. The planning and oversight elements of this program encourage teamwork, particularly integrating and coordinating the roles and responsibilities of DOE HQ,

Cognizant DOE Offices, and contractors, as appropriate. As part of the team, DOE HQ, Field Offices, and contractors should share pertinent information, as appropriate, regarding field and contractor performance. Cognizant DOE Offices, both in HQ and in the field, should consider all available data in communicating the Department's expectations in assessing performance against such expectations.

- *Best Business Management Practices*. Successful business management practices improve processes and customer satisfaction, and reduce defects and rework.

Although the DOE "corporate" Federal and contractor business systems assessment program encompasses the business functional areas of procurement, personal property, and contractor human resources, this document will address the program as it relates to Federal procurement and contractor purchasing. Personal property and contractor human resources will be addressed elsewhere.

3. Roles and Responsibilities

A. Cognizant DOE Office

The Cognizant DOE Office is that entity, either at HQ or in the Field that has the responsibility for performing oversight of the Department's business systems.

The Cognizant DOE Office concurs with and validates assessment processes, reviews problem analyses, and must be knowledgeable about the approach and timing of improvement action planning. The outcome of assessments shall be used to determine whether additional "for cause" reviews should be conducted. "For cause" reviews of business system operations may be required as a result of the identification of significant areas for improvement or trends which indicate the potential for improvement and require DOE follow-up to protect the Government's interest. They may also arise from implementation of new requirements on the contractor or new contractor systems which require validation.

B. Head of the Contracting Activity

The Head of the Contracting Activity (HCA) may have both operational and oversight responsibility for DOE business systems. The HCA has operational responsibilities for business systems such as the Federal procurement systems, as well as other Federal business systems. The HCA may also have oversight responsibilities for the Department's major site and facility management contractors' business activities.

HCAs may consider use of, or tailor, this program to meet system oversight requirements for other contractors where DOE is the Cognizant Federal Agency and the Operations/Field Office is the Cognizant DOE Office for system oversight purposes. The Cognizant DOE Office will ensure that the following requirements are met, when applicable:

1). The contractor shall maintain a written description of its business systems which must

be accepted by the Contracting Officer (CO);

2). Substantive changes to a contractor's business systems must be accepted in writing; and

3). Periodic self-assessments are performed by the contractor, in accordance with the terms and conditions of the contract and the BSC assessment methodology.

HCAs are responsible for the approval, conditional approval, or disapproval of contractors' business systems and for furnishing a copy of system determinations to DOE HQ. HCAs are also responsible for ensuring that Federal contracting activities are complying with applicable acquisition and financial assistance regulations. Part 6 describes the inclusion of compliance reviews as part of the BSC assessment process.

C. Cognizant Contracting Officers

The Cognizant Contracting Officer, for each major site and facility management contractor under his/her cognizance, shall:

- Review balanced scorecard development and implementation and ensure conformance with the program.

- Evaluate and validate the contractor's assessment methodology, and monitor the contractor's assessment activities.

- Serve as a peer review participant during assessments and/or as part of verification and validation of process and results.

- Ensure that appropriate steps are planned and carried out to achieve the scorecard's intended objectives, including ensuring that any additional objectives and measures identified by the contractor are consistent with the Department's objectives and do not serve to sub-optimize the balance of the scorecard.

- Collect and analyze, as appropriate, contractor assessment results, and advise the HCA and/or the Procurement Executive of any performance issues or compliance deficiencies, as appropriate.

- Work with the contractor to determine any appropriate actions needed to: 1) identify and address management initiatives by DOE or the contractor needed to assist achievement of strategic objectives/targets; 2) identify and implement additional or revised objectives and initiatives; and 3) identify benchmarking and process improvement opportunities to facilitate leveraging knowledge across the DOE complex.

D. Contractor

Each applicable contractor is responsible for establishing and maintaining business systems and processes which meet Departmental requirements. Contractors are also responsible for conducting credible, documented assessments of the business processes, to include problem analyses and improvement planning to ensure compliance with applicable laws, regulations, and terms and conditions of the contract. Compliance should focus on objectively measurable criteria and allow for meaningful trend and rate of change analyses. If requested by the contractor, outside entities may aid in administering the contractor's assessment program.

E. Director, Office of Procurement and Assistance Management (The Procurement Executive)

When requested by the HCA, the Procurement Executive will provide consultation, training, or facilitator services to Cognizant DOE Offices or contractors based on availability of resources, including facilitation of benchmarking and process improvement based on BSC results.

DOE Operations/Field Office performance will be evaluated as part of the Federal Balanced Scorecard Performance Management Program. Under that program, DOE Operations/Field Offices will perform assessments of the Federal procurement systems as well as manage contractor oversight.

Cognizant DOE Office implementation of the contractor BSC program will be evaluated as part of the Federal BSC assessment program administered by DOE HQ.

PART 3

Performance Management Strategy

This part sets forth the definitional baselines for performance measurement and performance management, provides a discussion of the characteristics and types of measures, and discusses Departmental and local targets for performance.

1. ***What is Performance Management?***

There are a wide range of definitions for performance objective, performance goal, performance measure, performance measurement, and performance management. To frame the dialog and to move forward with a common baseline, certain key concepts need to be clearly defined and understood, such as:

- **Performance objective.** This is a critical success factor in achieving the organization's mission, vision, and strategy, which if not achieved would likely result in a significant decrease in customer satisfaction, system performance, employee satisfaction or retention, or effective financial management.

- **Performance target or goal.** A target level of activity expressed as a tangible measure, against which actual achievement can be compared.

- **Performance measure.** A quantitative or qualitative characterization of performance.

- **Performance measurement.** A process of assessing progress toward achieving predetermined goals, including information on the efficiency with which resources are transformed into goods and services (outputs), the quality of those outputs (how well they are delivered to clients and the extent to which clients are satisfied) and outcomes (the results of a program activity compared to its intended purpose), and the effectiveness of government operations in terms of their specific contributions to program objectives.

- **Performance management.** The use of performance measurement information to effect positive change in organizational culture, systems and processes, by helping to set agreed-upon performance goals, allocating and prioritizing resources, informing managers to either confirm or change current policy or program directions to meet those goals, and sharing results of performance in pursuing those goals.

- **Output measure.** A calculation or recording of activity or effort that can be expressed in a quantitative or qualitative manner.

- **Outcome measure.** An assessment of the results of a program compared to its intended purpose.

2. ***Performance Measures***

Each performance objective should be supported by at least one measure that will indicate an organization's performance against that objective. Measures should be precisely defined, including the population to be measured, the method of measurement, the data source, and the time period for the measurement. Measures should be written as mathematical formulae, wherever possible.

A. Characteristics of Measures

Ideally, measures should possess the following characteristics:

- **Objective** - not judgment calls.
- **Controllable** - the results are substantially in the hands of the organization with the effects of potential outside influences minimized.
- **Simple** - easily understood and measuring only one thing.
- **Timely** - frequently available indicators of recent or current performance.
- **Accurate** - reliable, precise, sensitive indicators of results.
- **Graded** - trackable data available before system failure-not binary yes/no measures.
- **Cost-effective** - providing data worth the cost of gathering it.
- **Useful** - providing data necessary for the organization to manage the business.
- **Motivating** - achieving the targets should drive good business decisions-not over expenditure, over compliance, or other sub-optimization.

B. Types of Measures

Types of measures normally include the following:

- *Core Measures*. These are measures the Department expects all elements to employ where applicable. The formulae and methods for core measures shall be maintained as standard as is practicable from site to site.
- *Optional Measures*. These are measures suggested, but not required, by the Department, and may be useful indicators for assessing progress towards the predetermined core objective.
- *Local Measures.* These are measures, which have site or contractor specificity, that each

site may identify and include as part of their BSC.

- *Outcome and In-Process Measures*. Core, optional, and local measures may be outcome or in-process measures. All are indicators of performance (mission success in business systems). Outcome measures may be found in the Customer, Financial or Internal Business Process Perspectives. Outcomes are products delivered to customers. Outcome measures establish the current performance of a system.

  In-process measures will drive future performance, and are no less important than outcome measures. However, success is only desirable in these metrics, to the extent that it leads to success in outcome measures. Success in these measures alone will not satisfy customers. Poor performance in these measures may be addressed in time to prevent negative impact on process outcomes and customer satisfaction. In short, in-process measures are management tools to drive and sustain performance.

C. Departmental Expectations/National Targets

The Department has established Departmental expectations (desirable scores) for its core measures. These expectations or targets correlate to performance levels demonstrated by successful organizations. All sites shall strive to meet or exceed these expectations/targets. It is recognized that local situations are impacted by organizational alignment, structure, vision, strategic objectives, and current conditions.

D. Local Targets

Each site may establish short-term local targets for core, optional and local measures. While these should provide aggressive "stretch" performance targets, they should be realistic. There is little benefit in creating unrealistic or unattainable targets for "optics." It is expected that when targets are set below Departmental expectations, they will be set to stimulate substantial progress toward those expectations and will rise over time. Similarly, where organizations have already exceeded Departmental expectations, targets in excess of National averages may be maintained as part of continuous improvement.

It is understood that performance should not be driven beyond what is necessary to be supportive of the organizational mission, taking into consideration funding and resource realities (e.g., though it is always desirable to drive cost-effectiveness, it is recognized there is a point in performance or cycle time beyond which improvement does no service to the customer and could drive unnecessary costs.) Local targets may therefore not rise perpetually. When acceptable levels are achieved, these should be maintained and other performance areas emphasized whose improvement have greater strategic importance.

PART 4

The Balanced Scorecard Performance Measurement and Management System

In this part, the framework of the Balanced Scorecard performance measurement and management system is discussed, including a description of the four perspectives of the assessment methodology.

1. The Balanced Scorecard Approach

The BSC is a performance measurement and performance management system developed by Robert Kaplan and David Norton (see "The Balanced Scorecard--Measures That Drive Performance," Harvard Business Review, Jan-Feb 1992; and "The Balanced Scorecard-Translating Strategy into Action," Harvard Business School Press, 1996) and has been adopted by a wide range of leading edge organizations, both public and private.

The BSC is a conceptual framework for translating an organization's vision into a set of performance indicators distributed among four perspectives: Financial, Customer, Internal Business Processes, and Learning and Growth. Indicators are maintained to measure an organization's progress toward achieving its vision; other indicators are maintained to measure the long term drivers of success. Through the BSC, an organization monitors both its current performance (finances, customer satisfaction, and business process results) and its efforts to improve processes, motivate and educate employees, and enhance information systems--its ability to learn and improve.

2. The Four Perspectives of the Balanced Scorecard

A. Financial

In government, and with DOE's major site and facility management contractors, the "financial" perspective differs from that of the traditional private sector. Private sector financial objectives generally represent clear long-range targets for profit-seeking organizations, operating in a purely commercial environment. Financial considerations for public organizations, to include the DOE's major contractors, have an enabling or a constraining role, but will rarely be the primary objective for business systems. Success for such organizations should be measured by how effectively and efficiently these organizations meet the needs of their constituencies. In government, and for DOE's contractors, this perspective captures cost efficiency, delivering maximum value to the customer for each dollar spent.

B. Customer

This perspective captures the ability of the organization to provide quality goods and services, effective delivery, and overall customer satisfaction. For purposes of this model, both the recipient of goods and services (the internal customer) and the sponsor/overseer (DOE) are regarded as customers of the business processes. In a governmental model, or for DOE contractors, the principal driver of performance is different than in the strictly commercial environment; namely, customers and stakeholders take preeminence over financial results. Recognizing that budgets are limiting factors, public organizations and DOE contractors have a greater stewardship responsibility and focus than do private sector entities.

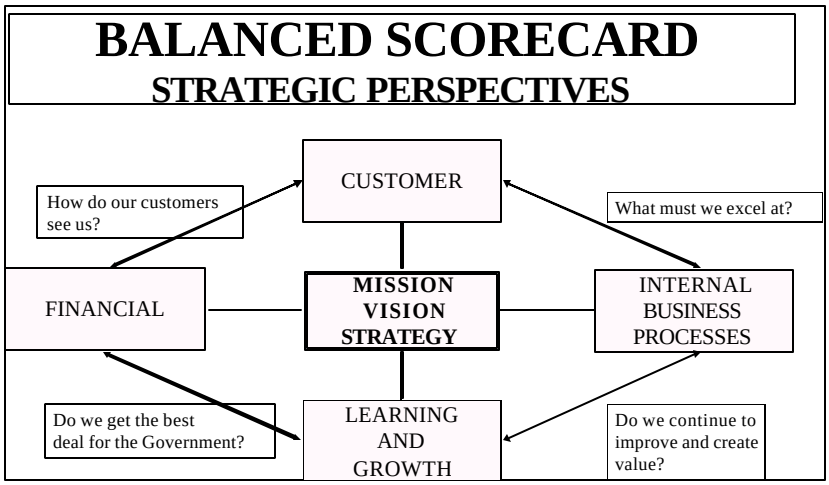
C. Internal Business Processes

This perspective provides data regarding the internal business results against measures that lead to financial success and satisfied customers. To meet the organizational objectives and customers' expectations, organizations must identify the key business processes at which they must excel. Key processes are monitored to ensure that outcomes are satisfactory. Internal business processes are the mechanisms through which performance expectations are achieved.

D. Learning and Growth

This perspective captures the ability of employees, information systems, and organizational alignment to manage the business and adapt to change. Processes will only succeed if adequately skilled and motivated employees, supplied with accurate and timely information, are driving them. This perspective takes on increased importance in organizations, like DOE and its contractors, that are undergoing radical change. In order to meet changing requirements and customer expectations, employees may be asked to take on dramatically new responsibilities, and may require skills, capabilities, technologies, and organizational designs that were not available before.

The following figure visually depicts the global BSC framework.



PART 5

Selection of Performance Objectives and Measures

This Part summarizes the process used to establish the core measures and how they will be used, and provides samples of organizational-specific measures for acquisition.

1. ***Establishing Measures for an Acquisition System***

The term "core objectives and measures" as used throughout this document refers to the common set of objectives and related measures used in order to determine progress towards pre-determined strategic states, and to facilitate benchmarking within the acquisition arena. Individual organizations, both Federal and non-federal, may add additional objectives and measures as necessary to implement organization-specific strategic and tactical planning goals.

The guiding principles of the FAR are:

"1.102 Statement of guiding principles for the Federal Acquisition System.

(a) The vision for the Federal Acquisition System is to deliver on a timely basis the best value product or service to the customer, while maintaining the public's trust and fulfilling public policy objectives. Participants in the acquisition process should work together as a team and should be empowered to make decisions within their area of responsibility.

(b) The Federal Acquisition System will--

(1) Satisfy the customer in terms of cost, quality, and timeliness of the delivered product or service by, for example—

(I) Maximizing the use of commercial products and services;

(ii) Using contractors who have a track record of successful past performance or who demonstrate a current superior ability to perform; and

(iii) Promoting competition;

(2) Minimize administrative operating costs;

(3) Conduct business with integrity, fairness, and openness; and

(4) Fulfill public policy objectives.

Federal Procurement Systems:

For Federal systems, the Federal Acquisition Regulation (FAR) provides a standard to focus on, with each perspective of the BSC requiring separately identified goals and measures that would help us see how well we are progressing toward each goal.

The core measures contained in the Federal BSC are designed to determine if we are performing our basic functions well and whether or not we are accomplishing the guiding principles of the FAR. Although the BSC assessment model has not been created for the sole purpose of relative comparison among the participating organizations, we believe that the measures do provide an adequate basis for comparing how well each organization's acquisition system is functioning.

970.4402 Contractor purchasing system

The following shall apply to the purchasing systems of management and operating contractors:

...(d) Contractor purchasing systems shall identify and apply the best in commercial purchasing practices and procedures (although nothing precludes the adoption of Federal procurement practices and procedures) to achieve system objectives. Where specific requirements do not otherwise apply, the contractor purchasing system shall provide for appropriate measures to ensure the:

(1) Acquisition of quality products and services at fair and reasonable prices;

(2) Use of capable and reliable subcontractors who either (i) Have track records of successful past performance, or (ii) Can demonstrate a current superior ability to perform;

(3) Minimization of acquisition lead-time and administrative costs of purchasing;

(4) Use of effective competitive techniques;

(5) Reduction of performance risks associated with subcontractors, and facilitation of quality relationships which can include techniques such as partnering agreements, ombudsmen, and alternative disputes procedures;

(6) Use of self-assessment and benchmarking techniques to support continuous improvement in purchasing;

(7) Maintenance of the highest professional and ethical standards; and

(8) Maintenance of file documentation appropriate to the value of the purchase and which is adequate to establish the propriety of the transaction and the price paid.

(9) Maximization of opportunities for small business, HUBZone small business, small disadvantaged business, and woman-owned small business concerns to participate in contract performance

Contractor Purchasing Systems:

For contractor purchasing systems, DEAR 970 identifies the objective of a management and operating contractor's purchasing system; i.e., to deliver to its customers on a timely basis those best value products and services necessary to accomplish the purposes of the Government's contract. To achieve this objective, contractors are expected to use their experience, expertise and initiative consistent with this subpart. The purchasing systems and methods used by management and operating contractors shall be well-defined, consistently applied, and shall follow purchasing practices appropriate for the requirement and dollar value of the purchase. It is anticipated that purchasing practices and procedures will vary among contractors and according to the type and kinds of purchases to be made.

It must be kept in mind that contractor purchases are not Federal procurements, and are not directly subject to the Federal Acquisition Regulation in 48 CFR. Nonetheless, certain Federal laws, Executive Orders, and regulations may affect contractor purchasing, as required by statute, regulation, or contract terms and conditions.

In addition, DEAR 970.0370 requires that contractors develop and maintain management and quality control systems that discourage waste, abuse, and fraud. These systems must also ensure that the products and services provided to DOE meet required specifications. Contractors must maintain management control systems which:

- Are documented and satisfactory to DOE.
- Ensure that all levels of management are accountable for effective management systems and internal controls within their areas of assigned responsibility.
- Cover both programmatic and administrative functions.

- Provide reasonable assurance that government resources are safeguarded against theft, fraud, waste, and unauthorized use.

- Promote efficient and effective operations.

- Ensure that all obligations and costs incurred are in compliance with the contract's terms and conditions and intended purposes.

- Properly record, manage, and report all revenues, expenditures, transactions and assets.

- Maintain financial, statistical and other reports necessary to maintain accurate, reliable, and timely accountability and management controls.

- Are periodically reviewed to ensure they are adequate to provide reasonable assurance that the objectives of the system are being accomplished and that these controls are working effectively.

- Are in accordance with the Comptroller General's standards for internal controls, as set forth in the General Accounting Office Policy and Procedures.

2. ***The DOE Balanced Scorecard Program***

The DOE balanced scorecard (BSC) is a functional component of the Departmental business systems performance measurement and management program. Federal and contractor systems are expected to achieve the most effective combination of performance results in accordance with Departmental expectations, customer requirements, laws, regulations, good business management practices, contractor management objectives, and the terms and conditions of their contracts, as appropriate.

The core objectives and performance measures established under this program for the Federal and contractor organizations are applicable to all activities. Under the BSC program, performance objectives and measures are established, targets are assigned and measurements taken. Formal documented self-assessments are the principal data generating or gathering source. Measurements are formulated to report status of performance to management and the customer and the feedback cycle drives improvement actions as appropriate.

The core objectives and measures contained in the Federal and contractor BSCs are to be used by participating activities to monitor their business processes. The initial step in each area will be to establish a baseline against which future performance will be compared. The objective should be to measure trends in continuous improvement affecting the organization's performance. To ensure this data is trendable and reliable, the method used to establish the baseline should also be applied in subsequent assessments. It is recognized that the results may not be directly comparable from one purchasing management activity to another.

Note: Because core measures and associated targets change on a periodic basis, the current core measures and targets for the DOE Federal and contractor BSC programs are not included here, but are available on the Internet at "http://professionals.pr.doe.gov". As objectives and/or measures and targets are modified or updated, they will be issued independent of this Guide by the Procurement Executive and made available at the above web site. However, below we have illustrated examples of the types of measures that are important to procurement organizations.

A. CUSTOMER PERSPECTIVE

For this perspective, "customer" means the government end-user of the contract. This includes direct internal customers and, for multi-organization acquisitions, direct or external customers.

- ***% of customers satisfied with timeliness***. This is the customer's degree of satisfaction with the timeliness of the delivery of products or services and other factors affecting the acquisition schedule. The timeliness category may include an assessment of the following:

  - Are products and services delivered when needed?
  - Are milestones consistently met?
  - Is planning performed early in the acquisition process?
  - Is communication consistent and effective?
  - Does the acquisition office do a good job in preventing problems which may lead to delays?

  % of customers satisfied with quality. This is the customer's satisfaction with the quality of goods and services delivered. "Quality" also includes an assessment of whether or not contractors selected for awards offer the best combination of quality and price.

- ***% of customers satisfied with the responsiveness, cooperation, and communication skills of the acquisition office (i.e., the "professionalism" of procurement staff)***. The perceptions, choices, and behavior of all participants in the acquisition process affect the outcome of any acquisition. This element is based upon the degree of responsiveness of the acquisition team, the success of mechanisms which support teaming, and the degree of satisfaction with communications and problem solving.

B. FINANCE PERSPECTIVE

- ***Cost to spend ratio***. This element represents the cost for each office to spend one dollar of their customer's funds. This figure is calculated by dividing the operating cost of each office by the total obligations of that office. The amount for total obligations is taken from the FPDS-NG. The cost of operating each office includes: salaries, training, and contractor support. (It is recognized that these elements of cost

may not capture the entire cost of the acquisition system, but the decision was made not to attempt to quantify indirect costs).

In addition, due to the variation in acquisition system organizational structures across the Federal agencies, the result of this cost to spend measure may not be directly comparable, one organization to another. Cost to spend measurements should be looked at as only one of the indicators of the current status of the acquisition systems' efficiency. The most important focus should be on improvements themselves. Benchmarking across, and outside of, Federal agencies can provide avenues of inquiry for identifying best practices for possible adoption, and should also be one of the techniques used to facilitate performance improvement.

C. INTERNAL BUSINESS PROCESSES PERSPECTIVE

- ***% of actions using Electronic Commerce***. This element represents the total number of acquisition actions processed through the use of electronic commerce.

- ***% of actions competed.*** This element assumes that cost savings, greater quality, and/or better sourcing are generally achieved through the use of competition versus non-competition. This element tracks the organization's percentage of competitive procurements and percent of dollars obligated as a percentage of total procurements.

- ***% of service contracts issued as performance-based***. This element measures the percent of service contracts issued as performance-based, and the percent of service contract dollars obligated as performance-based.

D. LEARNING AND GROWTH PERSPECTIVE

- ***Extent of reliable management information***. This measure captures the extent to which the managers of the procuring activities believe they have timely, accurate, and complete information to make management decisions.

- ***% of employees meeting mandatory qualification standards***. This measure identifies the percentage of acquisition employees (GS-1102 only) that meet the mandatory education, training and experience requirements as identified in the OPM Contract Specialist Qualification Standards. It will be calculated by dividing the number of acquisition employees that meet the education, training, and experience requirements by the total number of acquisition employees in the organization.

- ***% of employees satisfied with the work environment***. In order to retain high quality acquisition professionals, and enhance worker performance, the work environment must be pleasant and include the necessary resources for accomplishment of work. This measure represents the employees' degree of satisfaction with items such as tools provided (e.g., information technology, reference material, etc.) working conditions, and reward mechanisms.

- ***% of employees satisfied with the professionalism, culture, values and empowerment***. Management plays a vital role in the operation of each acquisition team by directing, motivating, and leading their personnel. Acquisition leadership should foster a professional environment that promotes the efficient and effective acquisition of goods and services from responsible contractors. This measure includes an assessment of the employee perception of organizational professionalism, culture, values and empowerment.

3. ***Initial Selection, Addition, and Deletion of Performance Measures***

Many reasons exist for selecting a particular performance measure. In most instances, however, the reason for selecting a measure should fall within one or more of the following:

A. Customer-focused

In most organizations, customer perception of product/service cost, quality, timeliness, and service-provider responsiveness plays a significant role in organizational success. As a result, performance measures should be created that monitor product/service cost, quality, "speed" and service.

B. Strategic Considerations

Senior management is responsible for guiding organizational performance in a direction that will ensure accomplishment of strategic goals. Once strategic goals are defined, performance measures can be developed that will help stimulate performance towards achievement of pre-determined objectives and in the desired strategic direction.

C. Critical Few

Performance measures should constitute those which are determined critical to achieving customer satisfaction and service, as well as organizational, informational, workforce, and business process improvements, and other strategic objectives. Too many measures will diffuse the focus of the organization and the measurement process.

The core measures used in the Federal procurement and contractor purchasing models were established by cooperation between DOE Headquarters and DOE field elements (for the federal program) and DOE Headquarters, DOE field elements, and contractor purchasing organizations (for the contractor purchasing program). Cooperation between participating parties is expected to continue in the creation and deletion of core performance measures. All Federal offices and participating contractor purchasing organizations are required to include all core measures in their assessment programs, unless a particular core measure is not applicable. Any other instance of non-inclusion must be discussed with the DOE Headquarters Office of Contract Management (ME-62) prior to finalization of the organization's annual assessment plan.

Although many factors exist that can influence any decision to add or delete a measure, the following criteria will be followed to the extent possible:

- *Each measure will be retained for multiple years, usually not less than three years*. Assessment of performance under the BSC methodology is dependent upon trend data established over time. A one-time-only assessment will provide a "snapshot" of current performance, but it does not provide a reliable assessment of where the organization is going. As a result, it does not make much sense to create a performance measure that will be utilized for one assessment period only. Therefore, in general, each core measure developed will be used for several years before any decision to delete is made.

- *In general, measures will be maintained for strategic purposes*. The BSC is a strategic tool whose objectives and measures are focused on strategic change. Therefore, when performance has reached stable levels of excellence, objectives and measures may be adjusted to focus on new directions and areas needing attention. However, because of the importance of excellent performance in certain areas (e.g. customer satisfaction, statutory and regulatory compliance), even when organizations achieve a high level of consistent performance, organizations still need to keep focused on these performance areas, and have an assessment system that provides the organization with immediate notification if performance begins to slip.

- *DOE Headquarters (Federal program) or DOE Headquarters or field element (contractor program) may mandate the inclusion of a performance measure*. In certain circumstances, DOE may require the inclusion of a measure without the participation or agreement of affected parties. These circumstances will be limited to instances where specific measurement is directed by law or regulation, or is deemed critical to guide organizational performance in a direction necessary to accomplish strategic goals.

PART 6

Compliance, Operational Awareness, and Reasonable Assurance

In this part, a discussion is provided of the importance of ensuring that procurement and purchasing organizations conform with appropriate laws, regulations, contract terms and conditions, etc. In other words, besides focusing on results, an acceptable performance assessment methodology in a government organizational environment must also consider organizational compliance issues.

1. General

The DOE Procurement Executive and contracting activities are responsible for ensuring conformance with laws, regulations, terms and conditions of contracts, and performance sufficient to meet Departmental expectations, including routine compliance activities, business systems surveillance, and validation and verification of measurement techniques and data. Together, these administrative activities can be described as operational awareness. More specifically, operational awareness is the continuous attention to those activities which enable an organization to determine how well it is meeting predetermined performance objectives.

2. Quality Assurance

Consistent with the need for control systems which prevent or detect unauthorized or undesirable activities, procurement organizations must have a quality assurance program which provides adequate supervision and sufficient independent checks and balances to provide reasonable assurance that the expectations set, and the objectives established, for the procurement system are achieved. Quality assurance is also important in achieving and maintaining a high level of credibility.

The policies, plans, and procedures designed and implemented by management should be sufficient to reasonably ensure prevention and/or detection of noncompliance with applicable laws, regulations, terms and conditions of contracts, and good business management practices.

An integral part of a satisfactory procurement system is a management control process that includes periodic reviews performed by qualified persons who are independent of the organization and who do not have any real or apparent conflict of interest. These assessments must ensure that the system and associated processes are adequate to provide reasonable assurance that the objectives of the system are being accomplished and that these controls are working effectively. "Qualified individuals" are persons with the technical proficiency and educational background appropriate for the procurement activities under review. "Independent of the organization" means the individual is not a part of, or under the control of, the area being assessed. (See, also, the related discussion in Section 5, Peer Review, of this Part.)

Management is responsible for initiating such corrective actions as are necessary to achieve compliance and to achieve predetermined objectives.

3. Risk Assessment

All organizations encounter risk. There is no practical way to reduce risk to zero. Accordingly, management must continually make judgments as to the level of risk it is willing to accept. (For the purpose of this guidance, risk is the probability that an event or action may adversely affect the organization.)

Risk assessment is the systematic process for assessing and integrating professional judgments about probable adverse conditions and/or events. The risk assessment process can provide a means of organizing and integrating professional judgments in developing the review work schedule. In designing an assessment program, managers should perform a risk assessment and assign those areas constituting the greatest risk to the earliest and most frequent evaluation, monitoring and testing.

4. Compliance Activities

Procurement systems must be evaluated periodically to assess basic compliance with system requirements, including laws, regulations, terms and conditions of contracts, ethical standards, and good business management practices, as appropriate. This periodic assessment of compliance activities is required by the regulations and is, accordingly, an important part of the Balanced Scorecard Program. A core performance measure related to compliance is included in the slate of core measures for Federal offices (Acquisition Excellence), and for contractor organizations (Effective Internal Controls). The results of the periodic compliance reviews represent a key source of information for organizations assessing performance under these core performance measures. In the case of contractor purchasing organizations, the results of these reviews also serve as input to the CO on purchasing system acceptability.

A compliance review of each Federal and contractor procurement office is to be conducted at least once every three years. This formal review of compliance activities is needed to assist Federal and contractor site procurement management in justifying the assessment rating of compliance under the BSC program as mentioned above. It is also needed to assist Federal offices in their contract administration responsibilities in conjunction with their major site contractors, and is needed for HQ assurance of satisfactory compliance by Federal field procurement offices and contractor purchasing systems as part of the HQ oversight responsibility.

In the conduct of these compliance reviews, Federal procurement and contractor purchasing organizations are to abide by the following requirements:

- Federal Offices: Federal offices are to use the *Acquisition and Financial Assistance Self-*

Assessment Checklist. It contains a detailed checklist of compliance standards and review questions that Federal offices are to use when conducting the compliance portion of the self-assessment. The process and the timing by which Federal procurement directors structure their assessment activities may vary, so long as the cumulative results of compliance evaluations are sufficient to provide accurate, comprehensive, and timely information. Flexibility is permitted in the timing of the review (i.e. either a total review once every three years, a partial review each of the three years, etc.) as long as all appropriate review criteria are covered at least once every three years. The *Acquisition and Financial Assistance Self-Assessment Checklist* document is available on the internet at the DOE Procurement Homepage (http://professionals.pr.doe.gov).

- Contractors: The contractors are to follow the requirements of the *Contractor Peer Review Program*. This program was established by the Procurement Evaluation and Reeingineering Team (PERT). The program represents a partnering of Federal and contractor personnel in evaluating the efficiency and effectiveness of contractor purchasing systems as defined in the prime contract and in applicable statutes and regulations, and as implemented by the contractor's policies and procedures. The program provides for the establishment of a peer review team that will conduct the compliance review of the contractor's purchasing system, and will also validate Balanced Scorecard assessment results. The program provides for standardized review criteria that will be used in the compliance review. As needed, both the contractor and the CO will participate in modifying the standardized criteria to fit specific requirements, and in developing additional criteria needed to fit local purchasing practices.

  The *Contractor Peer Review Program* is mandatory for all contractors participating in the Balanced Scorecard program. However, since the CO is ultimately responsible for contractor purchasing system review and approval, the CO may determine that a particular peer review needs to be supplemented in some fashion, or replaced by another approach (e.g., a formal CPSR done in accordance with FAR 44.3, etc.). In this event, it will be necessary to get the concurrence of the Procurement Executive prior to conduct of the compliance review. The *Contractor Peer Review Program* document is available on the internet at the DOE Procurement Homepage (http://professionals.pr.doe.gov).

5. ***Peer Review***

One of the critical elements of a credible DOE procurement performance measurement and performance management system is the level of competency, independence, and objectivity of those assessing the operation of the systems, both Federal and contractor. To facilitate such credibility, an integral part of all procurement systems assessments will involve some level of independent peer review.

This review approach shall consist of involvement by knowledgeable contracting professionals and personnel from related disciplines that are from outside the organization being reviewed. These personnel are to be involved in the design and conduct of the review, in the verification

and validation of review policies, procedures, practices, and in the resolution of review findings. Those from outside the organization can include staff from other sites, federal/contractor counterparts, internal auditors, other organizational performance evaluation staff, independent commercial sources, or Headquarters personnel. As far as the compliance component of the BSC self-assessment process is concerned, contractor participation in the required Contractor Peer Review Program described earlier in this Part will satisfy peer review requirements. However, there shall be involvement by the Cognizant Contracting Officer, or designee, in the BSC design, planning, conduct and evaluation of results by the contractors of their purchasing systems and activities, including participation in the planning, execution, and resolution of internal compliance activities to ensure that the resulting information is used for continuous improvement.

The overall point of the peer review requirement is to ensure that independence and objectivity are maintained and that there is no financial, organizational, or personal relationship that will prevent the peer reviewer/evaluator from rendering impartial and unbiased judgment and opinions when performing this assignment.

6. Operational Awareness

Factors influencing the level of operational awareness include: the nature of the work, the type of organization, and past performance. Accordingly, oversight organizations should maintain a relationship with the overseen organization and its management staff that affords on-going awareness of that organization's strengths and weaknesses, if any. This monitoring or surveillance is a fundamental part of operational awareness.

A. Surveillance

1). Surveillance includes both formal and informal activities. Formal surveillance activities, based on specific criteria, are typically established in writing and provided to the organization. Surveillance, general in nature and usually conducted and reported orally, is an effective approach when circumstances require flexibility to accommodate changing emphasis, shifting priorities, or establishing rapport. There should be scheduled activities that provide for sufficient levels of operational awareness, a sampling of which follows:

- Hold periodic meetings between management staff with agenda items designed to fully communicate subjects such as current initiatives, status of problem areas and actions taken to date, scheduled and planned training, policy and procedure revision status of organizational or contract change implementation, as appropriate.

- Review status reports and trend analyses of performance measures, perform limited on-site review (if applicable) of selected areas of significant risk as appropriate, and

- Maintain awareness and involvement at a level such that a "for cause" issue is not a surprise.

2). When a "for cause" condition exists, certain surveillance activities may be assigned to other disciplines or functional areas. In these instances, supporting documentation resulting from the findings should be provided to the organization. Reports generated as a result of internal audits performed by independent auditors in special areas, and reviews conducted by other Federal personnel, such as the GAO and the Inspector General, are considered valuable diagnostic tools for the Cognizant DOE Office.

3). Selected significant risk areas, as mentioned above, typically refer to those actions or activities that require compliance with laws, regulations and contract terms and conditions. Oversight of organizational self-assessments in these compliance areas is significant and accordingly, should be closely coordinated with that organization. There should be various control systems employed as necessary to ensure compliance and to test the currency and adequacy of the business system.

4). The degree of monitoring and the formality of the Cognizant DOE Office's/HQ's oversight approach must be value-added, understood by both parties and commensurate with the business system status and consistent with the reasonable assurance that the system is meeting expectations.

B. Validation

Validation is the process of determining the degree of accuracy and completeness of the measurement techniques and the resulting data. The DOE HQ Office of Contract Management, ME-62, will validate assessment practices and results for Federal offices. The Cognizant Contracting Officer will validate assessment practices and results for contractor purchasing systems (the Contractor Peer Review Program will assist in validating contractor results). More specifically, the cognizant oversight office will review and concur with the organization's proposed assessment plan, which includes the processes, approaches, and data systems to be used. In particular, the cognizant oversight office must be able to determine the validity of the organization's assessment techniques for measuring performance outcomes. The success of the assessment will depend largely on the mutually-agreed and understood performance objectives, measures, and expectations; the scope, depth, and effectiveness of the self-assessment; and, the integrity of the self-assessment.

C. Verification

Verification is the process of substantiating a set of data results by such means as checking stated facts, citations, measurements or attendant circumstances. Procurement Directors are responsible for ensuring the verification of data results for the Federal offices. Contractor Purchasing Directors are responsible for verification of data results for their purchasing systems.

Verification of data resulting, for example, from the assessment and other operational awareness activities will, in part, formulate the basis of the approval of the business system. The data should be analyzed to determine its accuracy and that comparisons or benchmarks are valid.

Verification of narrative or statistical data should be tailored by data type. Interviews with selected internal and external customers and the organization's employees may also verify reported survey results. Trend analysis of the assessment results should reflect the factual information provided by the interviews with staff.

D. Validation and Verification Suggestions

The following suggestions can assist in the validation and verification of the assessment process and results:

- Mutually understand what and how the organization will measure performance;
- Be familiar with the data sources and methods that will be used in the calculations;
- Confirm that the collection methodology is accurate, complete, and timely;
- Confirm that the data is properly controlled; and
- Become familiar with the trend analysis techniques to be used and gain assurances that the organization's personnel are qualified in this area.

7. Reasonable Assurance

When properly carried out, operational awareness activities should provide reasonable assurance that the business systems are operating in the best interests of the Government. Reasonable assurance is based on the collection and analysis of limited but critical data, from which inferences can be made and conclusions reached regarding the acceptability of the organization's management of the particular function. Sources for the data may include:

- On-going operational awareness activities,
- "For cause" reviews,
- Other reviews (e.g., Internal Audit, Inspector General, Defense Contract Audit Agency, and Contracting Officer appraisals), and
- Organizational self-assessments.

PART 7

Balanced Scorecard Assessment Plan

This part provides a discussion of the BSC Assessment Plan that will be developed by each assessed organization prior to the beginning of the assessment period.

1. General

Each organization under assessment will prepare an annual Balanced Scorecard Assessment Plan addressing the four perspectives of the BSC. The Plan shall address the following areas as a minimum:

- **Background Information**. This section identifies the DOE organization or contractor, Field Office or contract number, point of contact and telephone number, and if appropriate, the name of the Cognizant DOE Office, and CO name and telephone number. The date of the last system assessment (if applicable), scheduled date of the next assessment, status of the business system, and the current review thresholds shall also be listed in this section.

- **Identification of Assessment Review Personnel**. The specific names, titles, and corporate affiliation of individuals who are participating in the assessment shall be identified. It is essential that the assessments be conducted by technically qualified and results-oriented professionals.

- **Current Assessment (if applicable)**. Describe improvement actions which have not been fully implemented from the most recent assessment; proposed improvements; and target completion dates. Significant areas shall be discussed in greater detail.

- **Assessment Activities** - The organization's assessment program (including review processes utilized) shall be described. A description of the specific review activities to be performed and sampling methodology used in conducting the assessment must be included in this section. Be sure to include a separate discussion of compliance activities as described in Item 4 of this part entitled "Administrative Issues Specific to Compliance."

2. Planning for and Conducting an Assessment

The assessment may be divided into phases. Within each phase, various activities should be accomplished to properly plan, coordinate, conduct, gather data, analyze results, and close-out the assessment activity for any particular review period.

The Plan will describe the depth and scope of the assessments. The depth and scope will be tailored to fit the breadth of the organization's activities. Organizations who have had significant areas for improvement identified from previous assessments of their system may merit additional attention in areas of weakness or of special interest or importance. To determine the extent of the assessment, the organization (contractor or Cognizant DOE Office, as appropriate) will review previous assessment reports (if applicable) and such other pertinent information as may be available within DOE. This may include surveillance reports, internal DOE reviews, Inspector General reports, GAO audits, other internal assessment reviews, system procedures, transactional reviews, and business management reviews.

3. Problem Analysis and Business System Improvement Action Planning

Improvement action planning shall be based on the results of problem analyses, as applicable, for any less than satisfactory area of organizational performance. An effective problem analysis will identify the most basic reason for a problem, inadequate performance, or obstacle to improvement.

Once an assessment has been conducted, the organization shall brief the HCA, or DOE HQ as appropriate, describing any improvements to be undertaken to correct less than satisfactory areas identified in the assessment report. Agreement shall be reached on plans for performance enhancement activities. All such enhancement actions shall be completed within 12 months.

4. Submission of Assessment Plan to HQ

Annual assessment plans for Federal and contractor purchasing offices are to be submitted to DOE HQ by October 15 of each year (unless date changed by memo from DOE HQ), prior to the beginning of the fiscal year being assessed. Contractor plans are to be submitted to the Cognizant DOE Office for review. The Cognizant DOE Office will provide the contractor with written comments on the sufficiency of the plan, and forward their comments and a copy of the contractor plan to DOE HQ.

5. Administrative Issues Specific to Compliance

Both Federal and contractor purchasing organizations are expected to follow the plan guidelines listed above for structuring their BSC assessment plan. And as mentioned previously, a review of compliance activities is a key part of the BSC assessment process. However, due to the importance of compliance issues, Federal procurement and contractor purchasing organizations shall provide a *separate and distinct* discussion of compliance evaluation activities planned for the fiscal year as discussed in Section 4, Compliance Activities, of PART 6. For the Federal offices, this separate discussion shall cover the same information requested above for the BSC assessment plan. For the contractors (who are required to abide by the requirements of the Contractor Peer Review Program sponsored by the PERT) a discussion of the timing of any peer review for the upcoming year would be sufficient since team participants and other pertinent information would be controlled by the review team. For both Federal offices and contractor

organizations, if no formal compliance review is planned (e.g. because it was completed last year), then provide a discussion of the current status of corrective action implementation resulting from the most recent compliance review. Also, provide a discussion of the day-to-day review activities that focus on compliance. For example, what process(es) is/are in place to ensure that contracts are awarded in accordance with rules and regulations? Attachment of any current local policies and procedures relative to review of actions for compliance issues would be appropriate. As discussed in Part 6 of this Guide, when conducting compliance reviews, Federal offices are to use the *Acquisition and Financial Assistance Self-Assessment Checklist* as a starting point, modifying the criteria to suit local needs, or to up-date as needed. Major site and facility management contractors are to abide by the requirements of the *Contractor Peer Review Program*.

PART 8

Balanced Scorecard Assessment Report

At the end of each assessment period, each organization must prepare a report of the assessment results which will be reviewed by the Cognizant DOE Office. This part describes the contents of the report.

1. General

The organization shall conduct the assessment in accordance with the previously prepared BSC Assessment Plan. After conduct of the assessment, the organization shall prepare a BSC Assessment Report which will be submitted to the Cognizant DOE Contracting Officer (for contractors) or DOE HQ Procurement & Assistance Management, Office of Contract Management, ME-62 (for Federal offices). This Report shall contain, at a minimum, the following information:

- **Introduction/Background.** This section identifies the contractor or DOE organization, contract number or field office, point of contact and telephone number, and if appropriate, the name of the Cognizant DOE Office. List the date of the most recent purchasing system approval (for contractors) and current review thresholds (if applicable).

- **Identification of Assessment Review Personnel.** The names, titles, and organizational/corporate affiliation of all individuals (including peer personnel) who participated in the assessment review shall be listed here.

- **Scope of Review Activities.** The assessment review activities that were completed are listed in this section. This summary shall be presented in sufficient detail to allow any reader to understand the significance of the information contained in the report. The status of open items from the prior assessment shall be discussed (if applicable). Problem analyses and improvement action planning shall be discussed for assessments of greater significance. Be sure to include a separate discussion of compliance activities as described in Item 3 of this part entitled "Administrative Issues Specific to Compliance."

- **Trend Analysis.** Include analysis of trends as to how the performance over time indicates continuous improvement or opportunities for management attention.

- **Assessment of Perspective Trade-offs.** Include analysis of whether performance is "out of balance," and what is being done to bring it back into balance.

- **Identification of Management Initiatives.** Include any process reengineering/redesign, training, or benchmarking opportunities for leveraging across

the DOE complex.

- **Root Cause Analysis.** Root cause analysis refers to the process of identifying the causal factors for an event or circumstance which, if corrected or eliminated, will prevent its reoccurrence. It is expected that managers will determine the real causes for occurrences, violations, problems, failures to achieve agreed to objectives or target levels of performance, less than satisfactory performance, etc.

- **Corrective Action Plans.** Improvement action planning should be based on the results of root cause/problem analyses, as applicable, for any less than satisfactory area of organizational performance. An effective problem analysis will identify the most basic reason for a problem, inadequate performance, or obstacle to improvement.

Once an assessment has been conducted, the organization shall brief the HCA, CO or DOE HQ, as appropriate, describing any improvements to be undertaken to correct less than satisfactory areas identified in the assessment report. Agreement shall be reached on plans for performance enhancement activities. All such enhancement actions shall be completed within 12 months if possible.

2. Data Reporting To DOE Headquarters

Annual reports are required from both Federal and contractor entities. Federal office reports will be submitted directly to DOE HQ Office of Procurement & Assistance Management, Office of Contract Management, ME-62. Reports from contractors must be submitted to the Cognizant Contracting Officer who will analyze the results, and communicate results of the analysis to the contractor. The Cognizant Contracting Officer will then provide a copy of the contractor BSC report results to DOE HQ, along with a copy of the results of their analysis of the contractor submission. Submission of Federal reports, including copies of contractor reports, are to be submitted to DOE HQ by December 15 for the fiscal year just ending. Any change to this date will be made by memo from DOE HQ. The data submitted to DOE HQ will be used to generate Departmental expectations/targets for the performance measures for both the Federal and contractor BSC programs. DOE HQ will also develop Department-wide average scores for each of the BSC performance measures in the Federal and contractor BSC programs. In addition, DOE HQ will identify the names of those organizations who represent the top percentile for each measure. The intent here is to stimulate benchmarking among the Department's field offices and contractors. DOE HQ does not intend to release, outside of DOE, any other names or individual organizational data submitted. However, voluntary sharing of this information among field offices and contractors is encouraged.

3. Administrative Issues Specific to Compliance

As with the discussion of the BSC Plan development, Federal procurement and contractor purchasing offices are requested to provide to DOE HQ, or the Cognizant Contracting Officer, a *separate and distinct* discussion of any compliance reviews conducted during the past fiscal year. Please include a complete discussion following the guidelines discussed in Section 1, General, above. Provide a general discussion of the review results, significant findings, etc. Also discuss corrective action needed, current status of these correction activities, etc.

PART 9

Using Performance Measurement Results to Effect Change

This part provides a discussion of the importance of using performance assessment results in an appropriate fashion - one that helps ensure organizational success.

Obviously, making constructive use of assessment results is critical if the organization is to improve, and perhaps, to survive. There are certain significant aspects of using the results of performance measurement that should be kept in mind when deploying a performance management system. They are as follows:

1. ***Performance Measurement Systems Must Provide Intelligence for Decisionmakers, Not Just Compile Data***

Performance measures should be limited to those that relate to strategic organizational goals and objectives, and that provide timely, relevant, and concise information for use by decisionmakers—at all levels—to assess progress toward achieving predetermined goals.

Although each organization is unique in how performance results can best benefit the organization, several concepts appear to apply across the board. They include the following:

A. Assessment Results Must Provide Meaningful Information.

Management needs intelligent information for decision making. If properly constructed, the performance measures selected will result in data that is meaningful to decision makers in terms of improving organizational performance. The data generated should be timely, relevant, and concise. Assessment results should provide information on the efficiency of the production of goods and services, on how well current performance compares to intended programmatic purposes, and on the effectiveness of organizational activities and operations in terms of their specific contribution to program objectives. Numerous factors need to be considered when determining the effectiveness of assessment results. They include the following:

- Does the data indicate any performance trends over time and over projects/functional areas?
- Can the data be used to improve performance in areas other than the one(s) assessed?
- Have the correct performance measures been selected for assessing desired performance?
- Do the measures reflect priorities?
- Do the results reflect an understandable causal relationship between performance effort

and performance result?

- If performance targets are not met, what inhibited successful performance?

- If performance targets are significantly exceeded, are there additional benefits to the organization that can be gained in terms of reducing operating costs or improving performance?

B. Employing Supplemental Information Sources.

An organization can leverage the BSC's power by supplementing BSC results with data from other sources that provide information on the "health" and direction of the organization. Such information provides a more detailed picture of an organization's external environment and internal capabilities. It can also identify issues or problems not otherwise reflected in BSC results. This in turn helps the organization to interpret BSC results with a fuller understanding and make appropriate adjustments to its strategies. Useful sources for the acquisition function include:

- Agency protest statistics/ombudsman activities

- Workforce training and education data

- Performance-based service contract reports

- Debarment and suspension statistics

- Inspector General reviews

- General Accounting Office reviews

- Internal Audit reports

C. Assessment results must be properly analyzed

Understanding what a particular result really means is important in determining whether or not it is useful to the organization. Data by itself is not useful information, but it can be when viewed from the context of organizational objectives, environmental conditions, and other factors. Proper analysis is imperative in determining whether or not performance indicators are effective, and results are contributing to organizational objectives.

2. ***Results Must Be Used or No One Will Take Them Seriously***

This seems so obvious that it should not need to be stated. Nevertheless, assessments are often followed with little effective analysis of results, or honest attempts at improved performance. The following represent some of the ways that leading organizations, both public and private, use performance information to improve performance, manage risk, and support decision-making:

A. Gap Management

Performance results can be used to determine gaps between specific strategic objectives and/or annual goals and actual achievement. The root causes of these gaps are analyzed, and countermeasures developed and implemented. Whenever there is a gap between current results and an organization's objectives, it is an opportunity for process improvement. Reengineering and redesign are a frequent response to the identification of gaps between objectives and achievement, and are usually very effective, particularly when they include "process flow analysis" which requires a detailed examination of the existing process(s) and allows for exploration of alternate procedures within a process. Process flow analysis is especially useful when BSC results indicate performance gaps in the areas of timeliness, purchasing costs or efficiency. Understanding which key processes need the most attention, and then aggressively addressing the differences between current performance and the desired end state is a hallmark of successful organizations.

B. Self-diagnosis

A contracting or purchasing activity can use the information for "self-diagnosis." BSC data together with other reports and statistics can help the activity anticipate and resolve issues before they become problems, or at least minimize the effect of problems by early action. Information from other reports and statistics may also indicate the need to adjust BSC strategies and measures.

C. Enhancing Strategic Feedback and Learning

Kaplan and Norton recommend that, in addition to tracking progress on past results, managers can use the BSC to learn about the future. Managers should discuss not only how they achieved past results, but also whether their expectations for the future remain on track. Changes in the environment (e.g., new technology, legislative initiatives, etc.) may create new opportunities or threats not anticipated when the managers developed their initial strategies. If an organization followed established strategies, but did not achieve target results, managers should examine internal capabilities and assess whether the underlying strategies remain valid. Based on such analyses, managers may adjust or redirect their strategies or identify new strategies. This focus serves as a foundation for effective process improvement and risk management. It also completes a feedback loop that supports decision-making at all levels of the organization.

D. Benchmarking

An organization can use the BSC to benchmark its performance against other organizations. Benchmarking helps to get a picture of how the organization's procurement function performs compared to others. It also serves as one input for developing target goals. However, the strength of benchmarking is not in identifying best performance, but in learning best practices. That is, the organization should identify, study, analyze, and adapt the "best practices" that led to the "best performance." Understanding the best practices helps managers to make better-informed decisions about where and how to change their organization.

To make valid comparisons, the organization should consider how the other organization is both similar and different. Common factors to consider, whether selecting another agency or an industry for benchmarking, include:

- Is the total size and budget similar?
- Is the amount spent on acquisition comparable?
- Is the percent of total budget spent on acquisition similar?
- Does the other organization have a similar mission or perform work of comparable complexity?
- Are the products and services acquired similar?

Several sources have information available for benchmark comparisons:

- An organization can compare its performance on the core measures identified in this BSC to other Federal agencies that use the same measures.
- Other agencies may also have similar supplemental organization-specific measures.
- The Center for Advanced Purchasing Studies (CAPS) reports on numerous industries plus municipal governments and state/county governments on many standard benchmarks.
- The FPDS contains information useful for comparing several financial and internal business process measures (e.g., percent of acquisition dollars awarded competitively, percent of acquisition dollars spent on commercial items, etc.).

E. Oversight and Compliance

The Procurement Executive can use the BSC and supplemental data to support oversight and compliance activities. Results of BSC measures and other reports and statistics help highlight areas of concern. If BSC measures are properly aligned with significant objectives, then review efforts should be focused where they will have the most benefit. Reviews should analyze the

cause of concern and identify appropriate remedies (e.g., recommending changes in operational practices, clarifying existing or developing new policies, eliminating or revising policies that create problems, eliminating non value-added activities, etc.). The BSC also provides a framework for reporting to the agency head, chief executive officer, laboratory director, Congress, and OMB.

F. The Business Case

In addition to strategic feedback and learning, managers can also use the BSC to build a strong, sound business case to support proposals for changes or requests for resources. The BSC illuminates links between strategies, measures, and expected outcomes at different levels in the organization, and across different operational components. This provides a framework for explaining how and why a proposed change will benefit the organization and the expected effect on linked components. For example, a contracting activity could use the BSC to demonstrate how a proposed change to processing requisitions would improve its efficiency and also benefit program mission accomplishment.

The BSC also provides the framework for justifying requests for resources. For example, in presenting the annual budget request, a manager can use the BSC to demonstrate the expected results from a given level of funding. Similarly, the manager could use the BSC to defend requests for increases in resources, by showing how additional resources would improve results for one or more measures.

G. Cross-functional Problem Solving

By illuminating the links between strategies, measures, and expected outcomes at different levels in the organization, and across different operational components, the BSC also encourages cross-functional problem-solving. For example, the procurement office may identify a Department-level or corporate policy that impedes its ability to accomplish a certain objective. The Office could raise the issue, using the BSC to demonstrate the cause-and-effect relationship, and work together with the appropriate management toward a solution. Or a procurement office may work with finance to establish an electronic system for receiving and processing invoices that benefits the performance of both organizations.

Limited Liability Company

From Wikipedia

Limited Liability Company (abbreviated **L.L.C.** or **LLC**) in the law of the vast majority of the United States is a legal form of business company offering limited liability to its owners. Often incorrectly called a "limited liability corporation" (instead of company), it is a hybrid business entity having characteristics of both a corporation and a partnership. It is often more flexible, the owners have limited liability for the actions and debts of the company, and it is suitable for smaller companies with a single owner. The primary corporate characteristic is limited liability while the primary partnership characteristic is the availability of pass-through income taxation.

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FOR IMMEDIATE RELEASE
Wednesday, September 3, 2008

DOE Selects Mission Support Alliance, LLC for Mission Support Contract at its Hanford Site

WASHINGTON, DC – The U.S. Department of Energy (DOE) today announced the Mission Support Alliance, LLC has been selected as the mission support contractor for DOE's Hanford Site in southeastern Washington State. The contract is a cost-plus award-fee contract valued at approximately $3.0 billion over ten years (a five-year base period with options to extend it for up to another five years).

The Mission Support Alliance, LLC is a limited liability company formed by Lockheed Martin Integrated Technology, LLC; Jacobs Engineering Group, Inc.; and Wackenhut Services, Inc. Pre-selected subcontractors include Abadan, Akima Facilities Management, Dade Moeller & Associates, HPM, Longenecker and Associates, Protection Strategies, R. J. Lee Group, Vivid Learning Systems, Westech International, TestAmerica, and Lampson International.

"The final Central Plateau contract award to the Mission Support Alliance, LLC, positions the Department to begin a new chapter as it continues the safe environmental cleanup of the Hanford Site," said U.S. Secretary of Energy Samuel W. Bodman. "The Mission Support Alliance, LLC will provide cost effective infrastructure and site services that are integral and necessary to accomplish the cleanup mission at Hanford."

The Mission Support Contract (MSC) for Hanford will provide cost-effective infrastructure and site services integral and necessary to accomplish the Hanford Site's environmental cleanup mission. The scope of the MSC contract includes five primary functions: Safety, Security and Environment; Site Infrastructure and Utilities; Site Business Management; Information Resources/Content Management; and Portfolio Management.

The MSC is the last of three new major prime contracts awarded for cleanup at the Hanford Site in 2008 as part of the Department's Central Plateau acquisition strategy, which calls for contracts covering tank farm operations and closure, waste and facility disposition on the Central Plateau, and mission support. The Tank Operations Contract–awarded in May 2008–includes base operations of the tanks, analytical laboratory support, single-shell tank retrieval and closure, Waste Treatment Plant support, and supplemental treatment, while the Plateau Remediation Contract–awarded in June 2008–will advance the cleanup of the central portion of the Hanford Site, which once housed five chemical separations buildings and other facilities that separated and recovered plutonium and other materials for use in nuclear weapons. The MSC includes mission support functions of the Project Hanford Management Contract scope of work, which expire on September 30, 2008.

The transition period of the new contractor will begin on or after October 1, 2008, and will be completed within 90 days. Under the new contract, the Mission Support Alliance, LLC will assume responsibility for mission support activities beginning on January 1, 2009. The base period of the contract is from January 1, 2009, through December 31, 2013, with options to extend for up to five additional years through December 31, 2018.

The 586-square-mile Hanford Site in Southeastern Washington State played a pivotal role in the nation's defense for more than 40 years, beginning in the 1940s with the Manhattan Project. Formerly a plutonium production complex with nine nuclear reactors and associated processing facilities, Hanford is today engaged in the world's largest environmental cleanup project. For additional information on the Department of Energy's Office of Environmental Management and on the Hanford Site, visit http://www.em.doe.gov or http://www.hanford.gov.

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LOCKHEED MARTIN-LED TEAM TO SUPPORT DEPARTMENT OF ENERGY UNDER NEW HANFORD MISSION SUPPORT CONTRACT

Seabrook, Md., September 3rd, 2008 -- A team led by Lockheed Martin (NYSE:LMT) has been selected by the Department of Energy (DOE) to provide a broad range of site services for its Hanford site, located in Richland, Wash. With a total program value of $3 billion over a 10-year period, the contract includes a five-year base contract period and options to extend it to an additional five years.

Under the leadership of Lockheed Martin's Frank Figueroa, president of the Mission Support Alliance (MSA), LLC, the team will provide a number of cross-cutting services to the DOE and other contractors at the Hanford site, such as safety, security and environment, site infrastructure and utilities, site business management, information resources and content management and portfolio management.

The MSA LLC also includes Jacobs Engineering Group Inc., a global professional, technical and construction services company, and Wackenhut Services, Inc, the government's largest professional security services contractor. The MSA LLC will also be supported by several small business teammates.

Linda Gooden, executive vice president of Lockheed Martin Information Systems & Global Services in Gaithersburg, Md., said, "We are thrilled to be awarded the opportunity to continue and expand our work with the Department of Energy in support of the Hanford mission. Under the superb leadership of our program director Frank Armijo, we have built an outstanding partnership with the DOE throughout the course of our eleven years of support to the Hanford site. We remain committed to excellence at Hanford, supporting both the Department of Energy and the community."

Since September 1996, Lockheed Martin has provided Information Resource Management services to DOE Hanford. Lockheed Martin's Advanced Technology Support Services located in Richland, Wash., an operating unit of Lockheed Martin's Enterprise Solutions and Services Company, has proven world class technology capabilities, supporting key projects for the Department of Energy and many other federal and commercial clients.

"As the federal government's leading systems integrator, we are committed to bringing innovative ideas and proven best practices to our continued work in Hanford. We are confident we have assembled a world class team under the MSA LLC to accomplish the goals of the customer," said Tom Grumbly, vice president of Lockheed Martin Energy Services & Solutions.

Headquartered in Bethesda, Md, Lockheed Martin is a global security company that employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The corporation reported 2007 sales of $41.9 billion.

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Back

ENCOURAGING NEW OPPORTUNITIES FOR SMALL BUSINESS AS PRIME CONTRACTORS THROUGH CHANGES TO DOE's MANAGEMENT AND OPERATING AND OTHER MANAGEMENT CONTRACTS

A Feasibility Study Jointly Conducted By:

Small Business Administration
Office of Chief Counsel for Advocacy, SBA
Department of Energy
National Nuclear Security Administration, DOE
Defense Nuclear Facilities Safety Board
June 2006

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

I. INTRODUCTION 3

A. STATUTORY MANDATE 3
B. APPROACH 4

II. ANALYSIS 5

A. BACKGROUND 5
B. DOE MISSION AND ROLE OF THE MANAGEMENT AND OPERATING (M&O) CONTRACT 9
1. Original Design of M&O Contracts 9
2. Unique Features of DOE's M&O Contracts and Other Management Contracts 11
3. Special Features of DOE's M&O Contracts 12
4. External Recognition of the Unique Nature of DOE's M&O Contracts 13
5. Other DOE Management Contracts 14
C. SMALL BUSINESS REQUIREMENTS 15
D. DOE'S SMALL BUSINESS INITIATIVES 16
1. FAR Policy 16
2. DOE Policy and Procedures 17
a. Mentor-Protégé Agreement 17
b. Teaming Arrangement 17
c. Use of Federal Supply Schedules (FSS) 17
d. Multiple Award Contracts (MACs) 18
e. SBA/DOE Partnership Agreement 18
f. OSDBU Database 18
g. OSDBU Review 18
h. Advanced Planning Acquisition Team 18
i. Business Clearance Review 18
j. Small Business Program Managers 19
k. Small Business Subcontracting Plan 19
l. 8(a) Pilot Program 19
m. HUBZone Set-Aside 19
n. Service Disabled Veteran-Owned Small Business (SDVOSB) Set-Aside 20
o. Discretionary Set-Asides 20
p. Anti-Bundling 20

E. STATUTORILY SPECIFIED CONSIDERATIONS THAT MAY IMPACT ANY POSSIBLE CHANGES TO DOE's M&O AND OTHER MANAGEMENT CONTRACTS 20
1. Introduction 20
2. Statutory Safety and Security Considerations 20
a. Considerations Relating to DOE's Management of Its Sites and Facilities 21
b. Security Considerations 22
c. Safety Considerations 22
i. The Board's Views with Respect to Defense Nuclear Facilities 23
ii. Nature of DOE's Defense Nuclear Facilities 23
iii. The Potential Safety and Oversight Impacts That Would Result from Increasing the Role of Small Businesses as Prime Contractors 26
A. Increase in the Number of Prime Contractors for Which DOE Would Provide Oversight 26
B. Increase in the Variety of Systems and Processes Utilized to Perform Work at DOE Sites 26
C. Increase in the Efforts Required of DOE to Manage Interfaces Affecting Safety between the Prime Contractors 27
D. Increase in the Number of Prime Contractors with Less Depth and Breadth of Capability 27
iv. Conclusions to be Drawn with Regard to the Impact of Increasing the Number of Contracts Subject to Oversight 27
d. Statistical Analysis 28

III. POTENTIAL CHANGES TO DOE'S MANAGEMENT AND OPERATING CONTRACTS AND AN EVALUATION OF THEIR FEASIBLITY 29

A. WHAT IS FEASIBLE? 29
1. Breaking Out Work Scope for Award to Small Business 30
2. Stimulating M&O Contractors to Develop the Business Expertise of Small Business Concerns 33
3. Awarding M&O Contracts to Small Business 34
4. Changing the Methodology for Recording Achievements 35

IV. CONCLUSION 36

ATTACHMENT 1 - STUDY GROUP PARTICIPANTS..... 39
ATTACHMENT 2 - STUDY BIBLIOGRAPHY..... 40
ATTACHMENT 3 - GRAPHIC PRESENTATION OF DOE AND DOE's FMC CONTRACTORS' SMALL BUSINESS ACHIEVEMENTS FOR FY 2000 THROUGH FY 2004..... 47
ATTACHMENT 4 - ACRONYMS..... 53

EXECUTIVE SUMMARY

This report implements Section 6022(c) of the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005, Pub.L. 109-13. That section requires the conduct of a study regarding the feasibility of possible changes to the Department of Energy's management and operating (M&O) and other management contracts to encourage new opportunities for small businesses to increase their role as prime contractors. The study must consider the impact of possible changes on a number of matters, including sound management practices, safety, and security at Department of Energy (DOE) sites and facilities.

The M&O contract is a critical element of the DOE business model for the conduct of its mission, including its nuclear stewardship, non-proliferation, and energy and other scientific research and development programs. The contracts are large, both in terms of dollar value and scope of responsibility, technically complex, and unique in structure. Because of their nature, DOE's M&O contracts have historically been performed by large industrial companies and academic institutions. Although mission and other changes in recent years have significantly reduced the number of DOE's M&O contracts, those contracts account for approximately 70 percent of DOE's annual contract obligations. That number increases to 85 percent with the inclusion of former M&O and other management contracts.

Because statutory programs for small business goaling are implemented in terms of the percentages of an agency's obligations under small business prime contracts against the agency's total contract obligations, DOE's small business prime contract achievements have been limited on a percentage basis. However, total small business participation in DOE contracting at all levels exceeds $4 billion annually.

DOE has, in recent years, pursued a number of strategies to increase small business prime contract awards. These efforts have resulted in an 82 percent increase in small business prime contract obligations over four years. However, DOE's overall small business statistical achievement remains under 5 percent because of the significant budget outlay to the M&O and other management contracts.

A study group was convened to conduct this study and prepare a report of its findings. The Study Group reviewed the various segments of the Small Business Act and its implementing and supplementary regulations and guidelines. It also reviewed the nature of DOE's M&O contracts. The Study Group further analyzed DOE's small business program activities and the history of small business goaling within DOE. Finally, the Study Group identified a number of potential changes that could, in theory, be made with respect to DOE's M&O and other management contracts and assessed the implications of these changes, not only for increasing prime contract opportunities but also, for the effects those changes would have on DOE and its missions, programmatically, managerially, and administratively. This report summarizes these study analyses.

This report also summarizes the Study Group's views on the feasibility of possible changes to DOE's M&O and other management contracts that would increase prime contract obligations to small businesses. Specifically, the Study Group assessed changes that would: (1) break out work scope from an M&O for award to small businesses; (2) stimulate M&O contractors to mentor individual small businesses as to their business expertise and capabilities in order to expand prime contract opportunities; (3) award M&O contracts themselves to small businesses; and (4) change the methodology for counting prime contract obligations to small business.

In the opinion of the Study Group, changes to M&O contracts that would break out work for direct award by DOE to small businesses and incentivize the development of small business capabilities are feasible and could result in some increase in DOE's prime obligations to small business. However, the breakout of work from M&O contracts must be accomplished within a given set of DOE decision parameters that reflect the impact of the important considerations identified in Section 6022. Additionally, the Study Group believes that changes to the M&O and other management contracts could be made to incentivize offerors and contractors to provide the experience and to develop the skills small business will need to be successful in obtaining and performing new prime contract opportunities. Further, although an award of an M&O contract itself to a small business remains a theoretical possibility, the Study Group does not believe that this alternate path presents significant prime contract opportunities because the nature of the M&O contracts and their specific performance requirements make the performance of those contracts impractical for most small businesses. Finally, the Study Group does not believe that altering the methodology for counting small business prime contract obligations, absent specific legislative authority, is a feasible change.

In accordance with Section 6022(c) of Pub.L. 109-13, the Defense Nuclear Facilities Safety Board (Board) considered the potential impact of the changes by DOE to its contracting strategies identified by the Study Group to evaluate the extent those changes might affect the safe operation of defense nuclear facilities under the Board's oversight jurisdiction.

In exercising its safety oversight responsibilities, the Board has no predisposition as to form of contracts or size of contractors managing or otherwise involved in defense nuclear facilities or activities. DOE has a limited number of people and resources to manage contracts for defense nuclear work. Increasing the number of prime contractors will challenge DOE's ability to competently and thoroughly oversee safety. The Board's conclusions with respect to these facilities are provided in Section II.E.2.c. of this report.

I. INTRODUCTION.

A. STATUTORY MANDATE.

On May 11, 2005, President Bush signed the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief to become Pub.L. 109-13. Section 6022(c)(1) of the Act instructed DOE, Defense Nuclear Facilities Safety Board (Board), National Nuclear Security Administration (NNSA), the Small Business Administration (SBA), and the Small Business Administration Office of Advocacy (SBAOA) to "jointly conduct a study regarding the feasibility of possible changes to management and operating contracts and other management contracts within the Department of Energy to encourage new opportunities for small businesses to increase their role as prime contractors." The Act instructed that the organizations engaged in the study "shall jointly consider the impact of changes studied on--

A. accountability, competition, and sound management practices at the Department of Energy and its facilities managed by prime contractors;
B. safety, security, and oversight of Department of Energy facilities; and
C. the potential oversight and management requirements necessary to implement the findings of the study."

The Supplemental Appropriations Act at Section 6022(a) also instructed DOE and the SBA to enter into a Memorandum of Understanding (MOU) that articulates an appropriate method of measuring the achievement of DOE in awarding prime contracts to small business, as well as the award of subcontracts to small business by M&O and other management contractors. Section 6022 required that designated participants conduct the study and MOU by September 30, 2005.

The SBA and DOE have executed the MOU, and the designated participants have completed the study. What follows is a report of the study conducted by a study group organized in accordance with Section 6022(c), comprised of representatives of the Administrator of the Small Business Administration, the Chief Counsel for Advocacy of the Small Business Administration, the Chairman of the Defense Nuclear Facilities Safety Board, the Secretary of Energy, and the Administrator of the National Nuclear Security Administration of DOE. The report summarizes the Study Group's analysis of background information and materials relevant to the assignment, including events leading to enactment of Section 6022(a) and (b); Congressional and Executive branch small business policies and programs; the history, nature, and role of DOE's M&O contracts; the history of DOE's small business goaling; recent DOE small business initiatives; and information on certain missions or managerial and administrative concerns associated with potential changes to M&O and other management contracts.

The ultimate objective of this study is to identify opportunities for increased small business participation as prime contractors to DOE that are consistent with the safe, secure, and efficient accomplishment of DOE's overall mission responsibilities. This report summarizes the findings of the Study Group.

The Board, in its independent safety oversight role, evaluated the potential impact on safety of the conclusions reached by DOE and the SBA with regard to increasing small business prime contracts and has addressed in Section II.E.2.c. those actions required by DOE to maintain the same level of safety in all circumstances.

B. APPROACH.

In accordance with the mandate of Section 6022(c), the Study Group met several times to establish an analytical framework for the study. The resulting methodology consisted of the following four stages:

(1) Definition of the issue.
(2) Collection and review of literature relevant to the study.
(3) Identification and assessment of possible changes to M&O and other management contracts to increase small business participation in DOE prime contracts.
(4) Assessment of the feasibility of the possible changes to M&O and other management contracts.

During the collection and review step, the Study Group spent two full days of receiving briefings on various aspects of DOE's management and operation contracts. The briefings also covered the category of contracts classified by Section 6022(c) as "other management contracts." The materials collected and reviewed consisted of past Government Accountability Office (GAO) studies on small business participation in DOE procurement; the Request for Proposal for award of a management and operating contract, Los Alamos National Laboratory; Departmental memoranda; correspondence between DOE, Office of Federal Procurement Policy (OFPP), the SBA, and Congress on the small business goaling process; and relevant legislative histories. The Study Group heard several briefings on such items as the types of research conducted by M&O contractors, organizational structure of the M&O and its contractual relationship to DOE, security and safety issues, and the SBA goaling process. Selected individuals from the Study Group toured DOE's Argonne National Laboratory, to become familiar with the operation of a DOE M&O contract operation first-hand. As a result of the briefings and site visit, those members of the Study Group unfamiliar with DOE's M&O contracting environment gained an understanding of the statutorily mandated "special relationship" between DOE's M&O contractors and DOE.

II. ANALYSIS.

A. BACKGROUND.

Section 6022(c) of the Energy Supplemental Appropriations Act, 2005, requires DOE, the Board, NNSA, the SBAOA, and the SBA to assess both the feasibility and consequences of possible changes to DOE's M&O and other management contracts in order to "encourage new opportunities for small businesses to increase their role as prime contractors." Section(d) further requires the Secretary of Energy prior to "breaking out" a portion of an M&O contract to consider whether: (1) those services under the contract have previously been provided by small business concerns and (2) whether small businesses would be capable of performing the resulting contract.

Section 6022 reflects a compromise between competing interests and concerns regarding the effective management and accomplishment of DOE missions and the accomplishment of Federal policy to ensure that small business concerns have the maximum practical opportunity to compete for and participate in a fair proportion of executive branch contracts and subcontracts. To understand these interests and concerns, it is important to understand the historical context in which they arose.

The Small Business Act, 15 U.S.C. § 631, provides as a matter of policy that the Government should, among other things, ensure that a fair proportion of the total purchases and contracts or subcontracts for property and services for the Government be placed with small business enterprises.

In 1988, the Small Business Act was amended by the Business Development Reform Act, Pub.L. 100-656, to require the President to annually establish Government-wide goals for small business and disadvantaged business. The Government-wide goals established by the President for small business must be at least 20 percent of the value of all prime contracts. Additionally, each Federal agency was charged with establishing agency-specific goals jointly with the SBA. The goals so established were required to be consistent with each agency's mission and to realistically reflect the potential of small business concerns to perform such contracts. Cumulative agency prime contract goals were required to meet and exceed the annual Government-wide goals established by the President. In the event that an agency and the SBA were unable to agree on such goals, the Administrator, OFPP, was required to resolve the disagreement and make a final determination of the goal to be established.

On November 2, 1990, the SBA Administrator referred to the OFPP Administrator a disagreement on goaling with three Federal agencies - the Department of Defense, the National Aeronautics and Space Administration, and DOE. The SBA disagreed with the proposed goals of each agency because, when combined with the goals for other agencies, the resulting goal would not meet the statutorily prescribed minimum government-wide goal. The three agencies disagreed with the SBA's recommended goals because the proposed SBA goals for the three agencies were not consistent with the

statutory requirement that the goals realistically reflect the potential of small businesses to perform those agencies' contracts and subcontracts.

On March 5, 1991, the OFPP Administrator issued a final determination resolving each of the disagreements. The determination provided specific goals for each of the agencies. DoD and NASA's goals were premised upon their historical achievement. With respect to DOE, the OFPP Administrator established the agency's goal at a significantly higher level (20.1 percent) than that proposed by the SBA (3.7 percent) and far in excess of DOE's historical achievements.[1] However, the Administrator provided that the prime contract goals for DOE should also include the accomplishments of its M&O contractors in addition to its direct Federal awards. The OFPP Administrator opined that this goal was nonetheless challenging for the Department, because it resulted in goals for both DOE and the M&O contractors which were higher than those previously achieved by DOE and its contractors. The OFPP Administrator further stated that the previous treatment of subcontracts awarded by DOE's M&O contractors for the purpose of goaling did not appear to accurately reflect the Federal government's true achievements in small business awards because: (1) the M&O subcontracts directly benefited the government in the operation of its government-owned, contractor-operated facilities and (2) the similarity of DOE's procurement rules for the M&O contractors and those of Federal agencies. The SBA and DOE complied with the OFPP Administrator's determination from the date of issuance until 1999.

On October 7, 1999, the Administrator of the SBA wrote to the Administrator, OFPP, requesting the resolution of a dispute with DOE over the inclusion of M&O contractor subcontract awards to small business in DOE's small business prime contracting achievements. The SBA Administrator expressed the opinion that those awards should be counted toward DOE's subcontract goal achievements, so that all agencies would be measured on the same basis. DOE disagreed with the SBA's position, based on the previous policy direction provided by the OFPP Administrator in 1991. It also noted that the SBA's position would result in the erroneous perception that the reduced prime contract achievement represented a reduction in opportunities for small business, while, in fact, the total dollar participation of small business in DOE contracting as a whole was unaffected.

On November 3, 1999, the Administrator, OFPP, issued his determination that reversed the direction from 1990, effective in fiscal year (FY) 2000 and for subsequent fiscal years.

DOE and the SBA complied with the OFPP Administrator's November 1999 determination and revised both the prime contract goaling as well as its prime contract achievement practices. Due solely to this change in the methodology for measuring small business goals and achievements, DOE's achievement changed from the 18-20 percent range achieved since the early 1990s to 2.83 percent in FY 2000. The relative representation of DOE's statistical achievement against the statutory Government-wide

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[1] Letter from the Hon. Allan V. Burman, Administrator, Office of Procurement Policy, to the Hon. Susan S. Engeleiter, Administrator, Small Business Administration, March 5, 1991, at 1-2.

goal results, in substantial part, from the fact that the vast majority of DOE prime contract obligations were attributable to M&O and other management contracts, which have been awarded to large businesses and educational institutions.[2]

Nonetheless, as a consequence of the change, its impact on goaling and achievements, and the potential for misperception as to what these changes meant in terms of DOE's support to small business, DOE re-emphasized the importance of direct DOE prime contracting with small business and adopted a number of high-profile initiatives to increase those awards. Specifically, DOE: (1) launched a national outreach campaign to identify and attract small business to contracting opportunities at the prime and subcontract level; (2) established small business advisory teams to provide guidance and recommendations; (3) established challenging small business goals for each DOE program office that controlled funds for obligation through contracts; (4) began tracking program office performance against goals on a quarterly basis; (5) reviewed former M&O contracts and components of former M&O contracts to determine potential for small business participation; (6) set-aside for the first time environmental remediation, decommissioning, and facility support contracts for small business; (7) encouraged and facilitated small business teaming efforts to enable small business participation in such contracts; and (8) identified M&O and other management contract work scope for potential breakout for direct DOE award to small business.

On December 13, 2000, the then Chairman of the Senate Committee on Small Business expressed appreciation for DOE's efforts. The Chairman also expressed an understanding of the challenges created by the changes in the goaling/achievement reporting methodology, noting that in light of the fact that the majority of DOE's prime contract obligations were placed against M&O and former M&O contracts, the goal established for the Department in FY 2000 was not achievable. The Chairman further opined that the Committee had anticipated that the change directed by the OFPP Administrator would have a significant impact on DOE's ability to meet its goals and recognized that the new "reporting environment would require time to implement."[3] Finally, the Chairman emphasized the importance of reviewing DOE M&O and other major facility management contracts for small business contracting opportunities as they expire and are re-awarded.

In fulfillment of its commitment and plans, from FY 2000 to FY 2004 DOE increased prime contract dollar obligations to small business by $400 million or by approximately 83 percent. In terms of contracts awarded, the number of contracts

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[2] Of the total amount of prime contract obligations in FY 2000 ($17.2 billion), only $3.1 billion was obligated against other than M&O and other management contracts. Of that $3.1 billion, only $340 million was actually obligated under new contracts in FY 2000, and was available in that year for award to small businesses. The remaining $16.8 billion was obligated against pre-existing multiple-year contracts. Therefore, excluding monies obligated to FMC contracts and the amounts obligated to other existing contracts, of the total DOE contract obligations in FY 2000, only 2% of DOE's contract obligations could realistically be affected by DOE small business strategies.

[3] Letter from Senator Christopher S. Bond, Chairman, Senate Committee on Small Business, and Senator John F. Kerry, Ranking Member, Senate Committee on Small Business to the Hon. Bill Richardson, Secretary of Energy, Dated December 13, 2000, at 1.

(including awards under GSA multiple award schedules) going to small business increased from 42 percent in FY 2000 to 61 percent in FY 2004. In terms of the SBA's goal achievement, DOE obligations against small business contracts as a percentage of total obligations increased from 2.83 percent in FY 2000 to just over 4 percent in FY 2004.[4] This increase in DOE's small business achievement would have been more dramatic were it not for the fact that, during the same period, total contract obligations increased by approximately 28 percent, attributable in large part to increased obligations at DOE laboratories and other M&O contracts with national security-related missions, arising in the post-September 11 environment.[5]

On May 18, 2004, the Chairman of the Senate Committee on Energy and Natural Resources convened a hearing to assess the impact of OFPP's direction to change the methods by which DOE and the SBA established small business prime contract goals and reported achievements. The Chairman stated that "[t]his seemingly simple change in accounting is having a very serious number of effects."[6] Specifically, the Chairman expressed concern that one of the initiatives taken by DOE to increase prime contract awards, breaking out M&O work scope including existing subcontracts for direct award to small business, discouraged M&O contractors from expanding their own small business contracting and would actually decrease subcontract obligations to small business. He also stated that this practice would encourage activities at a DOE site to be run by numerous small businesses under separate DOE contracts, and he questioned the wisdom of relying on the Department's capacity to directly coordinate and integrate all those small activities as well as its ability to ensure that the Department's mission would be accomplished with maximum attention to safety and security.

On October 28, 2004, the Consolidated Appropriations Act, 2005, was enacted, incorporating, among other things, the Energy and Water Development Appropriations Act, 2005, which contained two provisions affecting DOE's initiatives to increase small business participation at the prime contract level. Section 312 of the Act provided that funds otherwise available to DOE to achieve small business contracting goals could not

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[4] As a percentage of non-M&O/FMC prime contract obligations, DOE's small business amounts increased from 15.8% in FY 2000 to 28.7% in FY 2004, almost doubling of the percentage of these obligations to small businesses. DOE increased the number of contract awards to small business from 593 (40% of all contract awards) in FY 2000 to 831 (53% of all contract awards) in FY 2004. This represents a 40% increase from FY2000 to FY 2004.

[5] See Attachment 3 for tables reflecting effects of the application of the statistical methodology. These tables display DOE's small business achievements for FY 2000 through FY 2004. From FY 2002 through FY 2004, DOE's budget increased by $4.4 billion. Congress appropriated those additional monies for national security activities after September 11 to be performed at DOE's national laboratories. That increase increased DOE's obligations base for the purpose of computing DOE's small business achievement, but those monies were not available for award of prime contracts by DOE to small businesses. Therefore, the increased appropriations offset the impact of the approximately 100% increase in obligations to non-M&O/FMC prime contracts DOE had achieved during the same period. Had these appropriation increases not occurred, DOE's small business achievement for FY 2004, for instance, would have been 4.7%, as opposed to 3.0%.

[6] *DOE Contracting with Small Business: Hearing before the Senate Committee on Energy and Natural Resources*, 108th Cong. 2d Sess. 1 (2004) (Opening Statement of Hon. Pete V. Domenici, Chairman, Senate Committee on Small Business).

be used for procurement actions resulting from the breaking out of requirements from current M&O contracts unless the Secretary of Energy formally requests, considers, and renders an appropriate decision on the views of a SBA Breakout Procurement Center Representative (or designee) concerning the cost effectiveness, mission performance, security, safety, small business participations, and other legitimate acquisition objectives of the procurement. Section 313 of the Act prohibited the use of funds appropriated by the Act to perform contract management oversight or other contract administration functions that are inherently governmental as defined and prohibited by the Federal Acquisition Regulation (FAR).

On May 11, 2005, Congress enacted the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005, Pub.L. 109-13. The section of the Act that directed this study, Section 6022, was adopted as a substitute for Section 6023 of the Senate version of the Emergency Supplemental Appropriations bill that, among other things, would have amended the Small Business Act to authorize the SBA and DOE to count the small business contracts awarded by DOE's M&O contractors and other facilities management contractors as DOE prime contracts for purposes of reporting small business prime contract results. In conference, Section 6023 of the Senate bill was replaced by Section 6022 of the House bill. Unlike the language it replaced, Section 6022 does not authorize DOE and the SBA to count the small business contracts awarded by M&O and other facility management contractors as Federal prime contracts. Neither does it specify any other methodology for counting contracts or subcontracts for purposes of determining the Department's small business goaling achievements. Rather, the text of Section 6022 directs the DOE and the SBA to "set forth" an "appropriate" methodology for counting both contracts and subcontracts awarded to small businesses in a memorandum of understanding. Additionally, it provides for the study which is the object of this report.

B. DOE MISSION AND ROLE OF THE MANAGEMENT AND OPERATING (M&O) CONTRACT.

1. Original Design of M&O Contracts.

What today are known as DOE's management and operating contracts began during World War II. The Manhattan Engineer District was the governmental entity responsible for the design, development, and production of the first atomic bombs, an undertaking without precedent. This massive effort was achieved, speeding the end of World War II. The achievement resulted through a substantial reliance upon private industry and educational and other nonprofit institutions.

In 1946, following on the success of the Manhattan Project, Congress created the Atomic Energy Commission (AEC) to design and produce nuclear weapons, to develop nuclear energy as a source of electricity, and to research the use of nuclear energy in medicine. The legislative history of the Atomic Energy Act of 1946 indicates the basic principle that underlies M&O contracts was that the AEC, a predecessor of DOE, was to employ highly capable companies and educational institutions to carry out the actual

performance of the agency's mission; that is, these contractors were to perform the agency's mission as opposed to the agency's using civil servants. "Wherever possible, the committee endeavors to reconcile Government monopoly of the production of fissionable material with our traditional free-enterprise system. Thus, the bill permits management contracts for the operation of Government-owned plants so as to gain the full advantage of the skill and experience of American industry."[7]

The Ninth Semiannual Report to Congress by the Atomic Energy Commission stated a more detailed intention of the Commission:

> The firms operating large Government-owned production plants, carrying on extensive development projects, and undertaking urgent construction jobs, work in close day-by-day cooperation with the Commission and its staff. They have been selected for their competence, and the Government is contracting with them not only for technical ability but for managerial ability as well. The working relationship between the Commission and its operating contractors resemble in some respects those between industrial companies and their branch offices. The contractor undertakes to carry on an extensive operation; the Commission establishes the objectives and makes the decisions required to fit the operation into the national program, and exercises the controls necessary to assure security, safety, desirable personnel administration, and prudent use of the public funds.[8]

The report also presented four basic principles relating to the operating contractors:

> (a) The contractor recognizes that the AEC is responsible under the law for the conduct of the atomic energy program.
>
> (b) The AEC recognizes that the contractor is an established industrial, business, or academic organization with proved (sic) capabilities, both technical and administrative.
>
> (c) The contractor recognizes that the proper discharge of the AEC responsibilities requires that the AEC shall have full access to information concerning the contractor's performance of the contract work and the power to exercise such control and supervision under the contract as the AEC may find necessary.
>
> (d) Both the AEC and the contractor recognize that the proper discharge of the contractor's responsibilities for management requires that it shall, to the fullest extent compatible with the law, exercise its initiative and ingenuity carrying out the contract work.[9]

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[7] S.Rept. 1211, 79th Cong. 2d Sess. 15 (1946).
[8] U.S. Atomic Energy Commission, Ninth Semiannual Report 57 (1951).
[9] *Id.* at 61-62.

The special nature of the work performed by the AEC and its operating contractors was reflected in 1949 when Congress enacted the Federal Property and Administrative Services Act establishing, among other things, an outline for defined procurement that included a provision, referred to as "nonimpairment authority," specifying that nothing in the Act "shall impair or affect" the authority of the Atomic Energy Commission to perform its missions.[10]

Subsequently, Congress expanded the mission and authorities of the AEC with its enactment of the Atomic Energy Act of 1954. That Act has provisions that recognize the AEC's potential reliance upon contractors for performing portions of its mission. In 1958 the Act was amended to provide a system of indemnification of AEC contractors and public utilities against liability for nuclear incidents.[11]

As a result of the enactment in 1974 of the Energy Reorganization Act, the AEC no longer exists. Its nuclear regulatory functions were taken over by the Nuclear Regulatory Commission, and its nuclear research, development, and weapons production were taken over by the Energy Research and Development Administration (ERDA). The "operating contracts" continued to play the same role in ERDA that they had performed in the AEC, that is, to perform a substantial portion of the basic mission of the agency. Many pieces of non-nuclear legislation, *e.g.*, the Federal Non-nuclear Energy Research and Development Act of 1974, expanded ERDA's and DOE's missions substantially, resulting in a comparable expansion of the missions of M&O contracts.

M&O contracts continue to serve a necessary function within the Department of Energy, since its organization in 1977, and its security component, the National Nuclear Security Administration.

2. Unique Features of DOE's M&O Contracts and Other Management Contracts.

The Department of Energy has disparate missions, generally involving energy research and development, weapons production and stockpile management, and environmental remediation and restoration. DOE's scientific research and development programs are extensive and include, for example, research in nuclear energy, high energy physics, the human genome, and naval nuclear propulsion, among other demanding and important areas. DOE's budget for carrying out its various missions was approximately $24 billion for FY 2004. Of that amount, about $19 billion was dedicated to the Department's major management contracts, with about $15 billion dedicated specifically to the Department's M&O contracts.

Aside from the size of these M&O and other major management contracts, they differ from stereotypical contracts awarded by Federal agencies in many ways relevant to

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[10] 40 U.S.C. § 474(d)(17), since recodified at 40 U.S.C. § 113(e)(12)(2000).

[11] Pub.L. 85-256. As a result of subsequent amendments, principally the Price Anderson Amendments Act of 1988, Pub.L. 100-408, the Price-Anderson indemnity now applies to DOE contracts under which there is a risk of public liability from a nuclear incident.

small business goaling and achievement. These contractors manage and operate vast sites, consisting of hundreds and often thousands of acres, and they are responsible for all facets of the complex and demanding scientific work DOE assigns to the contractors and for stewardship of the site infrastructure.

Under the statutory contracting model DOE directs the subject matter areas in which the contractors are focused and the overall performance objectives that DOE wants accomplished; however, Congress directed that the contractors be relied upon to apply best management, scientific, and business practices in carrying out that direction. This reliance gave rise to what has become known as a "special relationship," characterized by the use of these contractors to perform major portions of the agency's mission.

DOE's M&O contracts share indicia of that special relationship in their history and in their current operation. Those indicia are evidence of the unique nature of these contracts and, therefore, bear directly on establishing small business goals and recording achievements, and why those processes differ in DOE as opposed to all other Federal agencies.

3. Special Features of DOE's M&O Contracts.

Many of DOE's sites operated and managed by DOE's M&O contracts were placed in locations that at the time were isolated from population centers due to the potential danger and security concerns inherent in the research, design, development, and production of nuclear weapons and other activities. Currently, DOE's M&O contractors have approximately 100,000 employees as compared to DOE's 14,000 employees.

Because of the need to share various types of controlled and sensitive information with its contractors, as well as to ensure that potential conflicts of interest are managed, DOE generally requires that the M&O contractors be subsidiaries of their corporate parents, dedicated to performance at the specific site and supported by performance guarantees from their corporate parents. This limits the ability of the performing contractor to propose on or accept work for other Federal agencies[12] or third parties. The contractors' budget processes are integrated into those of the Department, and, in almost all cases, the budgets for DOE's M&O contracts are line items in the Department's budgets. The contractors operate under special financial institution accounts established by DOE from which, for the Government's benefit, contractors make payments for costs incurred in performance of the contract. Additionally, because the contractors' accounting systems are integrated into DOE's financial system, DOE establishes requirements for the contractors' accounting systems.

These indicia are representative of the "special relationship" the M&O contractors share with DOE.

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[12] Other than that accepted under DOE's Work for Others program, under which it assigns qualifying work to its M&O contractors, special work authorized for the Nuclear Regulatory Commission by § 205 of the Energy Reorganization Act of 1974, Pub.L. 93-438 or work authorized for the Department of Homeland Security under the Homeland Security Act, § 309 of Pub.L. 107-296.

4. External Recognition of the Unique Nature of DOE's M&O Contracts.

Various pieces of legislation enacted by Congress have explicitly dealt with DOE's M&O contracts, recognizing their special relationship with DOE and its predecessor agencies and the special importance of these M&O contracts to the nation. For instance, the Bayh-Dole Act, Pub.L. 96-517, enacted in 1980, reversed the then dominant rule that the Government would take title to inventions first conceived or reduced to practice under Government contracts by granting small businesses, non-profit organizations, and educational institutions the opportunity to elect title to those inventions. The statute recognizes that it would impact title to inventions under DOE's M&O contracts.[13] In doing so, the Act provided authority for DOE to retain title to inventions in DOE's nuclear propulsion and weapons related programs. The Homeland Security Act of 2002, Pub.L. 107-296, provides for Department of Homeland Security (DHS) to have special access in the accomplishment of its mission to DOE's national laboratories and other DOE facilities that are managed and operated by DOE's M&O contractors.

In addition, various other Federal agencies have at times recognized DOE's "special relationship" with its M&O contractors. Prior to enactment of the Competition in Contracting Act and its explicit grant to the General Accounting Office[14] of bid protest authority, the Comptroller General asserted jurisdiction over protests against the award of subcontracts by DOE's M&O contracts, a very limited instance of GAO's assertion of protest jurisdiction over the award of subcontracts under a specific type of contract.[15] Under the Brooks Act, since repealed, governing the acquisition of automatic data processing equipment (ADPE), DOE had a special delegation of procurement authority from the General Services Administration for purchases of ADPE by the M&O contractors. The Department of Labor recognizes the special identity of M&O contracts for the purposes of its administration of the Service Contract Act of 1965, as amended. The U.S. Trade Representative has provided for special treatment for DOE's M&O contractors in its negotiation of the General Agreement on Trade and Tariffs and North American Free Trade Agreement.

M&O contracts have also received special regulatory treatment. The Federal Acquisition Regulation system was adopted in 1984, long after the creation of the contracts that have become known as M&O contracts. The FAR, at Subpart 17.6, recognizes and codifies the special identity that M&O contracts have with an authorizing agency. The FAR coverage recognizes the special extend/compete process, it requires special statutory authority for an agency to establish an M&O contract, requires Secretarial designation of the M&O contracts, and authorizes agency acquisition regulations that deal with the special nature of M&O contracts. Under the authority of Subpart 17.6, the Department of Energy Acquisition Regulation (DEAR) has a Part 970

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[13] 35 U.S.C. § 202(a)(2000).

[14] Now the Government Accountability Office.

[15] 54 Comp. Gen. 767, 784 (1975).

that supplements the FAR and governs the solicitation, award, and administration of DOE's M&O contracts.

Finally, the Supreme Court opined that management and operating contracts are a unique type of contract, in that they have a special identity with DOE and indicia of agency without actually causing the contractors to be agents of the Department. The Court stated:

> [I]n several ways DOE agreements are a unique species of contract, designed to facilitate long-term private management of Government-owned research and development facilities. As the parties to this case acknowledge, the complex and intricate contractual provisions make it virtually impossible to describe the contractual relationship in standard agency terms. . . . While subject to the general direction of the Government, the contractors are vested with substantial autonomy in their operations and procurement practices. n2
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> . . .
>
> n2 AEC management contracts were developed in an attempt to secure Government control over the production of fissionable materials, while making use of private industry's expertise and resources. . . . [16]

5. Other DOE Management Contracts.

In recent years, the missions of certain sites historically managed and operated by M&O contractors have dramatically changed, since DOE no longer carries out a nuclear weapons production mission at some sites. DOE must remediate those sites where production left the Department with serious and sometimes undefined environmental issues. The Department's mission objectives at these sites were no longer broadly defined and indefinite in their term. Rather, the Government's new requirement was narrowly focused and of definite duration.

The desire to make expedited progress led predictably to the creation and adoption of contract structures that, while not management and operating contracts, shared some of their characteristics, particularly those related to site and facility stewardship during the conduct of the remediation missions, as well as the overarching importance of safety management and security management. These contracts are referred to in Section 6022(c) as "other management contracts" and have otherwise been described by DOE as major site and facility management contracts. Since these contracts involve the control of the site and involve a large contractor workforce, certain of the provisions appropriate to a management and operating contract were appropriate to the major facilities contracts, including retaining certain portions of the "special relationship" between DOE and its M&O contracts.

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[16] United States v. New Mexico, 455 U.S. 720, 723(1982).

C. SMALL BUSINESS REQUIREMENTS.

The Federal government purchases billions of dollars in goods and services each year that range from paperclips to complex space vehicles. America's small businesses-some 24 million strong-are the strength of our nation's economy. Small businesses account for half of the country's real, non-farm gross domestic product, create 60 to 80 percent of the net new jobs, and produce 13 to 14 times more patents per employee than large businesses. It is the policy of the United States that small businesses have the maximum practical opportunity to compete for and receive a fair portion of Federal government contracts and subcontracts. To ensure that small businesses get a fair share of Federal business, the SBA negotiates annual procurement small business goals with each Federal agency and reviews each agency's results. The SBA is responsible for ensuring that the statutory government-wide goals are met in the aggregate.

In addition, in 1976, Congress created the Office of Advocacy to protect, strengthen, and effectively represent the nation's small businesses within the Federal government's legislative and rule-making processes. The SBAOA works to reduce the burdens that Federal policies impose on small firms and maximize the benefits small businesses receive from the government. The SBAOA's mission, simply stated, is to encourage policies that support the development and growth of American small business.

In 1988, Congress passed legislation that established a Government-wide small business procurement goal for prime Federal contracts and certain subcontracts awarded by large businesses resulting from those prime contracts. Today, Section 15(g)(1) of the Small Business Act (15 U.S.C. § 644(g)), establishes Government-wide contracting goals for Federal procurement for both prime contracting and subcontracting. As originally enacted, the overall Government-wide prime contracting goal was established at 20 percent. However, in 1997, Pub.L. 105-135 raised the annual overall Government-wide prime contracting goal for small business to 23 percent. An individual agency's procurement goals do not necessarily match the Government-wide goals; rather, an individual agency's goal is to reflect the realistic opportunity for small businesses to receive that agency's awards.

While the statutory goals are Government-wide, that is, the statutory goals are an aggregate of all Federal procurements, each Federal department or agency has different program missions and procurement needs. Section 15(g)(1) of the Small Business Act (15 U.S.C. § 644(g)(1)) states, "Notwithstanding the Government-wide goal, each agency shall have an annual goal that presents, for that agency, the maximum practical opportunity for small business concerns … ." The SBA works with each agency to establish goals that both provide small businesses the maximum opportunity to receive contracts, given that agency's procurement needs, and meet the Government-wide statutory goals. It is the SBA's internal policy to begin the negotiation by assigning either the statutory level or the average achievement for the past three years-whichever is higher-and agencies must make a compelling case to have goals set lower. The SBA cannot accept proposed goals from an agency until it is sure the cumulative goals will satisfy the statutory Government-wide levels. If the SBA and the agency cannot agree on

the proposed goals, the agency may submit the case to OFPP for resolution. If this process is completed in the month of September, it will be included in the final goals that are distributed to all agencies prior to the beginning of the fiscal year. If the appeal process is prolonged, the SBA will assign either the statutory level or the average achievement for the past 3 years – whichever is higher – so that the goaling process can commence in a timely manner and assure that the statutory government-wide goaling level can be satisfied.

The SBA has established interim Goaling Guidelines for agencies. The guidelines, although not regulatory, were established in accordance with public rule making procedures and accordingly were published for public comment in the *Federal Register*. They are available for viewing on-line at http://www.sba.gov/GC/goals.

The SBA and the SBAOA, along with all the designated participants to the Section 6022 study, have examined the feasibility of possible changes to M&O contracts and other management contracts within DOE to increase small business contracting opportunities. The goal of this effort has been to identify: (1) potential changes that will expand procurement opportunities in DOE's Mentor-Protégé Program in both DOE's M&O and other major facilities contracts; (2) potential changes that will increase prime contracting opportunities for small business from work currently performed by DOE's M&O; and (3) potential changes that would increase subcontracting opportunities in DOE's M&O and other major facilities contracts.

D. DOE'S SMALL BUSINESS INITIATIVES.

DOE complies with the small business policies and procedures delineated in the Federal Acquisition Regulation and expands upon those requirements to facilitate participation of small businesses in the contracting process at both the prime contract and subcontract levels. Acquisition Letter No. 2005-08, dated June 10, 2005, is DOE's most current articulation of department-wide guidance on contracting with small business concerns. The impact of these special efforts has given DOE's Contracting Officers and prime contractors additional tools to increase the participation of small businesses in the contracting process.

1. FAR Policy.

The FAR automatically reserves for small business concerns acquisitions from the micro-purchase threshold ($2,500) to the simplified acquisition threshold ($100,000). For acquisitions over $100,000, awards are set aside for small business if there are at least two responsible small business concerns and award can be made at fair market prices. The FAR also provides for noncompetitive awards and set-asides for 8(a) firms, Historically Underutilized Business Zones Program (HUBZone) concerns, and service-disabled veteran-owned small business concerns.

2. DOE Policy and Procedures.

The programs described below are available to DOE program offices and M&O contractors, depending on the program, and represent an adaptation of a Federal small business preference program for use by DOE's M&O contractors. Many of these adaptations are designed to enhance the M&O contractors' ability to make subcontract awards in more situations than non-M&O contractors and represent the "special relationship" between DOE's M&O contractors and DOE.

a. Mentor-Protégé Agreements – DOE and the SBA operate Mentor-Protégé agreements as a method of increasing the participation of small businesses in government contracting. DOE contracting officers who seek to increase prime contract awards to small businesses can use the SBA Mentor-Protégé Program. DOE prime contractors who seek to increase subcontract awards can use the DOE Mentor-Protégé Program. The SBA's regulations provide for a joint venture that may include a large business and an 8(a) firm that qualify as a Mentor-Protégé arrangement, respectively, under its Mentor-Protégé Program. Such a joint venture will be recognized as small for the size standard corresponding to the North American Industry Classification System (NAICS) code assigned to the procurement. DOE's Mentor-Protégé Program seeks to foster long-term business relationships between small business entities and prime contractors, and to increase the overall number of subcontract awards to small businesses. Mentors and protégés are encouraged to form teams to submit offers that will advance the protégé's competitiveness in the market. The DOE Mentor-Protégé Program regulations are found in DEAR 919.70.

b. Teaming Arrangements – Another method of increasing the participation of small businesses in the award of DOE prime contracts is DOE's encouragement of the use of teaming arrangements among small businesses, consistent with applicable law and the SBA's rules on size status and affiliation. Such arrangements supplement the capabilities of small businesses to perform large, complex requirements. Teaming arrangements not only increase business opportunities for small businesses, but also expand the skill mix of the contracting entity.

c. Use of Federal Supply Schedules (FSS) –DOE was one of the first agencies to recognize the potential of the General Services Administration's Federal Supply Schedule to expand small business participation. Acquisition Letter No. 2000-02, dated April 20, 2000, was issued specifically to target small business firms in FSS competitions to the maximum extent possible. DOE established a procedure by which contracting officers work with program personnel to identify three or more small business FSS contractors. When appropriate, competitions may be limited to specific socio-economic categories (e.g., woman-owned small businesses). DOE provides that small business firms should be targeted regardless of the dollar amount of the acquisition. As a result of this policy, DOE obligates over 60 percent of the dollars awarded under the schedule contracts with small business firms.

d. Multiple Award Contracts (MACs) – Contracting officers work with program officials and the Small Business Program Managers (SBPMs) to identify small business opportunities and encourage business strategies such as teaming arrangements. MACs are set-aside exclusively for small businesses if the contracting officer can identify at least two responsible small business offerors. If a total set-aside is not practicable, contracting officers will identify opportunities for component(s) of statement of work to be set aside for small businesses.

e. SBA/DOE Partnership Agreement – A Memorandum of Understanding was executed between DOE and the SBA in 2003 and is effective through September 30, 2006. The SBA delegated to DOE the authority to contract directly with 8(a) firms, thereby streamlining the 8(a) contracting process.

f. OSDBU Database – DOE's Office of Small and Disadvantaged Business Utilization (OSDBU) established a DOE Small Business database for use by program offices and prime contractors. Small business profiles are downloaded from the Central Contractor Registration (CCR) database to include those small business concerns having interest in working with DOE. Contractors are cross-referenced by company, contact name, size status, NAICS code, and key words. The database has been developed to be accessed through DOE's Forecast of Prime and Subcontracting Opportunities.

g. OSDBU Review – DOE's Contracting Officers must refer all proposed acquisitions over $3 million (new requirements, exercise of options, or other extension requests of existing acquisitions) which have not been proposed for small business set aside to OSDBU. OSDBU reviews the analysis and conclusions with respect to the proposed action to determine whether the failure to set the requirement aside is justified and, if justified, identifies strategies to maximize small business participation as subcontractors.

h. Advanced Planning Acquisition Team – DOE established an "Advanced Planning Acquisition Team" (APAT), comprised of representatives of the Senior Procurement Executive, the OSDBU, the Small Business Administration Procurement Center Representative (SBA-PCR), and, as appropriate, the DOE requesting program element. This team meets regularly to discuss small business policy matters, DOE initiatives, goaling issues, and operational issues including acquisition strategies associated with major procurements in order to facilitate small business participation.

i. Business Clearance Review – DOE headquarters operates a business review function that assesses site business plans, acquisition strategies and plans, solicitations, and contract administration plans. As part of its reviews, the activity encourages planning for small business participation at the prime and subcontract levels; works with contracting activities to address roadblocks to small business participation; and assists in the drafting of evaluation factors to promote small business participation. The activity also works with OSDBU and program offices to identify opportunities to break out specific pieces of work under an M&O contract for award to small businesses.

j. Small Business Program Managers – Small Business Program Managers, many of whom are designated by Heads of the Contracting Activity (HCAs), participate in the planning of, and make recommendations to set aside, acquisitions over $100,000. The review process addresses small business categories, which are goaled HUBZone small business, small disadvantaged business, small business, service-disabled veteran-owned small business, and women-owned small business concerns and is conducted before the issuance of the solicitation. The SBPM acts as liaison with the small business community and reviews all subcontracting plans prior to acceptance by the contracting officer.

k. Small Business Subcontracting Plan – Contracting officers ensure that all M&O contractors, except small businesses, with contracts over $500,000 ($1 million, if construction) have a small business subcontracting plan in place that has aggressive small business goals and that subcontract reports are submitted in a timely and accurate fashion. Every subcontracting plan should, at a minimum, support achievement of the agency-wide goals negotiated with the SBA by the OSDBU. Subcontracting plans reflecting less than the agency-wide goals must be submitted through the OSDBU to the HCA for approval/disapproval. OSDBU monitors compliance with subcontracting plans. Contracting Officers, in consultation with Small Business Program Managers, meet periodically with directors of contractor purchasing to review the status of the contractor's performance against its small business subcontracting plan. Appendix 3 to the report demonstrates that FMC subcontracting as a function of the subcontracting under all its contracts, both FMC and non-FMC, ranged from 30 percent to 37 percent over the period FY 2000 to FY 2003. To enhance subcontracting opportunities for small business, DOE has offered its M&O contractors tools such as a program that allows award of subcontracts to 8(a) certified contractors under the same conditions as the Federal program and the ability to award sole source subcontracts to a mentor-prime contractor's protégé.

l. 8(a) Pilot Program – Contractors responsible for the management or operation of sites and facilities are authorized to award subcontracts with a value of $5 million or less for manufacturing NAICS codes and $3 million or less for all other acquisitions on a noncompetitive basis to firms certified as participants by the SBA under its 8(a) program. Contractors may also reserve for competition among 8(a) firms requirements in excess of those thresholds. The contractor shall assure that awards are made at fair market prices and are identified as awards to 8(a) firms and Small Disadvantaged Businesses (SDBs) under the reporting provisions of the Small Business Subcontracting Plan clause.

m. HUBZone Set-Aside – For procurements under $3 million ($5 million for manufacturing NAICS codes) if an 8(a) certified firm can be identified and award can be made at a fair market price, an award may be made noncompetitively to a HUBZone 8(a). If the procurement is valued in excess of $3 million ($5 million for manufacturing) and two or more HUBZone 8(a) firms can be identified, the procurement may be set aside for competition among HUBZone 8(a) firms. Contractors responsible for the management and operation of DOE sites and facilities are authorized to use HUBZone set-aside and HUBZone sole source procurement techniques in the award of subcontracts under conditions similar to those applicable to the award of Federal prime contracts.

n. Service Disabled Veteran-Owned Small Business (SDVOSB) Set-Aside – Program offices and contractors responsible for the management or operation of sites and facilities may restrict competition to SDVOSB concerns if there is a reasonable expectation that two or more SDVOSB concerns will submit offers and that the award can be made at a fair market price.

o. Discretionary Set-Asides – Contractors responsible for the management and operation of sites and facilities are authorized to set aside purchases at any dollar value for award to small businesses and to make direct purchases valued up to $100,000 to small businesses, while ensuring that awards are made at fair market prices.

p. Anti-Bundling – DOE policies provide strict controls on the consolidation of contract requirements that are prohibited under law and regulation as "bundled contracts." DOE's policies further demand that when permitted consolidation occurs because of good business judgment, the acquisition strategy for the consolidated requirement must consider the potential for award to a small business.

E. STATUTORILY SPECIFIED CONSIDERATIONS THAT MAY IMPACT ANY POSSIBLE CHANGES TO DOE's M&O AND OTHER MANAGEMENT CONTRACTS.

1. Introduction.

Section 6022(c) instructs the designated study participants to "jointly conduct a study regarding the feasibility of possible changes to [DOE's] management and operating contracts and other management contracts . . . to encourage new opportunities for small businesses to increase their role as prime contractors." However, the section also requires an assessment of the impact of potential changes on other important considerations. This portion of the report summarizes the Study Group analysis.

2. Statutory Safety and Security Considerations.

Specifically, Section 6022(c) requires that the study participants jointly consider the impact of any potential changes in light of these additional considerations.

(a) accountability, competition, and sound management practices at DOE and its facilities managed by prime contractors;

(b) safety, security, and oversight of DOE facilities; and

(c) the potential oversight and management requirements necessary to implement the findings of the study.

These considerations fall into three major categories. The first consists of several interrelated management concepts: accountability of the contractor, exercise of sound business practices by DOE, and the ability of DOE to oversee whatever contractual

relationships that may result from possible changes to DOE's M&O and other management contracts. The second and third considerations are security management and safety management.

a. Considerations Relating to DOE's Management of Its Sites and Facilities.

As previously noted, DOE's M&O contracts form the core of its business model for managing and operating its major scientific research, production, and other Government-owned sites and facilities. DOE's performance of its diverse missions depends on the success of these contractors in fulfilling the requirements of their contracts. Under the M&O model, the contractor acts as the integrator for all activities needed for the management and operation of the site or facility. The M&O's integration function is critical to the application of the appropriate contract resources and necessary for the effective and efficient performance of the contract.

These contracts are performance-based and, therefore, set forth the Department's performance standards and performance expectations. DOE administers the contract, performs surveillance of performance, and provides general site oversight functions. DOE holds each contractor accountable for its complete set of management and operating responsibilities consistent with the contract terms and regulatory requirements. DOE addresses contractor performance failures through both contractually based assessments, such as fee determinations, performance evaluations, and assessment of regulatory penalties, when justified.

DOE must carefully assess any changes to its business model to ensure that the contractor's ability to perform its site or facility management and operating responsibilities are not impaired and to ensure that DOE does not reduce its ability to hold the contractor accountable for performance deficiencies. Consideration of any possible change to DOE's M&O business model must also carefully consider the effect of the change on DOE's capacity, both in numbers and skills of its personnel, to effectively administer the resulting combination of work at the site or facility.

In reviewing these matters, the Study Group recognized that safety and security considerations may overlap. For instance, an individual's unauthorized presence on a DOE site would be a security violation. Additionally, that presence presents a safety risk. In order to draw an appropriate distinction and also to reflect the jurisdictional limits of the Board, the Study Group used "safety" to refer to the safe operation of facilities, that is, the protection of workers on site, the public on and off the site, and the environment. The Study Group used "security" to refer to the protection of facilities from both physical threats, for example, external assault or sabotage, and from failures to protect national security information.

b. Security Considerations.

Based on the information reviewed, the Study Group has concluded that a substantive security presence is crucial, particularly in this age of terror threats, to the safe and effective operation of DOE's management and operating and major facilities contractors. These contracts are performed on large and sometimes vast Federal reservations. As a rule, thousands of contractor employees, hundreds of Federal employees, and others, including foreign visitors, work on these sites. At almost all of the sites, there are nuclear materials, associated with nuclear weapons design and production, nuclear stockpile, naval nuclear propulsion, nuclear reactor research, nuclear waste storage, high energy physics research, or other scientific or medical use. Similarly, most DOE sites managed and operated by M&O and other management contractors also have stewardship over classified and other restricted information. Access to these materials and information is critical to our national security. Further, access to these sites and facilities also presents a risk to third parties who may wander on the reservation. Thus, the control of access is important not only to protect those who have a right to be there but also to protect those who do not from exposure to risks.

The security function includes controlling access to DOE sites and facilities, access to specific buildings or facilities within the reservation, the ability to respond to threats, and maintaining order on the reservation, including initial response to civil matters that may be associated with any workplace. All of DOE's facilities maintain some level of security system, most maintaining a high level of security protection.

Section 6022 mandates that any changes to DOE's M&O and other management contracts, must not compromise security under those contracts. The study group has considered security and believes that the analysis of security considerations mirrors the critical elements of the following discussion of safety considerations.

c. Safety Considerations.

Congress has recognized the importance of the safety function at DOE's M&O and other facilities management sites in Section 6022 in two ways: first, in establishing safety as a criterion to be considered in light of any recommended changes to management and operating contracts and, second, in designating the Defense Nuclear Facilities Safety Board as a participant in this study.

The Board made a presentation on its jurisdiction, function, and considerations that raised the Board's concerns about safety at those facilities under their jurisdiction. The Study Group used that information in assessing the potential effects on safety and oversight of increasing the number of prime contracts that may be awarded by DOE.

The scope of the Section 6022 study extends to all DOE facilities. The Board's oversight jurisdiction, however, extends only to DOE's defense nuclear facilities. Examples of defense nuclear facilities include weapons laboratories, weapon assembly plants, defense nuclear waste storage and waste processing facilities, as well as new construction facilities such as the Pit Disassembly and Conversion Facility or the Hanford Waste Treatment Plant.

Accordingly, this portion of the report addresses those DOE efforts required to maintain health and safety of the public, including workers, at DOE's defense nuclear facilities.

The Study Group additionally considered that the Board's discussion reflects the application of the safety considerations identified by the Board to the entirety of the DOE M&O complex, varying only as to degree, though several of the facilities do not fall within the Board's jurisdiction. Facilities not overseen by the Board, throughout the DOE M&O complex, present nuclear and other hazardous risks to the health and safety of persons employed at the site and to persons in surrounding areas.

The following detailed presentation of considerations identified by the Board reflects consideration of the statutory factors at Board-overseen facilities.

i. The Board's Views with Respect to Defense Nuclear Facilities.

In exercising its safety oversight responsibilities, the Board has no predisposition as to form of contracts or size of contractors managing or otherwise involved in defense nuclear facilities or activities. However, the Board does have specific interest in several aspects of the contracts and contractors utilized in and for defense nuclear facilities and activities, including the:

- Experience and technical competence of contractors;
- Ability of DOE to provide safety oversight of work performed by contractors;
- Ability of contractors to assure, through self-assessment, that work is performed safely;
- Clear identification of applicable safety requirements for which contractors are accountable; and
- Ability of contractors to implement applicable safety requirements.

Safety remains important to the execution of defense nuclear activities, regardless of the size of the business conducting the work. The Board expects defense nuclear work to be conducted safely, ensuring adequate protection of worker and public health and safety. As such, work should be conducted: (1) meeting the same contractual requirements; (2) with the same degree of formality; and (3) with each prime contract subjected to the required level of DOE scrutiny and oversight.

ii. Nature of DOE's Defense Nuclear Facilities.

Work at defense nuclear facilities principally involves two types of hazards: (1) those unique to defense nuclear activities and (2) those common to other high consequence work. DOE's defense nuclear facilities contain radioactive and toxic materials that present health and safety risks with a range of effects to workers and the public. In some cases, the potential risk is of the utmost significance. Extreme examples include inadvertent detonation of a nuclear weapon or significant spread of contamination affecting the public. Even when consequences are minor, tolerance for incidents or accidents, whether nuclear or non-nuclear, at DOE's defense nuclear facilities is extremely low.

Besides the health and safety risks presented by hazards at DOE's defense nuclear facilities, there are also potential impacts to both national security and safety related missions (including waste processing and stabilization). Defense nuclear work must be conducted safely to minimize potential safety and mission impacts.

Work conducted at defense nuclear facilities is generally subject to a high degree of formality to preserve the integrity of and ensure public confidence in defense nuclear activities. As a result, defense nuclear facility work normally requires the following:

- Safety requirements applicable to the work to be conducted must be clearly identified and approved. DOE has developed acquisition regulations that control the identification of safety requirements from applicable Federal, state, and local laws and regulations (including DOE regulations), as well as from applicable DOE directives and other applicable standards, practices, and controls. DOE's acquisition regulations also control implementation of the principles and functions of Integrated Safety Management for defense nuclear facilities work.

- Identified safety requirements must be effectively implemented by the contractor. Effective implementation is normally ensured through a contractor infrastructure that includes organizational elements such as Quality Assurance, Training, and Environment, Safety, and Health (ES&H).

- Technical competence and experience must be commensurate with the work. In many cases, technical qualifications and worker training must be conducted and demonstrated in a prescribed manner. Such demonstrations may include the use, as appropriate, of certifications, mockups, and simulators to demonstrate acceptable performance.

- DOE must provide safety oversight of work conducted at its sites. In general, this oversight is somewhat broad (for instance, a 100 person DOE site office may oversee the work conducted by 10,000 contractor and subcontractor employees), with only a small cadre of DOE employees, that is, DOE Facility Representatives, conducting daily on-the-job oversight.

- Contractors must provide effective self-assessment. DOE relies heavily on institutionalized processes by which contractors, acting under broad DOE oversight, provide more complete and comprehensive self monitoring and assessment in order to ensure that safety requirements are properly implemented for all work performed at the site.

The current functions carried out by DOE and its prime contractors are outlined in the following table:

Functions	
Prime Contractor	**Department of Energy**
Submits bid in accordance with DOE Request for Proposal	Identifies contract-level safety requirements
Identifies detailed safety requirements based on contract	Reviews and agrees
Devises implementation methods	Reviews and agrees
Implements requirements	Oversight of implementation
Monitors and assesses the work	Provides broad, and in some cases job specific, oversight
Provides product	Accepts
Requires knowledge of own work plus work of others and controls Integrated Safety Management	Responsible for managing oversight and integrating work, including Integrated Safety Management

Characteristics of the current contracting model and contracting models that may result in more DOE prime contract awards to small business are shown in the next table:

Characteristics	
Currently	**Proposed**
Few M&Os; self-tending; oversee small contractors	More prime contractors
Small Federal staff (approximately 100 for a large site)	Larger Federal staff
Federal management and oversight performed at a sampling level with detailed oversight by Facility Representatives	Federal management and oversight performed for each contractor; Assume M&O role of manage, integrate, and oversee, including Integrated Safety Management

iii. The Potential Safety and Oversight Impacts That Would Result from Increasing the Role of Small Businesses as Prime Contractors.

Increasing the role of small businesses as prime contractors will have a number of impacts on the conduct of safety oversight at defense nuclear facilities. These impacts, and the adjustments required to maintain the same level of protection of public health and safety, are listed below.

A. Increase in the Number of Prime Contractors for Which DOE Would Provide Oversight.

Work conducted at defense nuclear facilities requires a high degree of formality. Through contract mechanisms, DOE has used the resources and capabilities of prime contractors to ensure that appropriate safety requirements are identified and implemented for all work performed, including flowing down contractual requirements to subcontractors. By leveraging the resources of its prime contractors, DOE has been able to limit the amount of its direct Federal oversight. This approach obligates prime contractors to identify safety requirements for work to be conducted by subcontractors, to coordinate and assist subcontractors in implementing these safety requirements, and to provide direct oversight of work performed by subcontractors.

DOE provides oversight of the prime contractor to ensure work at both the prime and subcontractor level is done safely. Through functions such as the Facility Representative program, DOE samples work done at the detail level to verify that both prime and subcontractors are in fact performing work safely and according to requirements. If the number of prime contractors is increased, DOE's current level of oversight would not be sufficient to manage the increased requirements for oversight.

B. Increase in the Variety of Systems and Processes Utilized to Perform Work at DOE Sites.

In providing oversight of multiple work activities, the simplest model requires all work to be done using identical requirements, work controls, and procedures. This is not the case for defense nuclear work at DOE. The closest example would have work done at a single DOE site where a single prime contractor manages all work using a single set of processes and procedures. In this example, requirements are generally well known, implementation of requirements has been exercised and refined, and lessons learned and corrective actions are readily applied to all work. All subcontractors are likewise managed by the prime contractor and use the same processes for ensuring safety requirements are properly implemented. This model is usually the simplest to monitor and oversee.

DOE currently establishes requirements and mandates that its prime contractors remain within boundaries and perform work according to the established requirements. How requirements are met is the responsibility of the prime contractor. DOE qualifies the

contractor and measures its performance by sampling at certain detail levels to provide verification of the process.

Each time work is subdivided to additional prime contractors, even when work processes and controls remain the same, oversight efforts generally have to be similarly increased. However, work processes and controls normally do not remain the same, further complicating the oversight function and requiring increased oversight effort.

C. Increase in the Efforts Required of DOE to Manage Interfaces Affecting Safety between the Prime Contractors.

Work done by separate prime contractors at a site will rarely be completely independent, and will normally create interfaces between the work done by the different contractors. Such interfaces are a source of safety vulnerabilities and must be controlled. The integration of prime contractors, and the management of the interface between these contractors, will require additional oversight effort by DOE.

D. Increase in the Number of Prime Contractors with Less Depth and Breadth of Capability.

The rigor of nuclear work at defense nuclear facilities requires the contractor to have or subcontract for a substantial amount of support infrastructure and expertise in addition to the requirements for technical and project management expertise. Examples include internal oversight resources; quality assurance capability; environment, safety and health programs; health physics expertise; functioning safety culture; and incident investigative capability. The nature of the defense nuclear work also requires the contractor to have or subcontract for properly trained and skilled workers.

Small businesses are less likely to have this substantial breadth of capabilities and would likely require assistance to augment their capabilities. This approach will likely give rise to specialty contractors who provide expertise in areas such as safety and identification/application of required competencies. DOE will either have to provide this expertise that replaces the integrating M&O contractor or oversee the contractors providing the necessary expertise.

iv. Conclusions to be Drawn with Regard to the Impact of Increasing the Number of Contracts Subject to Oversight.

The formality, oversight, and safety requirement compliance demanded by defense nuclear work pose challenges. Necessary changes would include internal DOE oversight, controlling the manner and processes by which work is conducted, coordinating interfaces with multiple contractors, and providing an acceptable level of expertise and infrastructure. Small businesses may have to consider subcontracting portions of the work to meet these challenges.

The potential oversight and management requirements necessary to implement a substantial increase in small business contracts by DOE are:

1. A substantial increase in the numbers of skilled, competent DOE personnel will be required to manage the increased number of contracting processes and resulting prime contracts at each site.

2. Contract performance interfaces, a source of safety vulnerabilities, will increase dramatically and must be managed by DOE on a far more detailed basis than current practice.

3. Not only will the number of prime contracts increase, so, too, will the type and subject matter of the contracts. Thus, small prime contractors will most likely require the help of other subject matter specific contractors in areas such as quality assurance, safety, technical specialties, and Integrated Safety Management. This again will require an increase in DOE personnel who are qualified and competent to manage and oversee the cross-cutting specialty firms, which themselves may well be small businesses.

4. DOE will need to develop a credible plan to identify and satisfy resource requirements necessary to meet its expanded oversight and competency roles to address any significant increase in the number of prime contractors.

Increasing the role of small businesses as prime contractors for defense nuclear work has the effect of multiplying the burden on DOE to competently and thoroughly oversee the safety of meeting these challenges. New DOE processes and procedures, or significantly strengthened processes and procedures, would be required to implement such a change. A corresponding increase in DOE contract management and oversight resources, such as Federal project directors, subject matter experts, and Facility Representatives, would be required. In effect, DOE would have to function as a management contractor, managing, coordinating, and providing technical services – missions for which DOE does not currently maintain resources.

d. Statistical Analysis.[17]

DOE has prepared a comparison of the cost-to-spend ratio for FY 2004 of purchasing by DOE's M&O and other management contractors and by DOE's professional procurement staff. The comparison reflects a largely, though not exactly, comparable representation of the costs. The cost per dollar of subcontract obligation by DOE's M&O and other management contractors for FY 2004 was 2.32 cents. The cost per dollar of contract obligation by DOE's professional procurement staff was 0.9 cents.[18]

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[17] This section of the report presents economic considerations relevant to the study; however, this analysis is independent of the preceding Section c., discussing safety considerations, specifically those within the jurisdiction of the Board.

[18] This representation of cost per transaction by the purchasing functions of DOE's M&O and other management contractors versus the cost per transaction in the award by DOE of non-M&O and other

One could take the view that, since DOE's procurement cost-to-spend ratio is less, DOE should take over more transactions. Both Alternatives 1 and 2, discussed in the next section of this report, consider that view. As noted earlier in this report, DOE's assuming responsibility for large numbers of subcontracts poses many obstacles, not the least of which is a need to significantly expand DOE's professional acquisition workforce, including technical personnel. The decision-making filter associated with the first alternative discussed takes those obstacles into account and allows a judicious assumption by DOE of former subcontracts from M&O and other management contracts, minimizing the impact on DOE's professional procurement workforce.

A review of procurement professionals in DOE procurement organizations reveals that over the period FY 2000 through FY 2005, the number of contracting professionals **decreased** by 7.9 percent and the number of DOE employees, in general, **decreased** 10 percent.

These workforce reductions occurred in the face of DOE's procurement obligations' having **increased** 34 percent. The portion of DOE's obligations to management and operating or other management contractors reflects almost the entire budgetary increase and **increased** by 40 percent. DOE's obligations to and number of transactions involving non-M&O and other management contracts remained essentially the same over the same period.

DOE's experience in this regard is consistent with the trend in reducing the number of Federal employees as a result of the renewed emphasis on subjecting existing Federal organizations to a market competition. The result of such competitions is that, if retained within the Federal agency, staffing is reduced or, if contracted out, the Federal workforce is replaced. This emphasis on market competition indicates there is no expectation that DOE could acquire an increase its professional procurement workforce and the associated technical workforce.

III. POTENTIAL CHANGES TO DOE'S MANAGEMENT AND OPERATING CONTRACTS AND AN EVALUATION OF THEIR FEASIBLITY.

A. WHAT IS FEASIBLE?

In attempting to arrive at consensus conclusions as to what changes to M&O and former M&O contracts are feasible, the Study Group identified a "universe" of possible changes to, or with respect to, M&O and other management contracts that could result in an increase in Federal prime contract awards or obligations to small business. The group then identified issues, concerns, impediments, and other factors that could affect the feasibility of implementing these actions as well as the likely results of the actions.

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management contracts is approximate. The cost base used in computing the DOE cost per transaction was defined and applied consistently. The costs used in computing the M&O and other management costs in some cases may have included additional costs when the contractor had its own method of computing cost per transaction.

The group's conclusions are as follows:

1. Breaking Out Work Scope for Award to Small Business.

One alternative considered for increasing prime contract awards to small business is to identify additional opportunities for removing work scope from the M&O contracts and to have DOE contract for it directly with small business.

M&O contracts are not "bundled" contracts.[19] Accordingly, neither the statutory provisions nor their implementing regulations apply. Nonetheless, M&O contracts, as previously described, contain many different work elements associated with program and site management responsibilities. Further, many of these activities, on an individual level may be successfully contracted to small business, as evidenced by the robust small business subcontracting efforts engaged in by DOE's M&O contractors. These work scope activities, therefore, represent a theoretical opportunity for increasing DOE's prime contract awards by removing the work scope from the DOE M&O contracts and subjecting them to direct DOE contracting.

DOE has broken out a number of opportunities in recent years as a product of its ongoing strategies to increase Federal prime contract awards and obligations. For example, certain construction activities were broken out of DOE's contract for the management and operation of the Strategic Petroleum Reserve in Louisiana. The decommissioning of the Fast Flux Test Facility (FFTF) was awarded as a small business set-aside,[20] and the operation of the 222S analysis laboratory was broken out for award as a small business set-aside from the contract for management of the Hanford reservation. Further, DOE's National Nuclear Security Administration has proposed the breakout of a significant number of subcontracts currently subcontracted by its national security laboratories as part of its strategic sourcing initiative.

There are a number of considerations that must be taken into account in identifying breakout opportunities to maximize the expectations for successful performance of the work:

First, DOE's business model for the conduct of its national security and laboratory research program is largely based on the use of M&O contracts under which DOE brings in the skills of private sector management to fulfill DOE's programmatic responsibilities with the physical sites which support their accomplishment. This is provided for in DOE's enabling legislation and applicable regulations and is critical to the successful accomplishment of DOE's missions. The M&O model is the basis for DOE's historic

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[19] "The term 'bundling of contract requirements' means consolidating [two] or more procurement requirements for goods or services previously provided or performed under separate smaller contracts into a solicitation of offers for a single contract that is likely to be unsuitable for award to a small-business concern due to--

(A) the diversity, size, or specialized nature of the elements of the performance specified;

(B) the aggregate dollar value of the anticipated award;

(C) the geographical dispersion of the contract performance sites; or

(D) any combination of the factors described in subparagraphs (A), (B), and (C)." 15 U.S.C. § 632(o)(2).

[20] The FFTF has since been cancelled as a result of competing program priorities.

strategies of maximizing private sector (industrial and academic) performance of its mission responsibilities. It has also resulted in a Federal organization characterized by relatively few Federal employees' overseeing the work of its contractors.

Second, the ability to successfully integrate the various functions associated with the management of a site is a critical feature of an M&O contractor's role. The M&O contractor has the responsibility for integration of all aspects of performance and management and operation of its sites and facilities to assure effective performance of the contract, efficient use of contract resources and facilities, and preservation of critical safety and security functions. The need for properly resourced, disciplined, and uniform managerial alteration to such functions has become even more critical in recent years as a result of heightened interest in safeguarding the knowledge, materials, technology, facilities, and personnel located at those sites from threats against the United States' national security. DOE must critically review each opportunity to break out safety and security activities to assure the identification and assessment of any potentially negative effects.

Third, disruption of an M&O and other management contractor's integration responsibilities has the additional effect of potentially disrupting the ability of DOE to hold the contractor accountable for all aspects of its performance. So long as the contractor makes the decisions about use of its forces, use of the facilities, safety compliance, security compliance, and subcontracting for needed goods and services, DOE may hold the contractor accountable. As DOE assumes specific component portions of the work scope of M&O or other management contracts, it likewise assumes the added responsibility for coordinating the activities of the new prime contractors with the M&O or other management contractor and integrating those activities with the contractor's performance activities. These new responsibilities present staffing issues, which are discussed in the next section.

Contractually, breaking out work makes DOE's ability to hold the contractor responsible for a failure to perform more complex, expanding substantially the opportunity for allegations that DOE interfered with the contractor's work. These potential risks to performance put the M&O or other management contractor at risk for being able to maximize its performance and receive the fee associated with that level of performance. These risks are inherent in the breaking out of work scope; however, DOE can consider each opportunity judiciously, choosing those that minimize the risks to accountability and effective and efficient performance of the M&O or other management contract.

Fourth, DOE field organizations were not established to perform the functions of the M&O contractor, including the award and administration of former subcontracts. Indeed, the staffs of the DOE field organizations, including the acquisition organizations upon which DOE would have to rely to accomplish the contract support functions currently performed by M&O contractors, have been reduced significantly over the last fifteen years. Breaking out some of the functions of an M&O contract may require continued attention to the department-wide skill gap in contracting personnel that DOE is already trying to address.

Fifth, to the extent that an increase in DOE small business contract obligations may result from breaking out M&O work scope and contracting directly for that work in a

separate DOE prime contract, it is likely that many of such opportunities will be derived from the targeting of work already subcontracted to small businesses. This may have both positive and negative consequences. For example, although increasing Federal small business obligations is desirable from the standpoint of DOE's achieving prime contract achievement goals, a decision to break out a subcontract then being performed by a small business subcontractor could disrupt the performance of the subcontract unless DOE and the M&O contractor coordinate the breakout in a manner that allows the subcontract to run its entire performance period. Further, some small business may find contracting directly with a Federal agency more desirable or beneficial. However, reducing subcontract opportunities will result in an offset in the achievement of subcontract goals and potentially reduce the success of contractor small business programs. It may also unnecessarily disturb existing contractual/business relationships between the parties.

In its review of these factors, the study team is of the opinion that it may be feasible for DOE to break out work from its M&O contracts and award that work under direct Federal prime contracts to small business. The pursuit of this alternative should be conducted in accordance with certain parameters, reflecting these factors. Specifically, the team finds that the "breaking out" of work from M&O and other facilities contracts is feasible where DOE concludes that:

> (1) it makes good business sense to break the work out from the prime contract, independent of DOE's desire to increase direct Federal small business obligations;
>
> (2) the work may be broken out without significantly affecting the prime contractor's ability to meet its overall contractual obligations or otherwise impeding the accomplishment of DOE mission objectives;
>
> (3) the work to be broken out does not adversely impact the effective, safe, and secure management of the site or facility and its workers and visitors;
>
> (4) the Department has, or can reasonably obtain, sufficient administrative and technical resources to competently carry out its inherently governmental function of contract formulation and obligation; and
>
> (5) the breakout may be accomplished without adversely disrupting existing subcontracts with small businesses by the Department's actions.

These criteria substantially coincide with the statutory criteria, expressed in Section 6022(c)(2).

The Study Group believes that any pursuit of this alternative should be approached cautiously, on a pilot basis, because of the potential risks to small businesses' successfully carrying out the work and to performance of the M&O contracts without disruption. In pursuing this alternative, the study team further believes that DOE's Office of Small and Disadvantaged Business Utilization and its affected program and contracting offices should

work cooperatively with the SBA's procurement center representatives and breakout officials to identify opportunities for small business consistent with the foregoing parameters during the acquisition planning phase of M&O and other major management contract procurements and at such other times as may be appropriate. Organizations such as the Defense Nuclear Facilities Safety Board may participate, as appropriate, consistent with its statutory oversight responsibility under the Atomic Energy Act, to ensure that safety concerns are adequately addressed.

2. Stimulating M&O Contractors to Develop the Business Expertise of Small Business Concerns.

It is often noted in government that small business concerns most frequently find business opportunities in the more routine administrative requirements of Federal agencies with few opportunities available for more advanced, mission-critical functions.

In this regard, one of the barriers to further exposing prime contract awards to small businesses is the lack of available small enterprises with the requisite skills and experience to perform contracts with work scopes that are technically, managerially, or administratively complex. That complexity may be the product of the relative sophistication of the issues encountered in performing the work. For example, few small businesses have identified capability in particle physics research or in performing comprehensive radioactive waste management services. It may also be a product of the breadth of the requirement. For example, although many small businesses are experienced in human capital management on a limited scale, few have experience with the broader set of responsibilities associated with the management of thousands of employees covering hundreds of white and blue collar labor categories, with varying retirement compensation, and fringe benefits packages, and with multiple union representation.

Nonetheless, in the past several years, DOE has provided an increased number of high dollar value contract opportunities for small businesses in non-traditional contracting areas ranging from decontamination and demolition, to small facility operations, to legacy reactor decommissioning. Most of these opportunities were afforded by the change of mission responsibilities formerly accomplished through management and operating contracts and the restructuring of remaining needs through the use of alternative contract forms more appropriate to the Department's specific requirements.

DOE has supported small business migration to these contracts by facilitating teaming arrangements with other small businesses as well as appropriate levels of subcontracting with niche specialty providers. The SBA has assisted in this effort by providing expert services at DOE sponsored seminars for interested small business concerns. Successful performance of newly awarded contracts in these areas will spur even greater confidence in the capabilities of small businesses with some of the more complex and demanding requirements encountered in DOE's M&O and other management contracts.

In addition to continuing the foregoing efforts, the study team also believes it is feasible for DOE to explore ways in which its M&O (and other major contractors) may assist

in the development of small businesses' technical, managerial, and administrative capabilities so that they are ready to meet the challenges of contract performance as these opportunities arise. For example, DOE may facilitate offerors on an M&O contract to:

(1) Provide subcontracting opportunities to small business that involve these companies in more meaningful work activities that will advance their technical or managerial skills, as well as provide a potential past performance record of successful accomplishments;

(2) Establish mentor-protégé relationships which are focused on preparing small businesses for more technically or managerially advanced site and facilities management work; and

(3) Involve small business in prime contract teaming arrangements where the small business may directly participate in more complex managerial responsibilities.

In furtherance of the specific effort to involve small businesses in prime contract teaming arrangements, item 3 above, the SBA and DOE have begun discussions of the feasibility of the a pilot program under which DOE would receive credit for award to a team or joint venture that includes a small business to the extent of the participation of the small business.

3. Awarding M&O Contracts to Small Business.

Another approach to increasing the annual dollar obligations going to small business through prime contracts is to award the M&O prime contracts themselves to small businesses. Although representing less than 1 percent of the total number of contracts awarded by DOE, the obligations against these contracts account for approximately 75 percent of total DOE obligations against all prime contracts. Currently, all DOE M&O contracts are placed with large business or with academic institutions or other nonprofit organizations (which by virtue of their nonprofit status do not qualify as small businesses). Thus, the award of some or all of these contracts to small business could significantly increase contract obligations to small business.

A small business concern or a team of small business concerns may currently compete for an M&O contract under applicable government-wide and DOE-specific rules. None have. Theoretically, DOE could set-aside an M&O contract for small business if DOE believed that two or more capable small businesses (or Section 8(a) qualified, or disabled veteran-owned small business) were both capable and creditworthy to perform the contract at a fair market price. Neither the marketplace, DOE, nor the SBA has, to date, identified such small businesses. There are a number of likely reasons for this.

The performance responsibilities for many M&O contracts are broad and fairly specialized. DOE research and industrial sites can range in size up to thousands of square miles, with hundreds of facilities, many of which have specialized scientific or technical

purposes, and many others of which are contaminated by toxic substances or radioactivity. DOE sites also typically have extensive infrastructure systems such as roadways, railways, power generation systems, water treatment systems, waste management systems, and wildlife management programs. Mission responsibilities at these sites may include: (1) the manufacture of specialized nuclear weapons components; (2) weapons assembly transportation and storage; (3) scientific research and development in areas such as nuclear physics, particle physics; (4) bio-physics, chemistry, nanotechnology, laser technology, supercomputing; and (5) environmental engineering and remediation. The capacity to deal with these extensive, technically complex and specialized matters is generally beyond that of the small business enterprise. Further, the magnitude and complexity of the work effort at the DOE sites is typically paralleled by the dollars it takes to accomplish the work. Most M&O contracts have contract dollar values in excess of $500 million, and many are valued in multiples of billions of dollars. Few small businesses have undertaken work of this magnitude. As a consequence of these factors it is unrealistic, in the Study Group's estimation, to believe that M&O contracts can or will be awarded to small business with any regularity.

Nonetheless, DOE and the SBA believe they should continue to explore the future potential that an M&O contract with a relatively small or focused scope of mission activities could present an opportunity for small business. DOE, in recent years, has encouraged the small business community to assess this potential. Further, the Department has set aside smaller and more focused facilities operations contracts for small business. DOE has also worked with the SBA to explore the application of certain specialized SBA regulations for the development of new small and disadvantaged business organizations with the appropriate set of administrative and other specialized capabilities, supported by a qualified mentor to bring about such a relationship.

4. Changing the Methodology for Recording Achievements.

The most direct and immediate change related to an M&O or other management contract that theoretically could be implemented to increase the obligations going to small business through prime contracts would be to define the contract obligations of M&O contracts as Federal prime contracts and count those obligations going to small business as the equivalent of an obligation against a Federal prime contract. Indeed, this was the approach pursued by the Office of Federal Procurement Policy in 1991, but reversed in 1999.

The information relating to the M&O form of contract reviewed by the study team supports recognition of the distinct and unique aspects of the contractual vehicle and the relationship between the contracting parties. As noted earlier in this report, the special nature of the management contract has been reflected in many ways including its treatment in the Federal Acquisition Regulation, as well as in the Department of Energy Acquisition Regulation. Clearly, the M&O contractor in its management of DOE's specialized research and industrial missions operates as a contract surrogate for the Department in stewarding Federal assets and accomplishing mission performance. Indeed, the statutory authorization of this form of contracting specifically intended a blending of Federal, industrial, and academic skills to effect a desired result.

Nonetheless, it is equally clear that the relationship between the Department and its industry/academic partners is fundamentally a contract relationship as defined by the vehicle that creates it. The M&O contract is, with some exceptions, generally subject to the same over-arching set of laws, regulations, and principles which govern most other Federal contracts. Further, the Department, by the terms of its contract, treats the contracts entered into by its M&O contractors as subcontracts for the purposes of applying those laws, regulations, and principles.

It is also noteworthy that the Small Business Act, which provides the general statement of Congressional and Executive branch policy with respect to small business, does not treat the M&O contract uniquely with respect to its requirements. Furthermore, that law does make a clear distinction, in terms of its procurement requirements, between Federal prime contracts and the related subcontracts entered into by the prime contractors.

On the other hand, it is noted that the Act: (1) defines neither term; (2) does not provide parallel treatment of prime and subcontracts for purposes of small business participation goaling and achievement; (3) authorizes the OFPP Administrator to decide disagreements on goaling; (4) authorizes the SBA to implement the Act; and (5) does not specifically prohibit either the SBA or OFPP, acting within the scopes of their respective authorities, from providing further definition and application instructions.

Nonetheless, it does not appear feasible to now apply the approach directed by OFPP in 1991. In 1999, the OFPP Administrator reconsidered the merits of its earlier decision and clearly determined not to continue its guidance to count the subcontract achievements by M&O contractors as the equivalent of the prime contract achievements of the Department. By its terms, the decision of the Administrator was based on the objective of making DOE's "reporting of goal achievements consistent with that of other Federal agencies, thus making more meaningful any review of Federal agency achievements." Both DOE and the SBA are bound by this determination, and OFPP has given no indication of its willingness to change it. Of course, Congress is not so bound in the exercise of its prerogatives in this matter. The debate which accompanied consideration of Section 6022 and the earlier text which it replaced gave Congress the opportunity to consider this option and enact the 1991 OFPP decision, but it did not do so at this time. Accordingly, the parties to this study do not believe this option presents a feasible administrative route to increasing small business participation in prime contracts.

IV. CONCLUSION.

The Study Group has carried out a comprehensive study of DOE's and NNSA's history and business model, the history and roles played by DOE's M&O and other management contractors and the responsibilities of the SBA, the SBA Office of Advocacy, and the Defense Nuclear Facilities Safety Board. This study included consideration of actions taken by DOE and NNSA to enhance the opportunities for small businesses to receive DOE and NNSA prime contracts. The study has also evaluated the implications of the statutorily designated areas of special concern, including security, safety, and contract

management. The Study Group has identified and evaluated four potential modifications to DOE's M&O contracts to enhance the opportunity for small businesses to receive DOE and NNSA prime contract awards. Of those four potential modifications, three are feasible and provide substantive paths to increase prime contract awards to small business.

In pursuit of the three feasible paths to increase prime contract awards to small business, the SBA and DOE have committed themselves to cooperate and facilitate, where reasonably possible, the steps necessary. First, DOE will further institutionalize the breaking out of work from DOE's M&O and other management contracts for award as a small business set-aside. The report provides the logic filter that will work to ensure that work so identified will allow the M&O contractor and the small business to succeed in performance of their respective contracts and to ensure that DOE has the resources necessary to fulfill its responsibilities for performance of the work, including security and safety. Secondly, DOE will further institutionalize its process for stimulating its M&O and other management contractors to develop the business expertise of small businesses to enhance the prospects of those businesses to compete for larger and more complex contracts. In this regard, the SBA will study on a pilot basis offering DOE credit for M&O awards to a team or joint venture that includes a small business in the management team to the extent of the involvement of the small business. Finally, DOE and the SBA will continue to investigate processes that may enhance the opportunities of small business to successfully compete for the award of an M&O contract. As small businesses successfully compete for and perform contracts and are involved in the management team of DOE M&O contracts, the number of experienced small businesses will increase, making the ability of such small business ventures more likely.

This report represents the results of the study carried out in accordance with Section 6022(c) of the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005, Pub.L. 109-13.

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ATTACHMENT 1

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Richard H. Hopf, then Director, Office of Procurement and Assistance Management
Robert Webb, Office of Procurement and Assistance Policy

ATTACHMENT 2

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ATTACHMENT 3

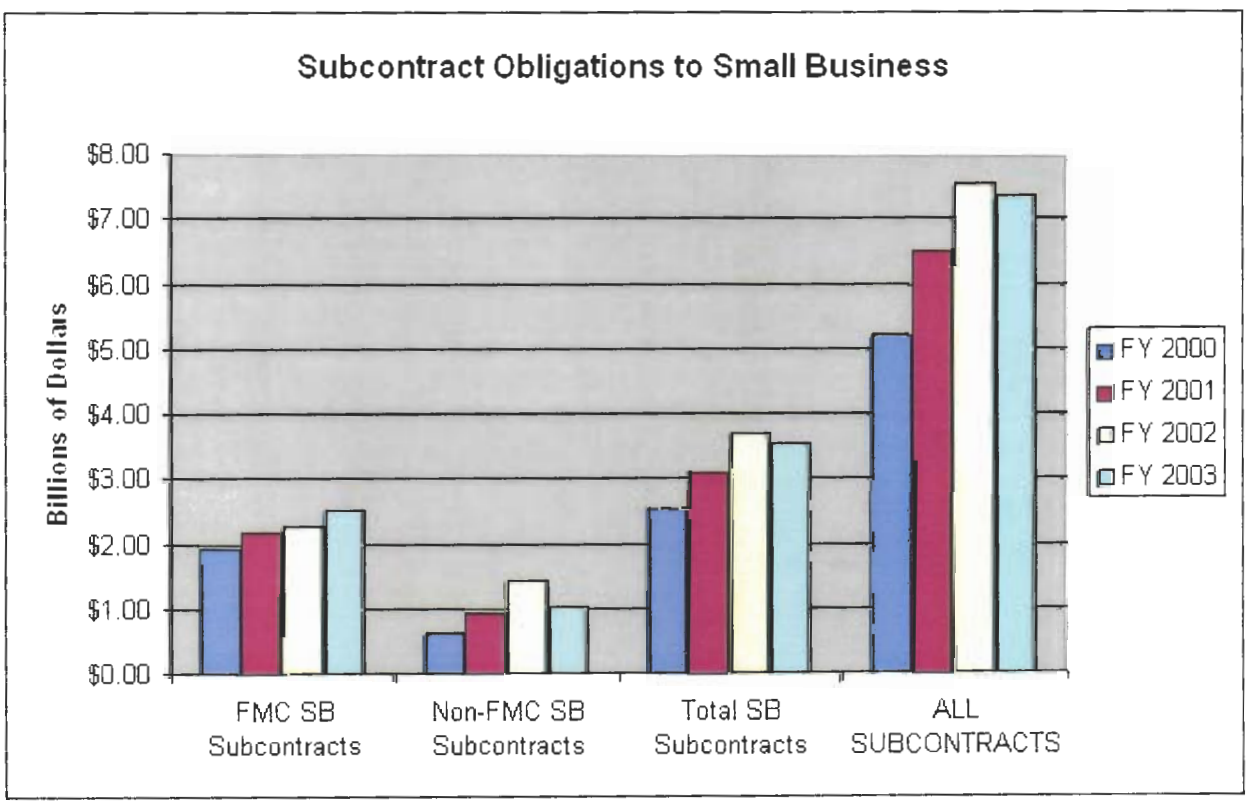
GRAPHIC PRESENTATION OF DOE AND DOE's FMC CONTRACTORS' SMALL BUSINESS ACHIEVEMENTS FOR FY 2000 THROUGH 2004

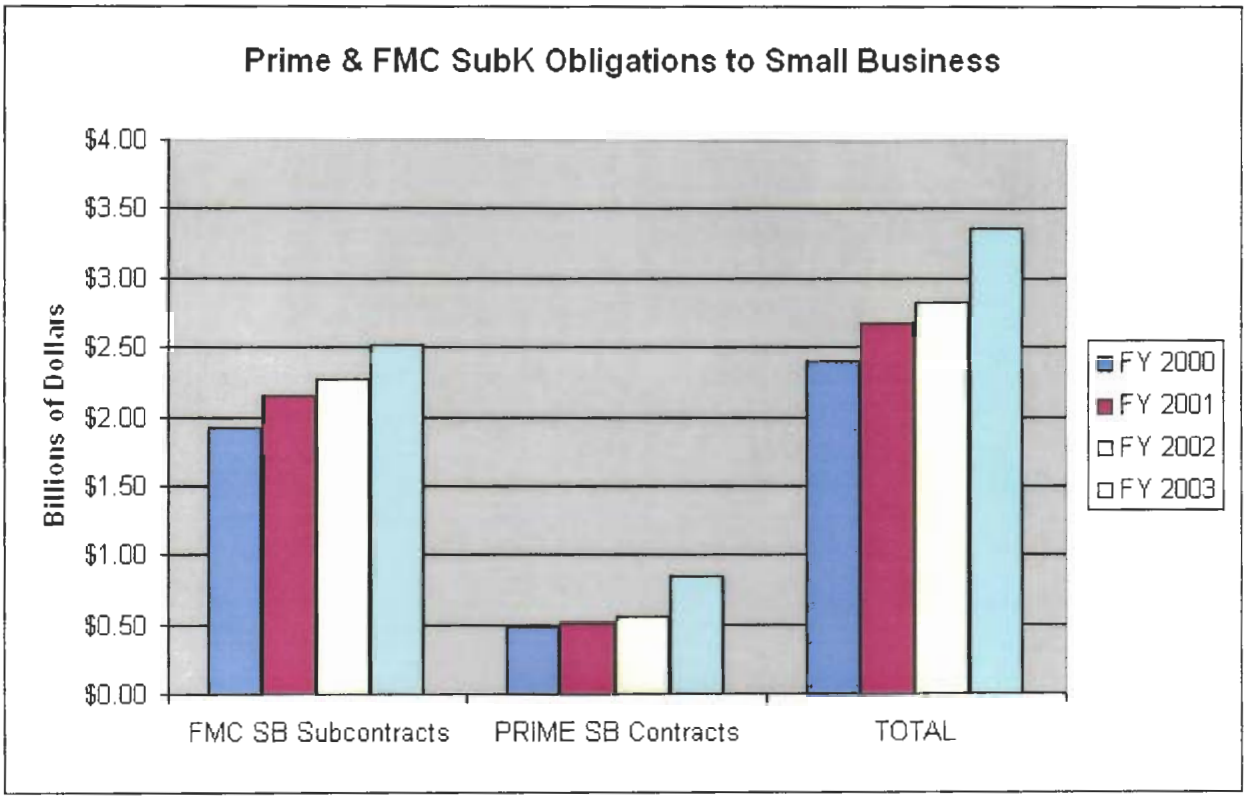
Subcontract Obligations to Small Businesses
Billions of Dollars

	FY 2000	FY 2001	FY 2002	FY 2003
FMC SB Subcontracts	$1.92	$2.16	$2.27	$2.51
Non-FMC SB Subcontracts	$0.61	$0.93	$1.42	$1.02
Total SB Subcontracts	$2.53	$3.09	$3.69	$3.53
ALL SUBCONTRACTS	$5.20	$6.51	$7.55	$7.35

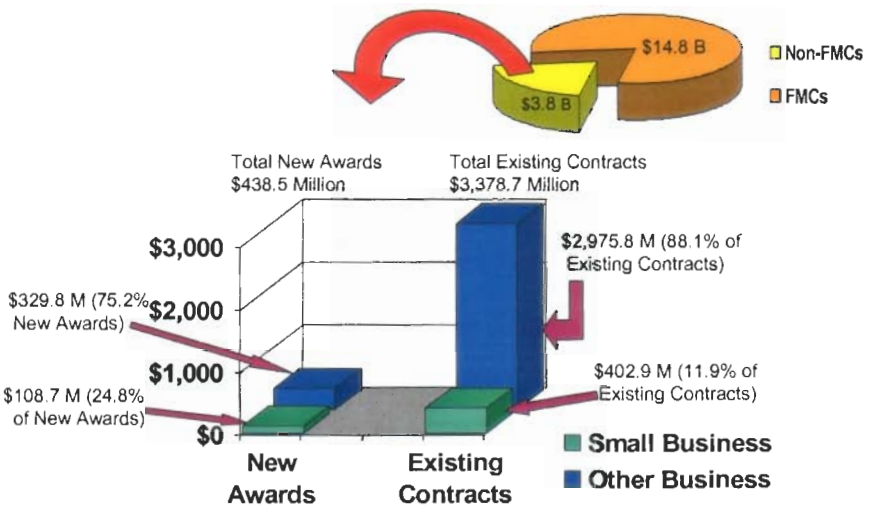
	FY 2000	FY 2001	FY 2002	FY 2003
FMC SB Subcontracts	$1.92	$2.16	$2.27	$2.51
PRIME SB Contracts	$0.49	$0.51	$0.56	$0.85
TOTAL	$2.41	$2.67	$2.83	$3.36

Total SB Subcontracts As a Percent of ALL SUBK's	48.68%	47.48%	48.87%	48.05%
FMC SB Subcontracts As a Percent of ALL SUBK's	36.94%	33.19%	30.07%	34.16%

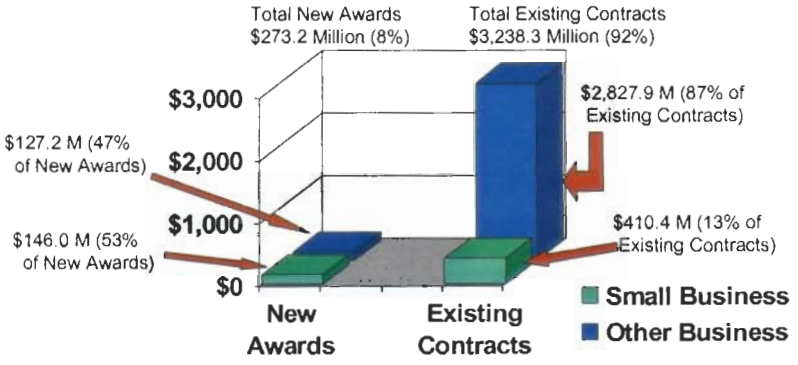



Prime & FMC SubK Obligations to Small Business
Billions of Dollars
$4.00
$3.50
$3.00
$2.50
$2.00
$1.50
$1.00
$0.50
$0.00
FMC SB Subcontracts
PRIME SB Contracts
TOTAL
FY 2000
FY 2001
FY 2002
FY 2003

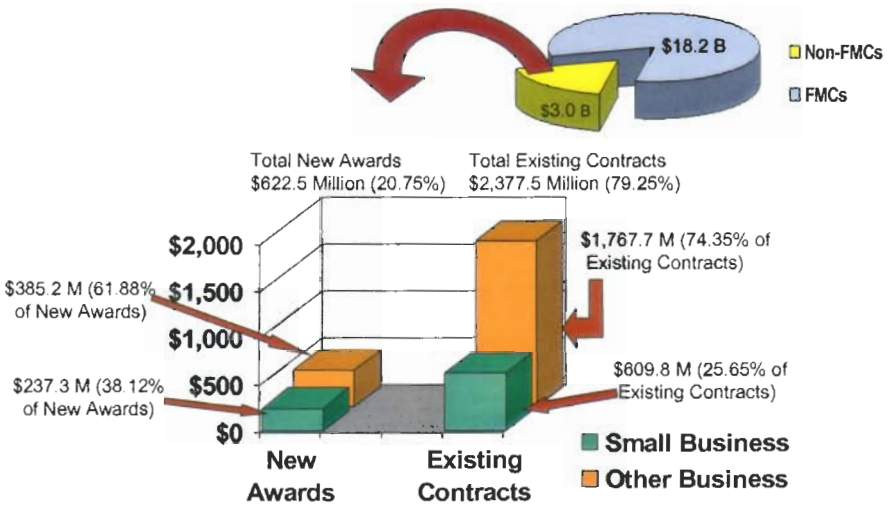
FY 2001 Non-FMC Obligations: $3.8 Billion



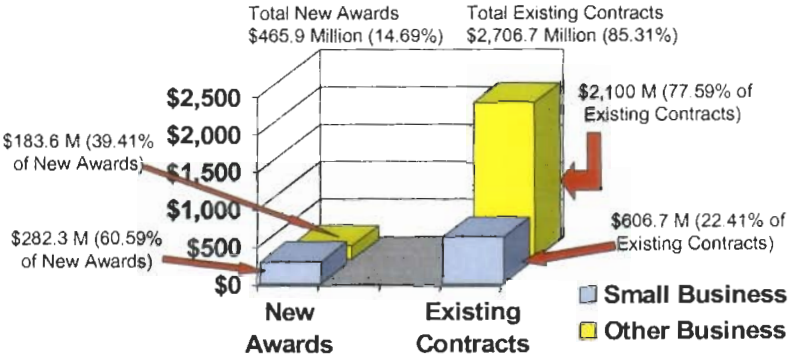
FY 2002 Non-FMC Obligations: $3.5 Billion



FY 2003 Non-FMC Obligations: $3.0 Billion



FY 2004 Non-FMC Obligations: $3.1 Billion



ATTACHMENT 4

ACRONYMS

ADPE - Automatic Data Processing Equipment.

AEC - Atomic Energy Commission.

APAT - Advanced Planning Acquisition Team.

Board – Defense Nuclear Facilities Safety Board.

CCR - Central Contractor Registration.

DEAR - Department of Energy Acquisition Regulation.

DHS - Department of Homeland Security.

DOE – Department of Energy.

ERDA - Energy Research and Development Administration.

FAR - Federal Acquisition Regulation.

FFTF - Fast Flux Test Facility.

FSS - Federal Supply Schedules.

GAO - Government Accountability Office.

HCAs - Heads of the Contracting Activity.

HUBZone - Historically Underutilized Business Zones Program.

MAC - Multiple Award Contracts.

M&O CONTRACT OR CONTRACTOR- DOE management and operating contract or contractor.

MOU – Memorandum of Understanding.

NAICS - North American Industry Classification System.

NNSA – National Nuclear Security Administration.

OFPP - Office of Federal Procurement Policy.

OSDBU - Office of Small and Disadvantaged Business Utilization.

SBA – Small Business Administration.

SBAOA – SBA Office of Advocacy.

SBA-PCR - Small Business Administration Procurement Center Representative.

SBPMs - Small Business Program Managers.

SDBs - Small Disadvantaged Businesses.

SDVOSB - Service Disabled Veteran-Owned Small Business.

Why The United States Needs a National Skills Agenda

The Council on Competitiveness in April published the Thrive report, the first in a series of targeted benchmarking reports intended to illuminate key areas of competitive advantage for Americans to succeed in the 21st century and provide an important framework for charting a path to prosperity for American citizens.

The Council on Competitiveness refers to itself as the only group of corporate CEOs, university presidents and labor leaders committed to the future prosperity of all Americans and enhanced U.S. competitiveness in the global economy through the creation of high-value economic activity in the United States.

The insightful report (available for free download) discusses in depth specific issues and strategies relating to increasing our global competitiveness through focused and aggressive workforce development practices. The synopsis of the call to action follows:

During a time of turbulence and transition—driven by globalization, accelerating technological change, and volatility in global energy, currency and financial markets—America needs a national skills agenda to compete globally and to ensure a rising standard of living for its citizens.

National and Global Demographic Trends Are Raising Red Flags. Slowing growth of the U.S. workforce has the potential to slow economic output if productivity does not increase. Lack of adequate reading and math skills among new U.S. workers compounds this challenge. At the same time, hundreds of millions of educated foreign workers are entering the global workforce and competing for jobs that are increasingly vulnerable to Offshoring.

Four Critical Skills Strategies for the United States

1) Meet the Demand for Middle Skills

Middle-skilled jobs represent the largest number of total openings in the United States until 2016, and the United States is failing to adequately train Americans to take advantage of this opportunity. These jobs do not always require a college degree, but most require training, technical sophistication and initiative. They pay well and do not offshore easily.

2) Build Service Economy Skills

More than three-quarters of all jobs in the United States are in the service economy, yet many policymakers view them as low-skill, low-wage options. In fact, the service sector is driving demand for more complex and creative skill sets—including problem solving, communications, entrepreneurship, computational analysis, collaboration and teamwork.

3) Compete for Innovation Advantage

Simply saying America needs more scientists and engineers is no guarantee that the United States can compete successfully in a global economy in which many nations have copied our model. Policymakers must recognize that the margin of advantage will flow from the fusion of cutting-edge capabilities with entrepreneurial, creative and interdisciplinary talent. Four potential areas to start with to create competitive advantage:

- More integrative scientists and engineers
- More entrepreneurial scientists and engineers
- More business-savvy service scientists and engineers
- More computational scientists and engineers to leverage America's IT advantage

4) Create Skills for Sustainability

Sustainability will become a more important determinant of global hiring and investment patterns. Where new and growing companies locate and where jobs are created will depend in large measure on which countries successfully anticipate these opportunities and take steps to educate and train workers in these fields. America must get out front and move fast to develop the talent and skills workforce to capture these opportunities.

We are ALL impacted by our willingness and ability to move this initiative ahead. If we ALL take ownership at a personal level of just ONE of these areas and work with our companies, schools and colleagues, we CAN make a measurable difference in our country.

If of course, you feel that leaving it to others will "git er done", then prepare yourself for the inevitable consequences.

Compete 2.0

Thrive.

The Skills Imperative

Compete.

Council on Competitiveness

The Skills Imperative

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Compete 2.0

Thrive.

The Skills Imperative

Debra van Opstal

Senior Vice President, Programs and Policy
Council on Competitiveness

The Skills Imperative
Table of Contents

Letter from the President	4
Compete 2.0: Skills Advisory Committee	5
Key Take-Aways	5
Creating the Context	7
Skills Strategies for the Future	
Untapped Opportunities	12
Service Economy Skills	18
The Innovation Advantage	22
Skills for Sustainability	28
Last Thoughts	32
Notes	33
Council on Competitiveness Board, Executive Committee, General Membership and National Affiliates	35
Council on Competitiveness Staff	38
About the Council on Competitiveness	39
Compete 2.0: Program Leadership	40

Letter from the President

On behalf of the Council on Competitiveness, I am pleased to release the first report in our Compete 2.0 series, *Thrive: The Skills Imperative*. This report provides a compelling, short and easily accessible analysis of the key trends underpinning future skills challenges and opportunities in the United States. Drawing upon the Council's leadership in innovative capacity, *Thrive* is the first in a series of targeted benchmarking reports published by the Council's Compete 2.0 Initiative. These reports will illuminate key areas of competitive advantage for Americans to succeed in the 21st century and provide an important framework for charting a path to prosperity for American citizens.

Grounded in the Council's overall policy agenda, the Compete 2.0 Initiative was launched in January 2008 to dive deeper into some of the key issues at the cutting-edge of global competitiveness that the Council highlighted in its 2006 *Competitiveness Index: Where America Stands*: skills; manufacturing; financial markets; infrastructure; and healthcare. With the Compete 2.0 Initiative, the Council will set a concrete action agenda to ensure that the United States can compete in the 21st century. To achieve this, the Council will publish benchmarking reports for each of these areas over the next two years and convene a series of outreach events centered on each report, targeting a diverse audience. Compete 2.0 will culminate with the publication of the Council's 2009 *Competitiveness Index.*

For this initiative, the Council convened a diverse and distinguished group of thought leaders from industry, academia and labor. We are very grateful to these advisors for so generously giving us their time and wisdom, providing guidance and feedback on this report, and serving as spokespeople for the initiative's outreach efforts. I would also like to acknowledge the Council's Compete 2.0 team for their outstanding work: Debra van Opstal, senior vice president for programs and policy; Chad Evans, vice president for strategic initiatives; Bill Bates, vice president for government affairs; and James Knuckles, research associate.

The United States is approaching a tipping point as the competition becomes ever more innovative, and the Council's Compete 2.0 Initiative will address how the United States can harness its intellectual, financial, entrepreneurial and human capital to ensure prosperity for all Americans in the 21st century. As we move forward, we welcome your participation and support.

Sincerely,

Deborah L. Wince-Smith

President

Key Take-Aways

The United States Needs a National Skills Agenda

During a time of turbulence and transition—driven by globalization, accelerating technological change, and volatility in global energy, currency and financial markets—**America needs a national skills agenda to compete globally and to ensure a rising standard of living for its citizens.**

National and Global Demographic Trends Are Raising Red Flags

Slowing growth of the U.S. workforce has the potential to slow economic output if productivity does not increase. Lack of adequate reading and math skills among new U.S. workers compounds this challenge. At the same time, hundreds of millions of educated foreign workers are entering the global workforce and competing for jobs that are increasingly vulnerable to offshoring.

Four Critical Skills Strategies for the United States

Meet the Demand for Middle Skills

Middle-skilled jobs represent the largest number of total openings in the United States until 2016, and the United States is failing to adequately train Americans to take advantage of this opportunity. These jobs do not always require a college degree, but most require training, technical sophistication and initiative. They pay well and do not offshore easily.

Build Service Economy Skills

More than three-quarters of all jobs in the United States are in the service economy, yet many policymakers view them as low-skill, low-wage options. In fact, the service sector is driving demand for more complex and creative skill sets—including problem solving, communications, entrepreneurship, computational analysis, collaboration and teamwork.

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Compete for Innovation Advantage
Simply saying America needs more scientists and engineers is no guarantee that the United States can compete successfully in a global economy in which many nations have copied our model. Policymakers must recognize that the margin of advantage will flow from the fusion of cutting-edge capabilities with entrepreneurial, creative and interdisciplinary talent. Four potential areas to start with to create competitive advantage:

- More integrative scientists and engineers
- More entrepreneurial scientists and engineers
- More business-savvy service scientists and engineers
- More computational scientists and engineers to leverage America's IT advantage

Create Skills for Sustainability
Sustainability will become a more important determinant of global hiring and investment patterns. Where new and growing companies locate and where jobs are created will depend in large measure on which countries successfully anticipate these opportunities and take steps to educate and train workers in these fields. America must get out front and move fast to develop the talent and skills workforce to capture these opportunities.

Competing in the Global Economy

Globalization is a game-changer. The competition has evolved and the playing field is more competitive. Global enterprises and networks that transcend national boundaries, hundreds of millions of middle-class consumers that reside outside the United States, and millions of new, sometimes highly credentialed workers whose average salaries are typically lower than the average American salary, all increasingly shape and mold the world's competitive landscape.

The United States' human capital, entrepreneurial culture and can-do spirit are some of the nation's strongest assets. But America will need new and proactive skills for success to ensure that we optimize those assets.

These Choices Are Ours to Make.

The Future Is Ours to Lose.

Creating the Context

As in the past, America today faces a period of economic transition and turbulence. Globalization and trade deficits, unprecedented competition in the world economy, an accelerating pace of technology change, and volatility in energy and financial markets pose great economic challenges as well as opportunities. There is no question that America needs to respond.

America's strength lies in a spirit that says: "The difficult we do immediately; the impossible might take a little longer."[1] America should concentrate its ingenuity, innovation and pragmatism on creating the strategies that will enable the country to compete successfully in the 21st century.

Some of the most critical strategies must focus around talent and skills—to ensure that America's workers have the tools to compete against anyone, anytime, anywhere in the world. In the emerging global economy of the 21st century, human capital is becoming the dominant competitive differentiator—for countries, companies and citizens.

Thrive: The Skills Imperative lays out a roadmap of the skills priorities for Americans to prosper in the jobs of the future.

Wanted: A National Skills Strategy

There are major demographic, educational and technological changes underway that could impede America's economic growth in the decades ahead: slowing growth in the U.S. workforce and flattening growth rates in educational attainment; growing competition from skilled workers around the world; and the ability to locate operations around the world wherever the right skills, infrastructure and incentives exist. A national skills strategy could mitigate many of these trends. Such a strategy has become an imperative to ensure that Americans have the skills to respond to current demands and to ensure that global companies invest in the United States. The trajectories and potential impact of each of these trends are briefly described in this report.

Economic Impact of a Slower Growth Workforce

For more than five decades, a growing labor force was one of the key drivers of the expanding U.S. economy. Driven by the baby boom generation and the entry of women into the workforce, the sheer growth of new entrants grew the economic pie by about 1.7 percent each year between 1948 and 2001.[2]

Falling Off the Flat Earth?

Norman R. Augustine
Retired Chairman & CEO
Lockheed Martin Corporation

Global leadership has come to be accepted by many Americans as our country's birthright. However, we would be wise to keep in mind that in the 16th century, it was Spain that was the dominant nation; in the 17th century, it was France; in the 19th century, it was England; and in the 20th century, it was America. The book hasn't been written on the 21st century yet, but it is clear that no nation has an entitlement to the future.

The United States is entering a global era in which Americans will have to compete for jobs in a global marketplace—not only with their neighbors down the street, but with highly motivated, highly capable, increasingly well-educated individuals from around the world. The change stems from what some have called "The Death of Distance." In the last century, breakthroughs in aviation created the opportunity to move people and goods rapidly and efficiently over very great distances. In the early part of the present century, we are approaching the point where the communication, storage and processing of information are nearly free. That is, we can now move not only physical items efficiently over great distances, we can also transport information in large volumes and at little cost.

In short, there is no longer a there, there—*there* is now *here*.

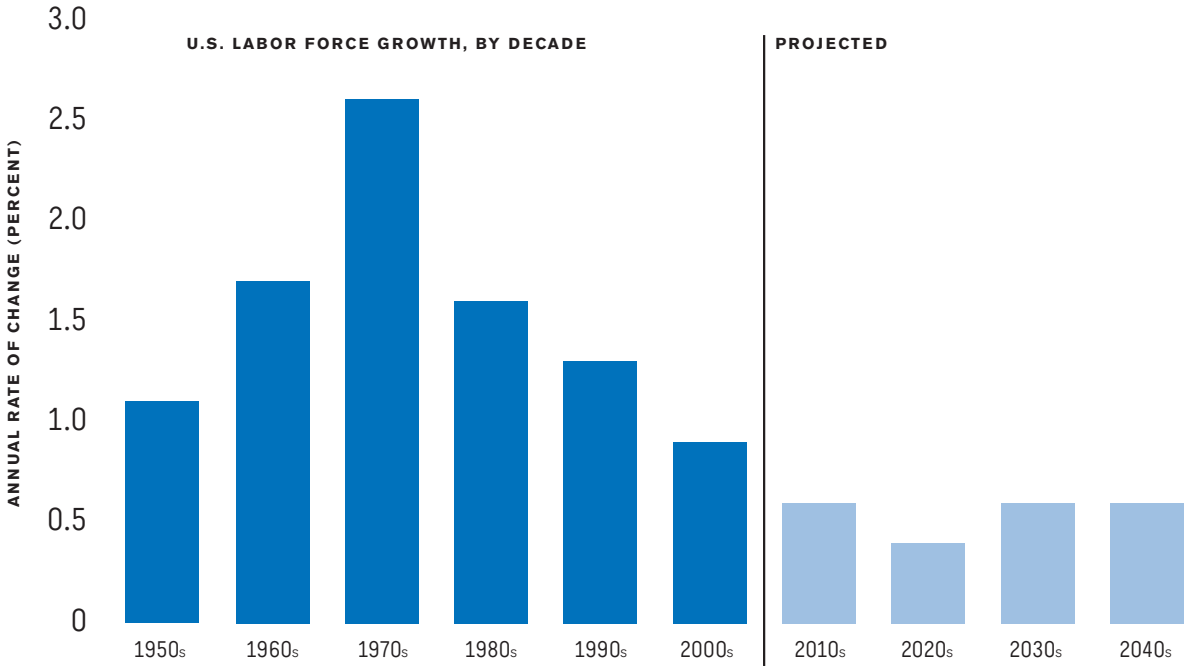
What does it mean for the average American that jobs throughout the food chain of employment will be just a mouse-click from candidates around the world? What does it mean—to cite one of many examples—that if you have a CT scan in a U.S. hospital it is likely to be read by a radiologist in either Bangalore or in Australia? As the Red Queen told Alice in *Through the Looking Glass*: "It takes all the running you can do to stay in the same place. If you want to go somewhere else, you must run twice as fast as that." And indeed that's where we find ourselves.

Today, it is possible that our nation's adult generation will, for the first time in history, leave their children and grandchildren a lower sustained standard of living than they themselves enjoyed. Should that occur, it will be the consequence of a collective failure to respond to the increasingly clear signals that are emerging and indicate that we have entered a new era, a global era, an era in which Americans must compete in the marketplace not merely with each other but with highly qualified people around the planet. It will represent a change of seismic proportions with commensurate implications for America's economic well-being, national and homeland security, health care and overall standard of living.

Is American Falling Off the Flat Earth? National Academy Press, 2007

1. Slowing Workforce Growth Could Impede Economic Growth

Source: United States Bureau of Labor Statistics, *Monthly Labor Review*, 2007



However, the contribution of a growing labor force to economic growth will fall during the next decade. Growth in the labor force is slowing down as baby boomers retire and participation rates (especially by women) level off. According to the U.S. Bureau of Labor Statistics, labor force growth will slow to below 0.5 percent by 2020 before increasing again to only around 0.5 percent by 2040.[3]

If the U.S. economy must rely on fewer workers to sustain growth and support baby boom retirees, then those workers must become more productive if they are to preserve their living standard and that of their fellow citizens. Absent accelerating improvements in productivity, a slower growing workforce could put a drag on future GDP growth.

Flattening Growth of Educated Workers

The economic impacts of slower growth in the labor pool can be offset by improvements in technology infrastructure that enhance productivity, by higher quality skills or skills better matched to demand, or by game-changing innovations that open up new high-value markets.[4] Higher education and skills tend to make workers more productive.[5]

For most of the 20th century, education drove steady increases in workforce quality; in every successive generation, the workers entering the labor force were more educated than those they replaced. That influx of better educated workers allowed employers to exploit new technologies and create flexible, adaptable workplaces that could respond better to a more dynamic business environment.[6]

But the growth rate in the number of educated workers entering the workforce is beginning to flatten. Between 1980 and 2000, the increase in the number of workers with more than a high school education was 19 percent. For the next 20 years, the growth in educated workers is expected to slow to just 4 percent. Indicators point to a mismatch between the demand for higher skills and the supply of skilled workers.[7]

The Global Skills Competition

Perhaps the most profound change is the growth in educated and skilled workforces around the globe. Today, American workers at every skill level—from low-wage, low-skilled to high-wage, high-skilled—face growing competition from workers around the world.

The global labor supply effectively quadrupled between 1980 and 2005. For example, China's labor force—those working or looking for work—reached nearly 800 million in 2005, more than five times the size of the U.S. labor force. China's manufacturing employment alone exceeds the manufacturing employment of the entire G7 by 30 million workers. The entry of lower-wage workers from Eastern Europe and the former Soviet republics is also changing the dynamics of the global labor pool.[8]

2. A Growing Global Talent Pool Competes for Jobs

Source: Council on Competitiveness, *Competitiveness Index: Where America Stands*

Large professional workforce in emerging markets

YOUNG PROFESSIONALS, 2003, THOUSANDS

	Engineers	Finance/ Accounting	Life Sciences Researchers	Analysts
China	1,589	945	543	202
United States	667	1615	852	175
India	528	2273	674	537
Russia	486	1082	108	107
Japan	317	702	180	55
Philippines	290	423	14	16
Brazil	158	355	75	16
U.K.	150	165	100	27
Germany	128	137	31	26
Mexico	115	319	23	8
Poland	82	231	25	22
Canada	81	150	89	18
Malaysia	49	83	19	11
Hungary	27	59	2	1
Ireland	22	32	4	3
Czech Republic	15	33	2	5

Emerging Markets

Developed Economies

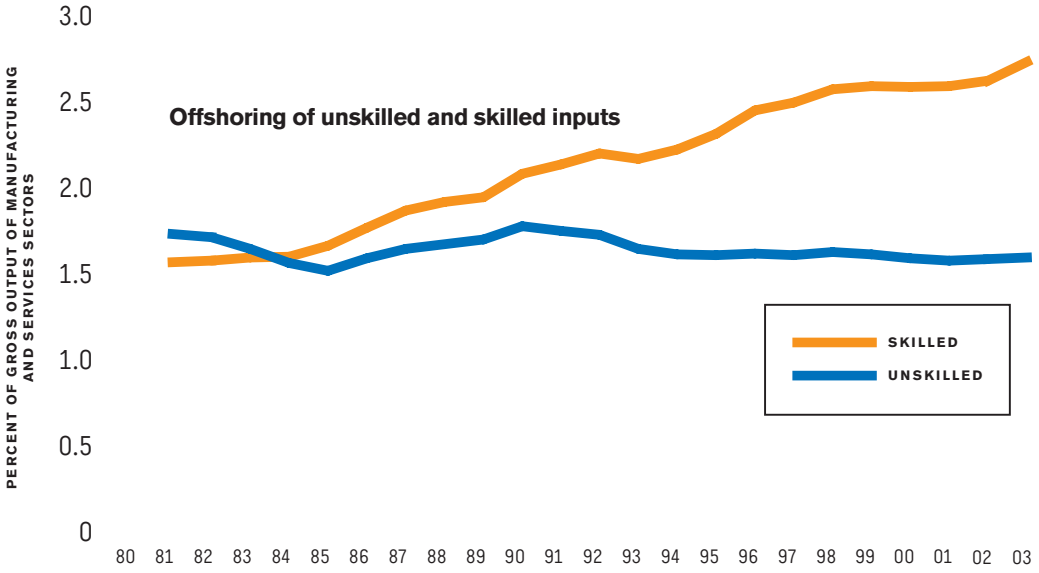
The Offshorability Factor

In lock step with the rise in global workforce skills are technological advances, particularly in telecommunications, software and information distribution, that make it easy to do business anywhere in the world. If a product, service or process is routine or can be broken down into a series of rules; if it can be digitized or reliably codified, it becomes a commodity. And its production is easier every day to ship digitally and rapidly to workers and consumers in other locations around the globe.

Princeton economist Alan Blinder notes that the offshorability factor should play a role in determining what kinds of skills to cultivate for national competitive advantage.

3. Jobs Requiring High Skills Are Becoming More Vulnerable to Offshoring

Source: IMF *World Economic Outlook*, April 2007



Note: Data are for the G7, the Netherlands and Australia

Although commodity production lines have been going to low-wage countries for decades, the ability to offshore highly skilled jobs—radiology, engineering, accounting, computer programming—is a relatively newer trend. Increasingly, the critical distinction may no longer be between high-skilled and low-skilled jobs. Both are now offshorable.

Blinder postulates that, in the future, the dividing line might fall between occupations that can be performed at a distance with little or no diminution in quality and those that cannot. By that definition, as many as 30-40 million U.S.-based jobs might be vulnerable to offshoring.[9]

Bottom Line

As Compete 2.0 advisor Joseph Bordogna notes:

> Civilization is on the brink of a new economic world order. The big winners in this increasingly fierce global reach for leadership will not be those who simply make commodities faster or cheaper than the competition, ultimately leading to a downward spiraling competition for low wages and lower margins. Rather, the winners will be those who develop talent, techniques and tools so advanced, that reaching a dimension of innovation beyond competition is ensured.[10]

Increasingly, America needs to think in terms of fostering training, educational programs and management systems that empower technology workers, build from its uniquely entrepreneurial culture, reinforce leadership in service industries with scientific discipline and data, and create unquestioned superiority in cutting-edge fields like nanotechnology, biotechnology, cognitive science, and information science and engineering. It means creating a workforce that is able and empowered to act on insight and experience, and an innovation system that is continually poised to deploy great ideas.

Skills Strategies for the Future

America must be more strategic about charting the path of future opportunities for workers, prioritizing around skills that do not offshore easily and are hard-to-replicate, that enable a faster pace of innovation, and that are emerging with new technologies and industries. Key areas of opportunity for the future prosperity of America's workers include:

- Untapped Opportunities
- Service Economy Skills
- The Innovation Advantage
- Skills for Sustainability

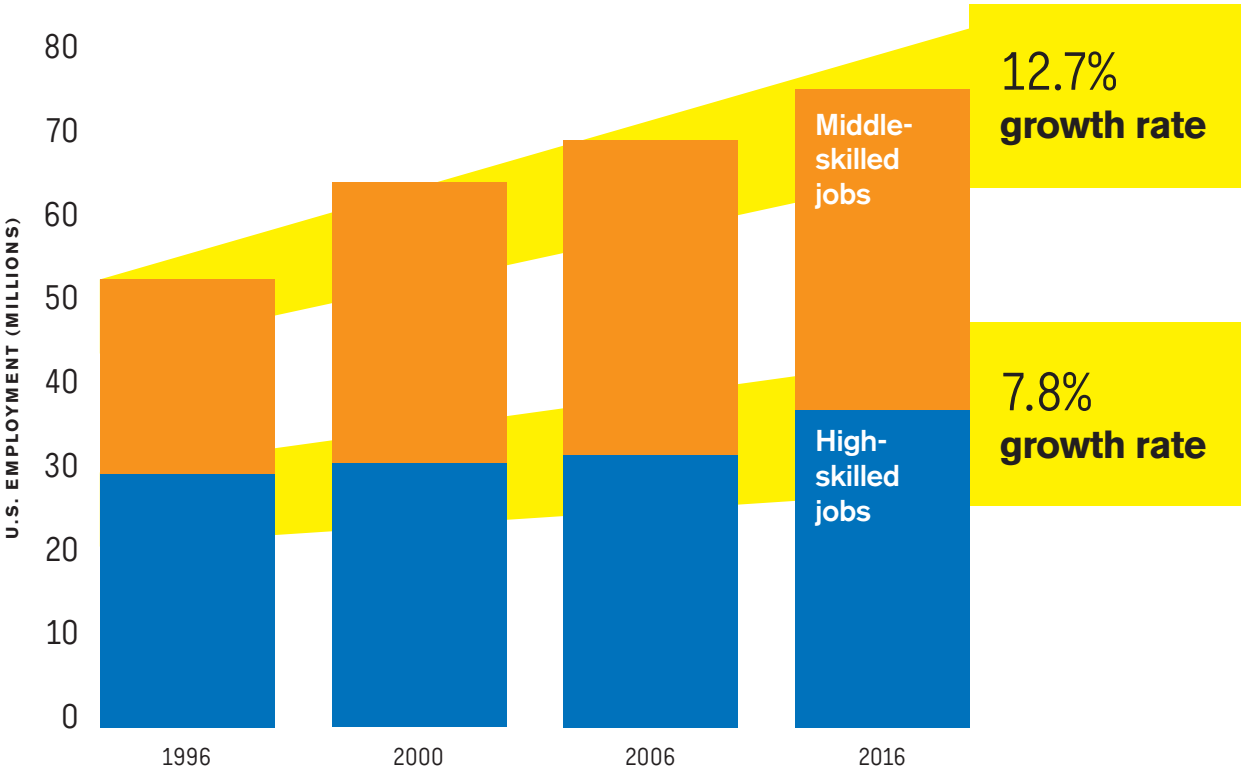
Untapped Opportunities

The U.S. Bureau of Labor Statistics estimates that between 40 percent and 45 percent of all job openings in the economy through 2014 will be in middle-skilled occupations, compared to one-third in high-skilled occupations and 22 percent in low-skilled service occupations.[11] As professor Harry Holzer of the Georgetown University Public Policy Institute observes, many of these jobs do not offshore easily and pay relatively well. And a number of these occupations face critical shortfalls in skilled workers.[12]

Two trends affect this job category significantly. Retiring baby boomers will create large vacancies in the low- to middle-skilled jobs. And immigrants are likely to fill the bottom- and top-skilled jobs more easily than those in the middle. Together, these trends will leave growing shortages of workers for middle-skilled jobs—those that require postsecondary education and training, but not necessarily a bachelor's degree.[13]

4. The Growth in Middle-Skilled Jobs Creates New Workforce Opportunities

Source: United States Bureau of Labor Statistics, Employment Projections



Short-term Shortages of Middle Skills

More than 80 percent of corporate respondents in the United States to a Deloitte survey commissioned by the National Association of Manufacturers indicate they are experiencing shortages of qualified workers overall—and more than 90 percent indicate moderate to severe shortages of skilled production employees, including machinists, craft workers and technicians.[14]

A 2007 survey of U.S. employers by Manpower Inc. indicates that technicians, mechanics and machine operators remain among the 10 top critical talent shortages.[15]

1. Sales Representatives
2. Teachers
3. Mechanics
4. Technicians
5. Management
6. Truck Drivers—Freight
7. Drivers—Delivery
8. Accountants
9. Laborers
10. Machine Operators

Musings of a Maintenance Evangelist

Joel Leonard
Founder
Skill TV

"No one wants to work in the boiler rooms,
No one wants to work with the tools.
The nation's youth are taking the easy way out,
There's no one left to fix our schools.
Maintenance technicians are `bout to retire,
Company executives got no one to hire,
How safe does it make you feel?
How safe does it make you feel?"
"The Maintenance Crisis Song" by Joel Leonard

Many experts, including myself, believe that America is in the midst of a major maintenance crisis caused by: 1) the millions of retiring skilled maintenance technicians and maintenance professionals; 2) lack of interest by future generations; 3) companies that are installing increasingly complex, new equipment with no or minimal budget allocated for additional training; and 4) old equipment that continues to age and requires more maintenance. A perfect maintenance storm is brewing—and is forming largely under the radar screen.

The basic question that every company should be asking is: "What is the product of the maintenance department?" The typical answer will be reactive—to repair broken equipment. But the real product of the maintenance department is not repair; it is capacity. Even as companies are substituting technology for labor in machine operations, they need more maintenance workers for the machines themselves. The highly sophisticated automated systems require even more care and attention to keep the plant running at optimal levels.

When people think of this field, they see Bubba and Skeeter. But the maintenance stereotype of grease monkeys is way off the mark. Companies now need technicians not just for mechanical systems, but also for electrical and electronic control systems as well as sophisticated predictive maintenance technologies like vibration analysis, ultrasonic leak detection and infrared thermography.

Business and government leaders need to remember that as they strive to fund bleeding-edge ideas to get cutting-edge results and competitive advantages in a global marketplace, they also must polish the rusty edge of business. We cannot neglect the proper maintenance of the hydraulic, electronic and electrical systems that sustain us today as we strive to develop biotech and nanotech solutions for tomorrow. If we can become the "Reliability Nation" by building a strong foundation of skilled technicians, uptime performance and rapid recovery strategies, our economy will grow and more high-paying jobs will be created and captured in the United States.

Looming Shortfalls

Demand for these types of skills will only grow during the next decade with the retirements of current workers. For example:

Maintenance Workers

For every 10 workers who retire, there are only three to seven to replace them, creating a shortage of skilled men and women who are trained to keep complex machines operating.[16]

Auto Mechanics

The Bureau of Labor Statistics forecasts that auto repair shops nationwide face an annual shortage of about 35,000 auto technicians through 2010.[17]

Welders

According to the American Welding Society and other industry research, average welders are in their mid-fifties, with many approaching 60 years old. Estimates suggest that more than half of the industry's highly trained workforce is nearing retirement, creating a potential shortage of more than 200,000 skilled welders by 2010.[18]

Electric Power Workforce

The average age of the power workforce is nearing 50—half of the country's 412,000 power workers are expected to retire in the next 10 years. A 2004 Edison Electric Institute survey shows that approximately 20 percent of the electric transmission workforce is expected to retire in the next five years.[19]

> The society that scorns excellence in plumbing because plumbing is a humble activity, and tolerates shoddiness in philosophy because philosophy is an exalted activity, will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water.
>
> John Gardner, former Health, Education and Welfare Secretary

The importance of these technology workers to the economy is growing in lock step with the sophistication—and fragility—of today's technology-based civilization. Increasingly, these jobs demand a capability to work with complex tools and systems. Technology workers need to be astute and anticipatory—able to spot problems and prevent potential failures. They need to be experienced and empowered, able to leverage their knowledge to propose improvements and even innovations. They keep the technical infrastructure of the nation humming.

Bottom Line

Many of these jobs pay well, often well above the national average.[20] The time has come to stop thinking of them as blue collar, and start thinking of the people as technology workers. These positions create solid career opportunities for millions of Americans. Community colleges must become an integral partner in expanding the technology workforce. And the nation must put a high priority on ensuring public-private partnerships to fund adequate training programs for what are likely to emerge as critical shortages.

5. Many Middle-Skilled Jobs Pay As Well As Jobs Requiring a Bachelor's Degree

Source: United States Bureau of Labor Statistics, Employment Projections, 2006-16

Jobs Requiring Training, a Vocational Award or an Associate Degree	Jobs Requiring a Bachelor's Degree	2006 Median Annual Wage
Air Traffic Controllers	Airline Pilots & Copilots	$70,000+
General Operations Managers	Nuclear & Chemical Engineers	
	Computer Software Engineers	
Nuclear Power Reactor Operators	Environmental Engineers	$60,000
Police & Detectives Supervisors	Civil Engineers	
Radiation Therapists	Financial Analysts	
Nuclear Technicians	Personal Financial Advisors	
Elevator Installers & Repairers	Architects (excl. landscape & naval)	
Dental Hygienists	Logisticians	
Detectives & Criminal Investigators	Orthotists & Prosthetists	$50,000
Registered Nurses	Landscape Architects	
Locomotive Engineers & Operators	Conservation Scientists	
Flight Attendants	Accountants & Auditors	
Aerospace Technicians	Food Scientists & Technologists	
Telecom. Equipment Installers & Repairers	Multi-media Artists & Animators	
Services Sales Representatives	Surveyors	$40,000
Fire Fighters, Inspectors & Investigators	Secondary School Teachers	
Police & Sheriff's Patrol Officers	Editors	
Aircraft Mechanics & Service Technicians	Elementary & Middle School Teachers	
Construction & Building Inspectors	Forensic Science Technicians	
Electricians & Plumbers	Kindergarten Teachers	
Industrial Machinery Mechanics	Probation Officers	

Note: 1) Not all occupations within a wage range are listed; 2) Only occupations projected to experience growth between 2006 and 2016 are shown; 3) "Jobs Requiring… or an Associate Degree" include only those whose most significant source of education and training comes from moderate or long-term on-the-job training, work experience in a related occupation, a postsecondary vocational award or an associate degree; and 4) Occupations listed under "Jobs Requiring a Bachelor's Degree" do not require education beyond a bachelor's degree.

The Changing Landscape of Education

Judith F. Cardenas
President
Lansing Community College

Workforce development, a key role of the comprehensive community college, is about more than just providing training for existing jobs. It is about building capacity for new jobs, about developing an educated and entrepreneurial population, and about creating ladders for learners to access learning throughout their entire lives. It is tied tightly to the community college/four-year transfer function, community responsiveness and developmental coursework roles of colleges. These functions bundled together create a strong response to community needs.

Workforce and economic development activities are fueled both by those who are creating work and by those who need work. This urgency reminds me of an African proverb from Thomas Friedman's book about the changing nature of work, found in an American auto parts company in China:

Every morning in Africa, a gazelle wakes up.
It knows it must run faster than the fastest lion or it will be killed.
Every morning a lion wakes up.
It knows it must outrun the slowest gazelle or it will starve to death.
It doesn't matter whether you are a lion or a gazelle.
When the sun comes up you better start running.

As leaders in today's higher education system, community colleges must be aware that the importance of working with their communities to prepare for the race is more critical than ever. However, our definition of community has drastically changed. We are no longer able to define community as merely our local and immediate community. Our global and competitive world has now become our new community.

Leaders throughout our nation are rethinking their position related to globalization within the construct of our academic systems. Creating programs which foster entrepreneurship, agility, cultural sensitivity and productivity will be required in order for the U.S. to stay competitive and ahead in our changing world.

Through the creation of strategic partnerships, private/public collaborations and integration of best practice models from corporate America, colleges can begin to transform themselves into highly credible, accountable and competitive centers of excellence. Colleges must look for new ways of forging partnerships and redefining their mission.

Our educational landscape is changing, and our world is changing. We must wake up every morning and run together as fast as we can.

Service Economy Skills

People sometimes have a misconception that most service jobs are low-skilled, low-wage, no-benefits jobs in fast food joints and beauty parlors.

But it is time for a reality check. During the period that America was making a transition to a service economy, the GDP more than doubled from $6 trillion in 1991 to nearly $14 trillion today, and the economy accommodated millions of new college graduates.[21]

Service Economy: Engine of Economic and Job Growth

The service economy is an engine of wealth creation. It now accounts for the lion's share of U.S. jobs and gross domestic product.[22]

The stereotype of low-skilled service jobs actually represents only a small percentage—just 22 percent—of the large and growing service employment in the United States. More than 30 percent of service jobs are in the highest skill category of professional, technical, managerial and administrative occupations which tend to be knowledge-intensive, using the latest collaboration and communications technologies.[23]

Services account for 75 percent of all jobs in the United States today. And virtually all of the projected employment growth in the U.S. economy until 2016, according to the Bureau of Labor Statistics, will occur in service-providing industries. Professional and business services, as well as health care services, are the areas of largest expected growth.

Who are these service workers? They are doctors and lawyers, architects and accountants, CEOs and scientists, branding and marketing specialists, software engineers and computer programmers, office workers and educators, transportation and logistics providers, health and human services workers, plumbers and electricians.

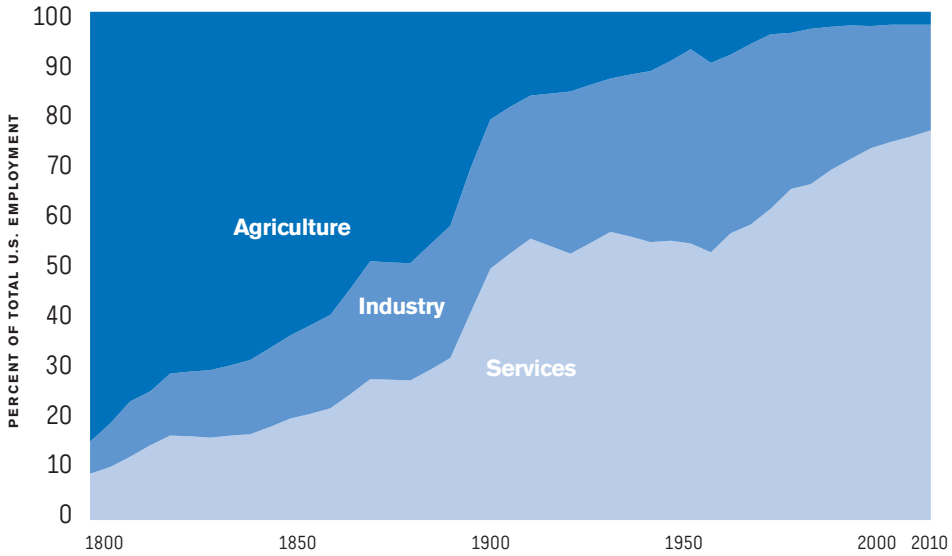
Hooked on (and into) Services

James C. Spohrer
Director of Service Research
IBM

We hear a lot about the service economy, but what is it really? To understand the nature of the service economy, get a piece of paper and start making a list of all the times you're in the role of a customer during the course of a day. Start from the moment you turn on the lights in the morning (electric utility services), commute to work (transportation services), boot up your computer (information services), grab a sandwich at your desk (retail food services), check your bank balance (financial services), or put your feet up and watch TV (entertainment services). We are all in the role of customers of service systems about 40 times a day. Maintaining the infrastructure and supply chains that deliver these and many new types of services creates local jobs near you. As customers' expectations of quality service rise, so do the number of knowledge-intensive service engineering and management jobs, as well as service sales and delivery jobs.

6. Services Power U.S. Job Growth

Source: IBM Study, 2004



These are the workers who will drive America's economic growth today and in the future.[24] The service economy accounts for a large and growing share of America's economic pie.

	Contribution to GDP	Share of GDP Growth
Private Services Producing Sectors [25]	83.3%	67.8%
Private Goods Producing Sectors	15.2%	19.8%

Services Drive Demand for Higher Skills

According to Professor Anthony Carnevale of Georgetown University, from the Civil War until the 1970s, the United States was the world's most successful mass-production economy; the very best at producing standardized goods and services at the least cost and selling them at the lowest price. These mass-production successes required rigorous discipline and narrow skill. As the world got richer, the competition shifted rapidly to new kinds of added value that required new kinds of skill. More of the value-added of manufacturing began to come from the services associated with production: marketing; financing; customer service and managing quality; variety; customization; innovation; convenience; novelty; and speeded operations.[26]

This approach to the service economy embraces, and does not exclude, manufacturing. To a large extent, the demarcation line between services and manufacturing is a relic of an outmoded data collection system. The most competitive companies today bundle products and services—and with good reason. With the rapid pace of technology diffusion, even advanced products can be commoditized. Integrating services into the mix changes the value hierarchy and transforms the revenue stream.

In the wireless industry, the profits come from voice and data services, and not from the sale of phones and devices. Jet engine manufacturers do not just sell engines and spare parts, but also propulsion services that continue to generate revenues through the product's lifespan—five times more revenues than the original sales price. Manufacturing companies are transforming themselves from product suppliers into solutions providers and competing on customer satisfaction and innovation. What they need are workers with the skills to meet these new demands.

That growth in value-added services is driving demand for higher-skilled and more educated workers. In 1973, only 28 percent of prime-age workers had any post-secondary education. Today, 59 percent attended some type of post-secondary institution.[27]

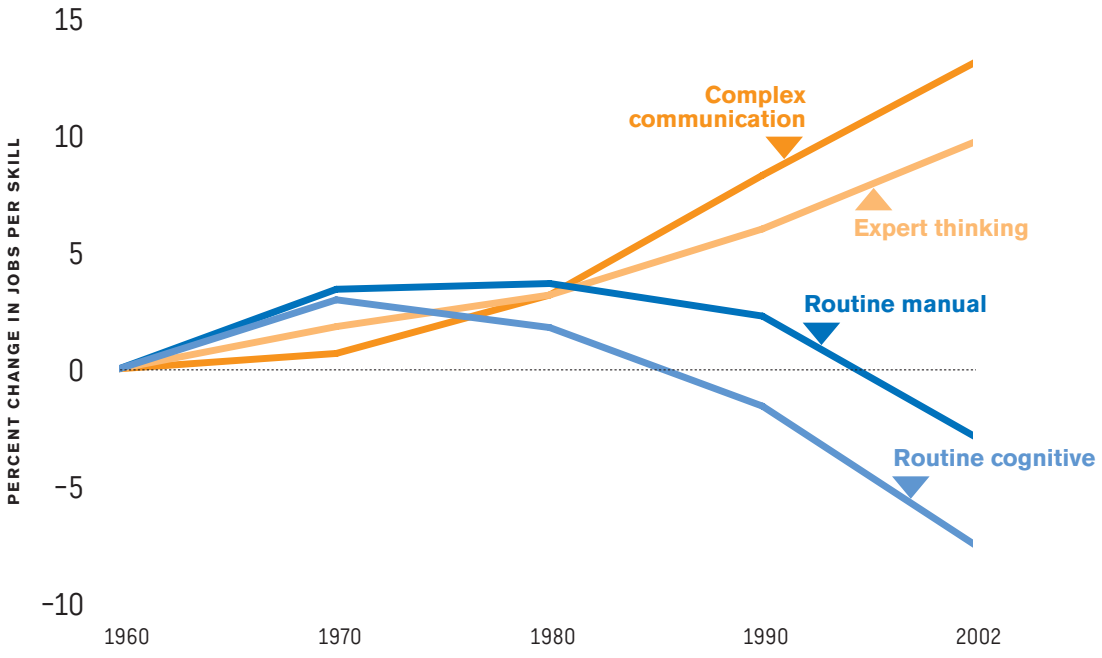
The service economy is creating a need for new and more complex skill sets—creativity, problem solving, communications, customer relations, computing, collaboration and teamwork. Increasingly, all workers have to be adaptive and flexible—able to respond rapidly and with independent initiative. These post-industrial jobs in legal, finance, business consulting, health care, education and other knowledge-intensive service industries require higher levels of communications and problem-solving skills because their work entails higher levels of human interaction and customized, often personalized, responses to challenges and opportunities.[28] Americans live and work in a service economy, yet are only just beginning to teach and train students and workers to improve service sector productivity and innovation.

Bottom Line

The time has passed to abandon the misguided stereotypes and focus on skills for the knowledge-intensive service economy. In virtually all advanced economies and successful emerging ones as well, new services are becoming the dominant driver of economic growth and are making it easier for entrepreneurs to innovate new business concepts. Competing for the future means it is time to get serious about figuring out how to create a skills advantage for American workers and companies. Understanding the best practices and skill sets in a more rigorous way is the key. Industry, academia and governments have begun to support multidisciplinary curricula, training programs and research agendas around service science—but much more needs to be done.

7. The Service Economy Generates High Demand for Higher Order Skills

Source: Council on Competitiveness, *Competitiveness Index*



Education and Market Advantage

James L. Oblinger
Chancellor
North Carolina State University

For many people, "globalization" conjures up images of worldwide competition for jobs, resources and markets. It holds out the promise of a more equitable, interconnected world and the challenge of preserving our position of economic, political and cultural leadership. It is only when we start to tease apart what globalization is that we start to get a better understanding of what it means for colleges and universities.

Former Secretary of Labor Robert Reich recently said: "Underlying all the debates over globalization, and all the debates over trade and direct investment is this most important singular fact…if you are well educated…if you are well able to innovate, you are advantaged in the global economy. You have a larger and larger market for your intellectual capital."

Simply put, education and innovation are intrinsically linked. In a world connected primarily and increasingly by its problems, the successful global workforce is one that excels at problem solving—and solving today's complex, global problems requires innovation.

Developing a globally attuned, innovative workforce involves widening the scope of educational experiences for our students beyond our borders, giving them opportunities to confront and solve real-world problems and bring together other disciplines, insights and approaches in novel ways. Such opportunities are not limited to study abroad programs. Corporate, government and university partnerships can catalyze innovation and provide students with a unique perspective.

Interdisciplinary education, research and collaboration help students expand their world view, as does creating opportunities for students to be entrepreneurial and work with practicing professionals. Corporate and government partners can model problem solving, mentor aspiring students, and challenge them with real-world, complex problems. But those same corporate partners benefit from the energy, enthusiasm and innovation our students bring.

On Centennial Campus at North Carolina State University, we have evolved the corporate partnership concept, literally moving corporate and government partners closer to students and faculty. Global organizations physically become part of campus, providing an opportunity for students to see and understand not just the problem or the solution, but the process of innovation and problem solving. Having this unique, tangible connection provides additional relevance to students' education. And corporations come to campus not just looking for a place to locate but with a mindset that includes student engagement, workforce development and innovation.

MeadWestvaco, a global packaging firm, recently engaged students to help the company improve "at the front-end of innovation." GlaxoSmithKline wanted interns with a background in computer programming, mathematics and facility with logic and cognitive science—students they found in the philosophy department—to help them turn ideas into action. Not only did the students gain valuable experience, the corporations gained as well. Innovation is not limited by age or position—it is catalyzed by diversity of perspective, a willingness to collaborate and a problem to be solved.

A critical part of education is helping students understand and experience problem solving and innovation. Those who learn to innovate will prosper in a global economy. As we think about the education our universities provide, we should not forget the education our corporate and government partners can share.

The Innovation Advantage

In this new global economy, America faces highly effective competition not just for low-skilled, low-wage jobs, but also for lower-wage, highly-skilled ones as well. Other countries are building innovation ecosystems that have been successful in generating new knowledge and patents, producing technical talent in large quantities, attracting higher-value investment, and building local industrial capacity in cutting-edge technologies and services. There is no question that the capabilities of innovator nations are getting better—in some cases, much better.

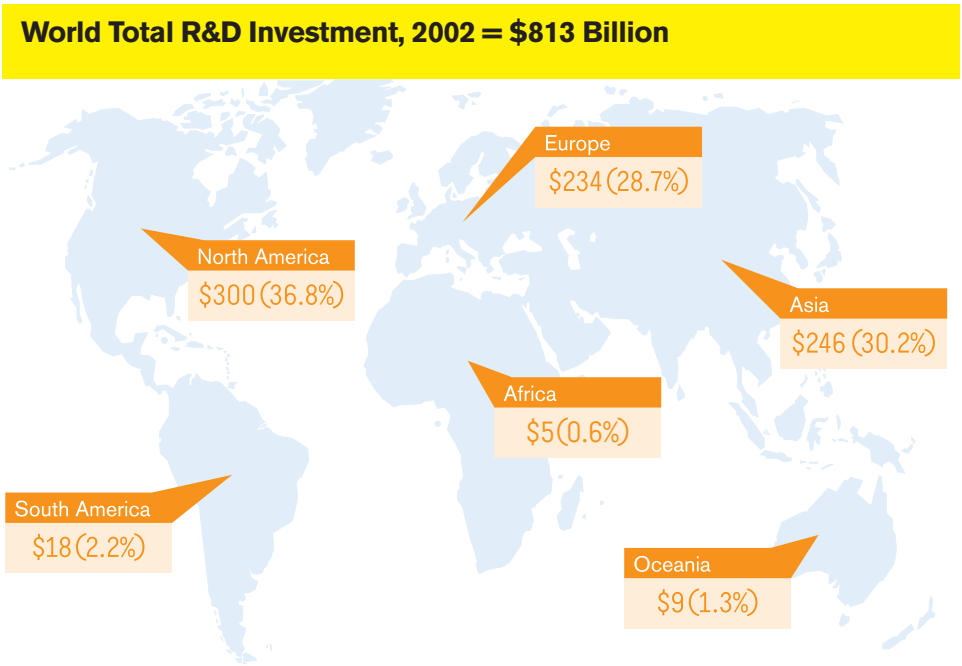
Consider that:

- R&D employment by American multinationals overseas is growing—about 76 percent during the last 10 years—while the growth in R&D employment by foreign multinationals in the United States peaked in 1999 and has been declining.
- The U.S. share of the world's scientists and engineers is projected to fall from 40 percent in 1975 to 15 percent in 2010.[29]
- America's share of global foreign direct investment (FDI) inflows has declined from its peak of 21 percent in 2000 to 11 percent in 2005, although FDI inflows to the United States have recently been on the rise.
- In 2000, the United States accounted for 20 percent of the world's high technology exports while China accounted for only 4 percent. As recent as 2005, however, the U.S. share of global high-tech exports dropped to 15 percent while China's share increased to more than 14 percent.[30]

In recognition of this changing competitive landscape, Congress passed the America COMPETES Act in 2007, which sought to restore technological leadership with significantly increased funding for frontier research, math and science education, and incentives to graduate more scientists and engineers. The critical issue going forward is to ensure adequate funding for these programs. Sustaining America's competitive edge requires both committment and action.

8. The United States Faces Competition in Research and Development Investment

Source: National Science Foundation, *Science and Engineering Indicators 2008*, p. 4-36, Figure 4-14.



But America needs to ask: *Is just doing more of the same going to be enough in the 21st century?* The U.S. margin of leadership may depend not just on doing more, but on a strategy for doing things differently. If the competition has successfully imitated the American innovation model, then we should be thinking about the new model that will differentiate U.S. capabilities from the rest of the world.

America must be as innovative in talent as it is in technology. Certainly, it will be critical to lead in the fields that are reshaping the global competitiveness landscape—for example, nanotechnology, biotechnology and information technologies. But America must also build on core talents and combinations of skills that differentiate and create a margin of advantage at the innovation frontier, including:

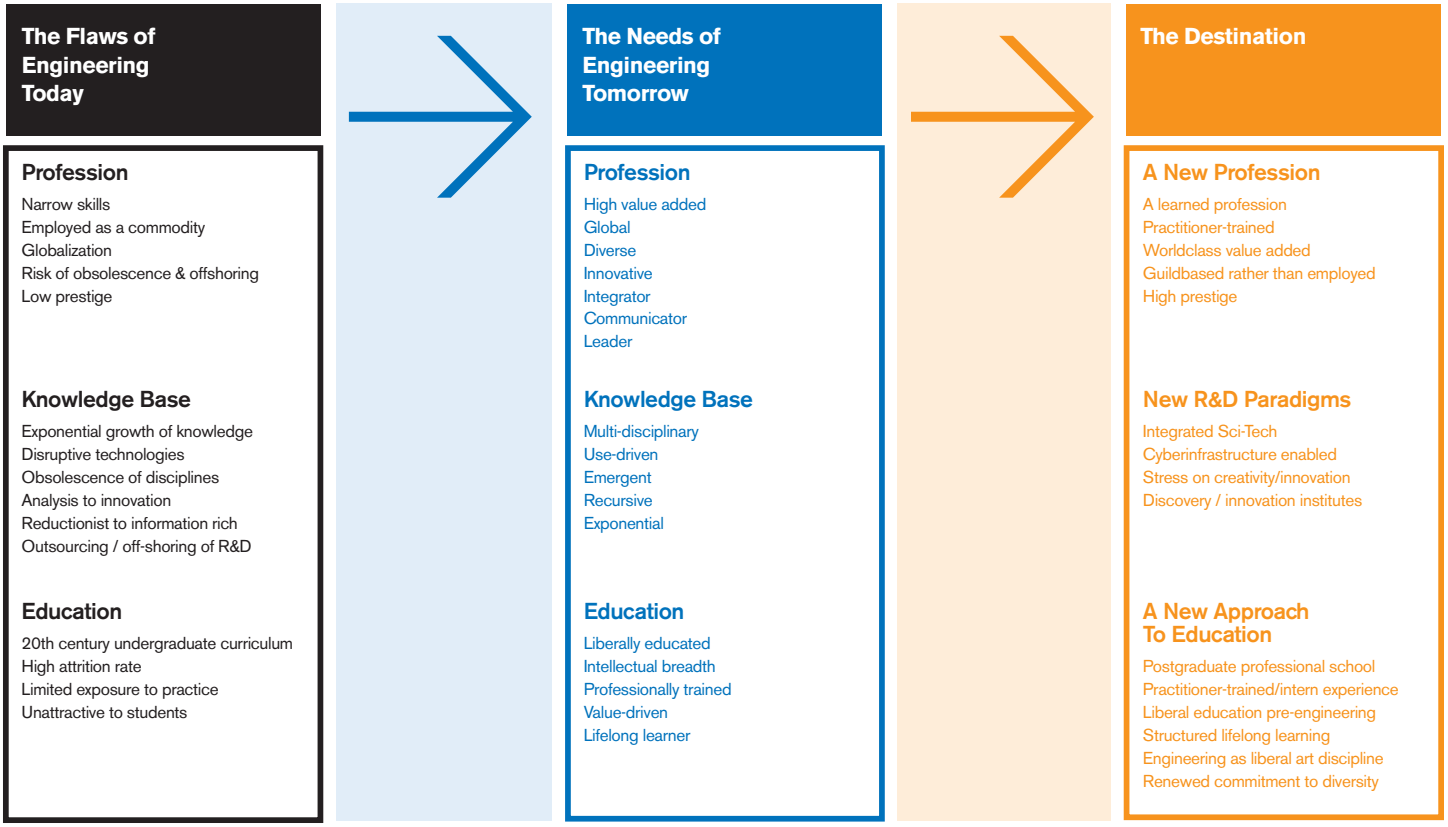
- Educating Renaissance Scientists and Engineers
- Creating a Cadre of Service Scientists
- Leveraging Leadership in Computational Technologies

Educating Renaissance Scientists and Engineers

Science and engineering have become part of global enterprise, and for the first time, American scientists and engineers are competing head-to-head with their counterparts in other countries.

9. Roadmap To 21st Century Engineering

Source: James J. Duderstadt, *Engineering for a Changing World*, Millennium Project, University of Michigan.



In *Engineering for a Changing World,* Compete 2.0 advisor James J. Duderstadt notes that:

America does not need just more engineers, it needs a new kind of engineer. To compete with talented engineers in other nations, in far greater numbers and with far lower wage structures, American engineers must be able to add significantly more value than their counterparts abroad through their greater intellectual span, their capacity to innovate, their entrepreneurial zeal and their ability to address the grand challenges facing our world.[31]

When faced with robust competition from scientists and engineers from around the world, American scientists and engineers must augment their credentials with other capabilities to sustain a leadership position. Today's science and engineering students need to have a robust knowledge not only of disciplines, but of other combinations of skills as well—effective communications, entrepreneurial initiative, creativity and inventiveness.

To sustain America's margin of leadership, 21st century scientists and engineers need to be innovators with an understanding of business value and an ability to work in multi-cultural environments. They need leadership skills with a flexibility to adapt to changing conditions and a willingness to engage in lifelong learning. This requires a commitment by America's leading educational institutions to a different curriculum in both the sciences and engineering than we have today.

Creating a Cadre of Service Scientists

Although the knowledge-intensive service economy is a principle driver of economic growth, there is a dearth of research, funding, and educational curriculum to accelerate America's capacity for service innovation and productivity.

A recent essay, "The Service Imperative," notes that:

> Even today relatively few firms have formalized services R&D practices. When *Business Week* annually reports the list of the World's Most Innovative Companies, few service companies appear on that list. A major academic review article on product innovation reveals little explicit attention to service innovation in the academic literature. According to a 2005 report by the Organisation for Economic Co-operation and Development: "The sector has traditionally been seen as less innovative than manufacturing and as playing only a supportive role in the innovation system."[32]

Yet, the ability to drive innovation in services is going to be increasingly important to economic competitiveness.

Services are in the early stages of "industrialization." The industrial age was enabled by three factors: cheap energy; transportation networks; and standardized parts that enabled mass production. The infrastructure for services is evolving along roughly comparable paths. Computing is the analogue for cheap energy that powers the service industry. The Internet and worldwide communications networks provide a global infrastructure backbone. And standardization is already becoming available in some sectors. In the travel sector, for example, Web sites such as Travelocity or Expedia.com customize travel packages assembled from discrete providers.[33]

The challenge is that the assembly of complex service systems still remains a trial and error process rather than a predictable discipline. Proponents of a new discipline of service science seek to create a more systematic understanding of how to drive

Choose to Compete

Charles M. Vest
President
National Academy of Engineering

Look back about 25 years and think about what was not going on. There was no World Wide Web. Cell phones and wireless communication were in the embryonic stage. The big challenge was the inability of the American manufacturing sector to compete in world markets; Japan was about to bury us economically. The human genome had not been sequenced. There were no carbon nanotubes. Buckminster Fullerines had been around for about five years. We hadn't even begun to inflate the dot-com bubble, let alone watch it burst. And terrorism was something that happened in other parts of the world.

Some of the grandest accomplishments in human history were engineered in the century just passed. The widespread development and distribution of electricity and clean water, automobiles and airplanes, radio and television, spacecraft and lasers, antibiotics and medical imaging, and computers and the Internet are just some of the changes that transformed virtually every aspect of human life.

The century ahead poses even more formidable challenges. As the population grows and its needs and desires expand, the problem of sustaining civilization's continuing advancement, while still improving the quality of life, looms more immediate. Old and new threats to personal and public health demand more effective and more readily available treatments. Vulnerabilities to pandemic diseases, terrorist violence and natural disasters require serious searches for new methods of protection and prevention. Breakthroughs in energy security and sustainability—whether a revolution in solar cells or sequestering carbon generated by burning fossil fuels or nuclear fusion—would be game-changing in important ways.

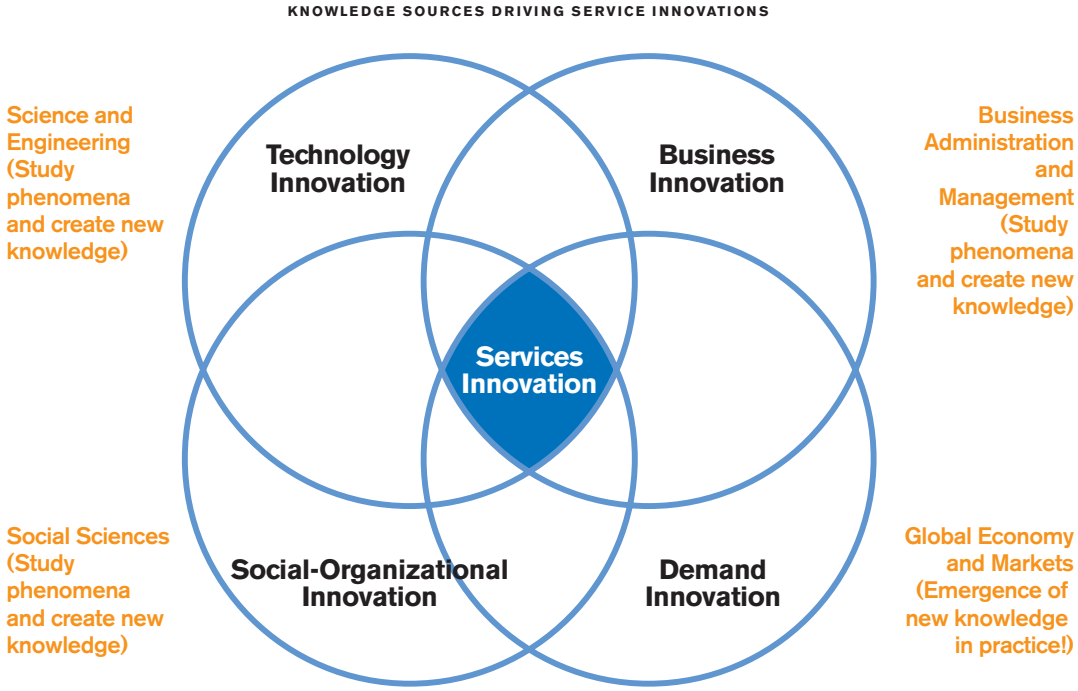
The world is changing remarkably fast, and leadership in science and engineering will drive it. Where will this leadership come from? China? India? The United States? That choice is ours to make. Choosing to compete means that United States must lead in brainpower, organization and innovation.

improvements in productivity, quality, compliance, sustainability and innovation in the service economy and to create a cadre of workers to implement that knowledge. Many of today's science and engineering graduates will work in the service economy. They need the knowledge and tools to compete successfully.[34]

10. The Growing Service Sector Requires a New Combination of Capabilities

Source: IBM Research, 2005

Why Service Science?
New Knowledge Drives the Process of Systematic Innovation…



Some of the questions this new discipline would address:

- How to accelerate the rate of innovation in services, business processes and business models by understanding and filling the existing knowledge and tool gaps?
- How to make innovation and creativity inside the company—intrapreneurship—as relevant to national competitiveness and growth as entrepreneurship?[35]
- How to anticipate customers' demands and understand their real needs? Henry Ford once said: "If I had asked my customers what they wanted, they'd have said a faster horse."[36]
- How to create an organization in which collective learning becomes a practice, not just a process?[37]
- How to design metrics for effectiveness, not just efficiency?[38]
- How to understand the fundamentals of service sector productivity and develop models to accelerate productivity growth?

The principles of service science remain nascent. But the country that masters this discipline—and produces a cadre of service scientists and engineers who are able to accelerate innovation and productivity in service industries—has a clear advantage in attracting high-value service investments and creating high-value service jobs. The Japanese were the first to master product quality, but so far, no nation has mastered service science, management and engineering.

Leverage Leadership in Computational Technologies

Ongoing research at the Council on Competitiveness is demonstrating that, in the 21st century, "to outcompute is to outcompete." America clearly has the technological edge. The most powerful computing systems in the world are in the United States, but America lacks sufficient numbers of computational scientists to exploit its leadership position. According to Council surveys, the biggest single constraint on the deployment of advanced computation tools is the lack of computational scientists.

At the frontiers of science and engineering, advanced computation has become a major element of the third leg of discovery tools—the other two legs being theory and experimentation. Computer modeling and simulation dramatically accelerate the pace of innovation—and enable new-to-the-world knowledge and insights.

But the business benefits of advanced computing are also becoming clear to the minority of companies that are able to use it. Leading companies are proving out the advantages of leveraging computational capabilities: accelerating design and engineering of new products; reducing time to market through virtual prototyping; and increasing supply chain efficiency and flexibility.

Consider that:

- In 1980, Boeing tested 77 wings in wind tunnels for the 767. Thanks primarily to high performance computing (HPC) simulation, Boeing needed to physically test only 11 wings for the 787 Dreamliner series, dramatically cutting costs and design time.
- Entertainment leader DreamWorks Animation SKG would not even exist without powerful computer graphics technology. Every movie is generated on a HPC system.
- At The Proctor & Gamble Company, computational analysis is used for everything from increasing absorbency in Pampers® diapers to designing the right geometric shape for Pringles® potato chips—one that allows the chip to drop gently into a container rather than flying off the conveyor belt.[39]
- Wal-Mart optimizes its entire supply chain on computer models, including daily data analysis to determine what to stock in every store worldwide.[40]
- On any given day at the NASDAQ Exchange, more than two billion transactions are processed at rates of more than 200,000 transactions per second. The secret sauce is the ability to use computer modeling to increase volume and transaction speed reliably.[41]

America's innovation advantage rests not just on having the most advanced tools and technologies in the world, but the people to use them.

Bottom Line

The world is being rewritten in digital, atomic and genetic codes. Information technologies, nanotechnologies and biotechnologies all hold out the promise that new ideas, inventions and innovations will ultimately create whole new industries, not yet conceived. America's innovation advantage means continuous innovation in scientific talent as well as technology and creating the competitive difference that will concentrate cutting-edge investments in this country.

Skills For Sustainability

Looking ahead, skills for sustainability could become a key competitive differentiator. As Joseph Stanislaw has noted: "We are at the very beginning of a global race to create dominant green economies."[42]

Global warming and competition for resources could very well change the ground rules of globalization—at the very least, the need to reduce carbon footprints and achieve higher resource productivity could alter corporate calculations about where and how to distribute operations and assets globally. This trend may have already begun among the leading companies. Consider that The Proctor & Gamble Company is putting its first domestic green field manufacturing plant in the United States in more than three decades to be proximate to West Coast consumers.

America could get out in front of this paradigm shift. But it is not clear that the United States will have enough talent with the right set of skills, or has even defined the path forward on skills for sustainability.

America's Scarcest Sustainable Resource? An Energy Workforce

Ironically, many of the "green skills" that have received the most attention are not actually new skills, but relabeled ones. Nowhere is this more evident than in the energy industries. The lack of energy workers actually constitutes one of the greatest barriers to more sustainable energy, according to a recent Council report, *Define: The Energy-Competitiveness Relationship.*

Consider that:

- The average age for energy workers is 50, nearly a full decade older than the average age of all U.S. workers.
- At least half of the country's utility workers are expected to retire in the next 10 years.[43]
- More than half the oil and gas workforce is expected to retire in the next 10 years at all skill levels, from equipment operators and truck drivers, to scientists and engineers. Enrollment in undergraduate engineering programs fell by 79 percent between 1982 and 2004.[44]
- A 2005 study by the Nuclear Energy Institute found that half of the industry's employees were more than 47 years old, while less than 8 percent of employees were younger than 32. The survey found that more than a quarter of nuclear workers were already eligible to stop working. The number of nuclear engineering majors at colleges around the country has risen to 1,800 last year from just 500 in 1998, according to the Energy Department, but that is still not enough to feed current needs.[45]

In many of these areas, new skills are not required, just adequate numbers of workers who have them. For example, the skills needed to operate a turbine do not depend on whether wind or petroleum turns the blade. Boiler maintenance does not change because solar power heats the water. And the need to have an efficient and effective electric power grid does not change by what generates the electrons. Sustainable energy requires, first and foremost, a workforce capable of supplying America's basic energy needs.

Skills for Sustainability: Training for the U.S.'s Workforce

David F. Carney
Chairman and CEO
Lincoln Educational Services Corporation

The common perception in America today is that you need a college education to obtain a rewarding career. Consequently, parents and high school counselors are increasingly pushing students to attend college even when they know that college is not the right choice for many young people. As a result, tens of thousands of students every year drop out or graduate without skills to obtain a job.

This focus on college has created a shortage of skilled workers across the United States in many careers from nurses to automotive technicians and welders. For example the American Welding Society predicts that by 2010 the demand for welders will exceed supply by approximately 200,000 workers. Entry level welders with some skills can earn up to $30,000 while more advanced welders with experience can earn $60,000 to $100,000. Here is a job that is in demand and pays well. However, if current trends continue, the U.S. will be importing welders in order to meet demand.

For Lincoln Educational Services, the key to sustainability and competitiveness is a skilled workforce. Since our founding in 1946, Lincoln has been committed to providing students with quality, hands-on skills training needed to succeed in an ever-changing employment landscape. We are proud to be providing enterprising men and women the ability to become mechanics, electricians, HVAC repair technicians, welders, and practical nurses amongst other professions. We understand that many people prefer to work with their hands and to learn in an environment that incorporates industry experience with hands-on training.

Additionally we understand that workers need to upgrade their skills without leaving their jobs, and that is why we have developed online degree programs. Specifically we see a need for online management programs that will enable workers who have started at the bottom of the company ladder to acquire skills that will enable them to move into management positions. These online degree programs enable working adults to better manage the pressures of job, family and education.

Today we need to ensure that America has enough people with the skills to create, build and maintain a sustainable and growing economy. We need to educate parents, students and society as to the many job opportunities that continue to be available and to support training in these fields.

Educating for Sustainability

In fact, sustainability may demand more profound changes in higher education than it does in skills training. Virtually every profession needs to embed principles of sustainability into its core curriculum. Although some leading institutions are experimenting with new programs, these have yet to become widely available or accepted practice.

MBAs for Sustainability

With new C-suite positions in sustainability, energy and environmental impact springing up across the country—as well as demand for carbon analysts and carbon traders in the financial sectors—business schools will play a key role in educating a new generation of business leaders in sustainability. (At present, there is evidence that the principles are not always integrated across the enterprise. See Note 48.) Yet, the Aspen Institute survey, *Beyond Grey Pinstripes*, demonstrates that although business schools have begun to adopt course modules on the environment, much more needs to be done.

The percentage of schools surveyed that now require a course dedicated to business and society issues has increased dramatically from 34 percent in 2001 (when the survey began) to 63 percent in 2007. And the proportion of schools offering environmental content in one required course has increased in most disciplines—accounting, economics, management, marketing and strategy.[46]

But sustainability practices have been slow to find their way into the mainstream curriculum. Only 35 of the 112 business schools surveyed offer a concentration or major in these areas. According to Rich Leimsider, director of the Aspen Institute Center for Business Education:[47]

> What we are not seeing in most schools is an examination of these issues through the lens of risk management and strategy and the realization that mainstream, for-profit business can be a force for positive social and environmental change.[48]

Sustainable Design and Architecture

William McDonough, Founding Partner of William McDonough + Partners, challenged the current college curriculum in design and architecture, writing in the *Chronicle of Higher Education* in 2004:

> Each year American colleges and universities hand out design degrees by the thousands… Have their college educations prepared them to be the designers of the 21st century world?… At a moment in our history when the scientific community has warned of some technologies' negative consequences—global warming, water pollution, the loss of biodiversity and natural resources—designers have a crucial role to play in the creation of a more just, healthful and sustainable world.
>
> Our colleges, by and large, are not preparing design students for that challenge. While design for sustainability is increasingly seen as an important element of both basic and specialized courses, we still have a long way to go. Consider, for example, the 2003 *Metropolis* magazine survey of more than 350 deans, department chairs and professors on the relevance of sustainability to design education. Although 67 percent of the respondents strongly agreed that sustainability is relevant to their design curricula, only 14 percent

said their institutions were developing programs to educate their instructors about sustainable design. When asked how many graduate courses their department offered that included considerations of sustainability, 28 percent said none and 45 percent said they did not know.[49]

McDonough envisions a world in which sustainable design is not limited to simply trying to become more efficient. Rather than teaching architecture students and designers how to reduce the impact of their work to meet environmental standards, colleges and universities, he argues, should create industrial and architectural systems for the 21st century that set wholly new standards that would:[50]

- introduce no hazardous materials into the air, water or soil
- measure prosperity by how much the positive effects of the human footprint are enhanced
- measure progress by how many buildings have no smokestacks or dangerous effluents
- generate more energy than they consume

These principles could be embedded across all disciplines. Green chemistry could encourage the design of products and processes that reduce and even eliminate hazardous substances. Green engineers could apply sustainability principles to industrial processes and products that diminish environmental and human hazards and reduce waste and cost. The accounting profession could play a central role both in providing the needed information for social and environmental reporting and helping to verify its accuracy. Public policy analysts can begin to connect ecological variables to economic ones. For example, the Brookings Institute recently completed a study that shows that an increase of a few percentage points in the water quality in the Great Lakes could drive billions of dollars in regional economic value.[51] Higher education institutes will play a pivotal role in assuring that Americans can understand and apply innovative new concepts for sustainability in every discipline and profession.

Bottom Line

Sustainability is likely to become a game-changer for citizens, communities, companies and countries in the decades ahead. Costs could dramatically change consumer behavior. Regions may eventually compete for global investments based on their carbon footprint and resource productivity; the more resource efficient regions attracting investment through their ability to manage supply and price volatility. Companies could increasingly factor sustainability concerns into their site and investment decisions, with proximity to customers and shorter supply chains receiving greater weight.

Leadership in global markets may depend on getting out in front of the sustainability shift with a sprint toward creating the right combination of talent, technology and infrastructure to support the green economy.

Last Thoughts

Most Americans understand that globalization is a game-changer. But many are not sure that they are going to like the new game. For better or worse, the modern economy is a global economy, which the United States can influence given the sheer size of its market. But America is no longer the sole economic superpower.

The new global landscape is increasingly shaped by global enterprises and networks that transcend national boundaries, by hundreds of millions of new middle-class consumers that reside outside the United States, and by millions of new, sometimes highly credentialed workers whose average salaries are typically lower than the average American salary. What this enables is a redistribution of assets and operations on a global scale.

The old rules no longer dictate who wins or loses. What is clear is that new strategies for success are needed to create the kind of platform that will ensure that America's next generations enjoy a rising standard of living—in short, to ensure that Americans can compete successfully. That requires that the focus be put on:

- Enabling the supply of middle-skilled jobs to match future demand
- Integrating the more complex skill sets required in service economy jobs into education, training and research programs
- Extending America's innovation leadership with a focus on integrative, interdisciplinary, computational and entrepreneurial skills—and with a new emphasis on supporting innovation in service industries
- Anticipating future skills trajectories at the cutting edge of sustainability

The Goal Posts

To create a skilled workforce, strengthen existing industries, launch new firms and attract high-value investment into the United States, we must act and invest wisely. America needs to prioritize around the kinds of investment that generate high-wage jobs.

Success in the 21st century means looking forward—positively and proactively—at where the country is going, not backward at who is catching up. The rest of the world has been copying the American innovation model—investing in talent, research, education and technology, and building a policy infrastructure that protects IP, opens markets and supports investment. Their success in attracting jobs and investments is, in some measure, due to the fact that they copied a great American roadmap.

When everyone is copying this model, it is time for America to invent a new one.

Human capital is the nation's strongest asset. In assuring America's prosperity in the future, it is necessary to build from a position of strength—not just economically, but culturally. America truly is the can-do country. From the nation's founding, exploration and experimentation has been part of its DNA.

Americans need to get out in front and get out fast to translate that can-do spirit into wealth creation—creating a new roadmap that will:

- Embrace the freedom to test the frontiers of knowledge and technology
- Create the spectrum of skills that keeps a complex infrastructure humming
- Nurture the entrepreneurial spirit that risks a step into the unknown
- Enable the innovation that creates whole new industries, and
- Celebrate an innovation nation.

These Choices Are Ours to Make.

The Future Is Ours to Lose.

Notes

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Has your company ever consulted with you on any of the following?

(% respondents)

	Yes	No
How to interpret sustainability in the context of your job	34	66
What changes you could make in your business unit or department to improve its sustainability	49	51
Whether or not you would wish to be involved in any sustainability initiatives	32	58
What aspects of sustainability you feel are most important	31	59
Where sustainability could lead to new products or services	38	62

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About the Council on Competitiveness

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The Council's mission is to set an action agenda to drive U.S. competitiveness, productivity and leadership in world markets to raise the standard of living of all Americans.

The Council on Competitiveness is the only group of corporate CEOs, university presidents and labor leaders committed to ensuring the future prosperity of all Americans and enhanced U.S. competitiveness in the global economy through the creation of high-value economic activity in the United States.

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HOW WE OPERATE

The key to U.S. prosperity in a global economy is to develop the most innovative workforce, educational system and businesses that will maintain the United States' position as the global economic leader.

The Council achieves its mission by:

- Identifying and understanding emerging challenges to competitiveness
- Generating new policy ideas and concepts to shape the competitiveness debate
- Forging public and private partnerships to drive consensus
- Galvanizing stakeholders to translate policy into action and change

Compete 2.0: Program Leadership

Deborah L. Wince-Smith is the president of the Council on Competitiveness, a group of CEOs, university presidents and labor leaders committed to driving U.S. competitiveness. She is a Senate-confirmed member of the IRS Oversight Board and a member of the NASDAQ Stock Market Board of Directors. Wince-Smith also serves on the U.S. Secretary of State's Advisory Committee on International Economic Policy, the Board of Governors for the Argonne National Laboratory, and the boards of several private equity startup companies. She has more than 20 years of experience as a senior U.S. government official, including as assistant secretary for technology policy in the Department of Commerce during the George H. W. Bush administration.

Debra van Opstal is the senior vice president of programs and policy at the Council on Competitiveness. She has been a principal author on a number of Council publications, including: *Five for the Future* with Bill Bates; the Council's Enterprise Resilience Initiative 2007 publication, *Transform;* and *Innovate America*, the 2004 report of the National Innovation Initiative. Prior to joining the Council, van Opstal was the fellow in science and technology and deputy director of the S&T program at the Center for Strategic and International Studies in Washington. Van Opstal currently chairs the judging panel for the Gerald R. Ford journalism award.

William Bates is vice president for government affairs at the Council on Competitiveness. He is the co-author of the Council's *Five for the Future* competitiveness agenda. Bates previously served as director of government relations for the United States Telecom Association. Prior to that, he was chief of staff and legislative director to House Commerce Committee member, U.S. Congresswoman Anna Eshoo (D-CA). With more than 14 years experience working for and with government policymakers, Bates brings a unique combination of political and policy expertise to the Council.

Chad Evans is vice president of strategic initiatives for the Council on Competitiveness. He leads the Council's Strategic Initiatives programs, including the National Innovation Initiative, the Global Innovation Initiative, the Technology Leadership Council, and several special projects. In addition to his work on national and global innovation ecosystems, Evans' portfolio during the past decade has centered on benchmarking the competitiveness of developed and emerging economies, including spearheading the Council's flagship publication, *The Competitiveness Index*.

James Knuckles is a research associate with the Council's Strategic Initiatives. His primary areas of focus include conducting research to benchmark U.S. competitiveness for the Council's Compete 2.0 initiatives and to support the Council's global engagements, and assisting with the planning and implementation of many of the Council's outreach events. Prior to joining the Council's staff, Knuckles was an intern with the Council. Before this, he worked for Harley Davidson Financial Services, Inc. on their cash management team.

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GAO

Testimony

Before the Subcommittee on Federal Workforce, Postal Service, and the District of Columbia, Committee on Oversight and Government Reform, House of Representatives

For Release on Delivery
Expected at 2:00 p.m. EDT
Thursday, March 13, 2008

U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Human Capital Initiatives and Additional Legislative Authorities

Statement of Gene L. Dodaro,
Acting Comptroller General of the United States

G A O
Accountability * Integrity * Reliability

GAO-08-573T

Chairman Davis and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to discuss several important topics:

- provisions of H.R. 3268, the GAO Act, that would bolster our ability to attract and retain a highly skilled and diverse workforce needed to serve the Congress and provide for operational improvements and administrative efficiencies;
- steps we are taking to establish and maintain a constructive working relationship with the GAO Employees Organization, International Federation of Professional and Technical Engineers (IFPTE); and
- my commitment to ensure fair and equitable treatment for all segments of our diverse workforce, as reinforced by our commissioning of a study of various performance assessment issues related to African-American Analysts at GAO.[1]

Importance of GAO Act Provisions

The GAO Act contains several distinct and critical components. A number of provisions are designed to benefit our employees and to provide a means to continue to attract, retain, and reward a top-flight workforce, while other provisions are aimed at helping us improve our operations and increase administrative efficiencies. We ask for your support of these measures and have outlined each of them below.

Human Capital and Compensation Provisions

- *Permit the GS-15 statutory cap to rise to the Executive Level III*

Our pay surveys indicated that certain higher-level economists, attorneys, management positions, and specialists would warrant salaries above GS-15, step 10. This authority would enable GAO to compensate these skilled professionals and managers up to Executive Level III when justified, thus aiding GAO in its recruitment and retention efforts. This authority is similar to flexibilities exercised by other agencies. For example, the Federal Deposit Insurance Corporation and other agencies concerned with financial matters are not subject to the GS-15 cap. The Departments of Defense and Homeland Security likewise have the ability to pay their staff more than this limit. If this authority is granted, GAO would use its

[1]The study comprises Analysts; Auditors; and Specialists, such as Economists and Information Technology Specialists, who perform GAO's audit and investigatory work.

increased pay flexibility only when justified by pay surveys or other compensation data.

- *Allow GAO to incur recruiting expenses for meals and related expenses*

  GAO's work requires skilled professionals for whom GAO must compete with leading private sector and public organizations. GAO would like the ability to incur recruiting expenditures for meals and related expenses. This small, but important, step would enhance GAO's effort to attract top talent. At this time, both the Department of Defense for recruiting military members (10 U.S.C §520c) and the Coast Guard (14 U.S.C. §468) have similar provisions. We would use this authority frugally.

- *Achieve equal footing regarding voluntary separation incentive payments (VSIP)*

  The law authorizing GAO to provide VSIPs requires GAO to make a substantial payment to the retirement fund—no less than 45 percent of an employee's final basic pay—which renders the flexibility virtually unusable. This contrasts with the flexibility given to the executive branch for VSIPs. While the Department of Defense has agency-specific VSIP authority, and executive branch agencies—with Office of Personnel Management (OPM) approval—have general VSIP authority, in both instances the statutory authority for these programs does not require any payments to the retirement fund for the granting of a VSIP. Removing this requirement would put GAO on an equal footing with other agencies, make VSIPs more practical, and provide an important flexibility to help GAO reshape its workforce should such authority become necessary.

- *Include performance-based bonuses in calculating non-Senior Executive Service and non-Senior Level employees' "high-three" average salary for retirement purposes*

  GAO's performance-based compensation system provides a nonpermanent bonus component for some of our employees. As our employees have pointed out, under current law, they do not get credit for these bonuses when OPM calculates their "high-three" average salary for retirement purposes. The GAO Act would remedy the situation by directing that bonuses be included in the "high-three" calculation. This provision does not apply to Senior Executive Service (SES) and Senior Level employees.

Related Compensation Proposals

Before turning to provisions in the GAO Act related to operational improvements and administrative efficiencies, let me address two important proposals related to employee compensation that—while not included in H.R. 3268—have been under discussion as well.

- *Adopting a "floor guarantee" for future annual pay adjustments*

We support the adoption of a "floor guarantee" provision for future annual pay adjustments. We first raised a similar concept with Members of the Subcommittee last May.[2] Just last month, our negotiating team introduced the idea to the GAO Employees Organization, IFPTE, which agreed to adopt a floor guarantee as part of the agreement governing 2008 pay adjustments. We were pleased to reach a prompt agreement and believe the floor guarantee reasonably balances our commitment to performance-based pay with an appropriate degree of predictability and equity for all GAO employees.

A statutorily based floor guarantee would provide GAO employees with greater certainty about future salary increases and ensure at least pay parity with the executive branch. We support the floor guarantee approach because we believe it will preserve the incentives and rewards of GAO's performance-based compensation system, while ensuring—subject to the conditions explained below—that GAO employees receive an annual increase in their permanent pay that is at least equal to GS across-the-board increase for each locality area.

The floor guarantee would ensure that all employees performing at the "meets expectations" level or better would receive an annual adjustment to their basic rate that is at least equal to the total annual increase under the General Schedule (GS) system for the employees' geographic area.[3] The only exceptions would be employees (1) receiving ratings below the "meets expectations" level, (2) participating in development programs under which they receive performance reviews and permanent merit pay increases more than once a year, (3) occupying positions covered by the Federal Wage System, or (4) occupying SES or Senior Level positions.

[2]GAO, *U.S. Government Accountability Office: Status of GAO's Human Capital Transformation Efforts*, Statement of David M. Walker, Comptroller General of the United States, GAO-07-872T (Washington, D.C.: May 22, 2007).

[3]This would be in accordance with U.S. Code, Title 5, Part III, Subpart D, Chapter 53, Subchapter 1.

The floor guarantee would be implemented in the following manner. We would continue to apply the system we implemented in 2006, as authorized by GAO's 2004 legislation. Thus, we first would determine for each employee the amount of GAO's annual adjustment and performance-based compensation, which includes both permanent merit pay adjustments and any nonpermanent bonuses. Then, if the sum of the employee's annual adjustment and permanent merit pay is less than the increase the employee would have received under the annual adjustment to the GS in the employee's geographic area, we would increase the employee's permanent pay to equal the increase that would have been received under the annual adjustment to the GS system that year. If an employee receives an additional adjustment as a result of the floor guarantee, the additional amount would be deducted from any bonus an employee would have received.

- *Addressing prior pay decisions*

  We understand that consideration has been given to including a legislative provision that would compensate GAO employees who did not receive the full base pay increases of 2.6 percent in 2006 and 2.4 percent in 2007. At the invitation of subcommittee staff, we have engaged in fruitful discussions about a reasonable and practical approach should the Congress decide to accomplish this objective legislatively. We appreciate the subcommittee's willingness to consider providing GAO with the necessary legal and funding authorities to address this issue. Resolution of this matter would be helpful and would permit us to move forward on other important human capital initiatives.

Operational Improvements and Administrative Efficiencies

The GAO Act also contains a number of provisions to promote operational improvements and efficiencies. These include establishing a statutory Inspector General at GAO, providing the Congress with more information on the level of executive branch cooperation received by GAO in the conduct of our work, authorizing reimbursement for certain financial audits, allowing GAO more flexibility in administering oaths, receiving gifts that do not impair our independence, and clarifying financial disclosure requirements.

- *Establish a statutory inspector general*

  The GAO Act would replace our current inspector general (IG) position with a statutory position. GAO supports the IG concept and administratively has created an IG who performs many of the roles of the

statutory IGs. GAO's statutory IG would be similar to the statutory IGs in the other legislative branch agencies. Although appointed by the heads of their respective agencies (or by the Capitol Police Board, in the case of the Capitol Police IG), these statutory IGs are provided with independence and autonomy from the heads of their agencies. They conduct and supervise audits and investigations, and they endeavor to prevent and detect fraud and abuse in their agencies' programs and operations. This is the model followed in H.R. 3268 for GAO's statutory IG.

- *Report on executive branch cooperation*

  Although the Comptroller General has certain statutory mechanisms available to aid in conducting GAO audits and investigations, voluntary cooperation of agency officers and employees of audited agencies is essential to the efficiency of GAO's work. The GAO Act includes two new reporting requirements to provide more transparency related to the level of cooperation GAO is receiving from audited agencies. The first would require an annual report card on the overall cooperation of federal agencies in all aspects of GAO's work, including any unreasonable delays in making personnel available for interviews, providing written answers to questions, granting access to records, providing timely comments on draft reports, and responding appropriately to report recommendations. The second reporting requirement would require that the Comptroller General inform the Congress as soon as practicable regarding specific impediments, such as when an agency or other entity does not make personnel available for interviews or does not provide written answers to questions.

- *Obtain reimbursement of certain financial audit costs*

  The GAO Act also includes a provision to enable GAO to be reimbursed for the financial audits it performs that, in the first instance, are the specific responsibility of an executive branch agency. Since 1997, the Comptroller General has elected to exercise his statutory discretion to audit the financial statements of the Internal Revenue Service and the Schedule of Federal Debt, issued by the Bureau of the Public Debt, in lieu of the Treasury IG or an independent Certified Public Accountant hired by the IG. As a result, the Department of the Treasury has received these audit services at no cost and without reimbursing GAO. This legislation would require, beginning in fiscal year 2009, any executive branch agency covered by the Chief Financial Officers Act (CFO Act) and Accountability for Tax Dollars Act for which GAO elects to audit financial statements or related schedules to reimburse the Comptroller General for the cost of

performing such audits. Such payment would be consistent with the principle that agencies should pay for financial statement audit services, as they otherwise must when the audit is conducted by their IGs or independent contracted auditors. This principle already has been applied to reimbursements made to GAO by the Securities and Exchange Commission and the Federal Deposit Insurance Corporation, as well as other government corporations for financial statement audits conducted by GAO under separate legal authorities.

- *Provide GAO with greater flexibilities in administering oaths*

  Currently, the Comptroller General is authorized to administer oaths to witnesses when auditing and settling accounts. Although in 1921, when the Congress established GAO, auditing and settling accounts represented the bulk of our work, that is not the case today. The Comptroller General has been called upon to perform many other audit, investigative, and adjudicative roles for the Congress. These roles periodically raise situations involving, for example, potential criminal or ethical violations, or conflicting testimony or assertions of material and sensitive subjects. In such situations, the ability to administer oaths would be a useful and important tool for the Comptroller General to accomplish his work for the Congress. The new authority is not expected to be widely used or to have broad impact.

- *Give GAO the same gift authority as other agencies*

  Under the GAO Act, the Comptroller General would receive the same authority presently available to many agency heads to aid them in accomplishing their mission. Specifically, the Comptroller General would be authorized to accept and dispose of gifts given for the purpose of aiding and facilitating the work of the office. To implement this authority, we would promulgate regulations to ensure that no conflict or appearance of a conflict would arise when accepting any gifts.

- *Clarify financial disclosure requirements*

  GAO is seeking a revision to the law regarding the financial disclosure requirements of its employees to address an unintended result of GAO's revised pay system that vastly increased the number of employees who must file a public financial disclosure report. Under GAO's new pay system, GAO employees no longer receive severable locality pay adjustments, as compensation differences in local markets are already taken into account in setting the pay ranges for GAO's various locations.

The inability to exclude amounts formerly attributable to locality pay has roughly doubled the number of GAO employees who must file a public disclosure report. This amendment would remedy this situation by deducting these amounts from employees' annual rate of pay for purposes of determining who must file a public financial disclosure report. This would substantially reduce administrative burden while assuring that GAO's senior employees remain required to file a public financial disclosure report. The employees who no longer would be required to file a public report would still be required to file a confidential financial disclosure report for review within GAO under GAO's ethics rules.

Remaining Provisions

In the draft bill that we transmitted to the committee last July, there were a number of provisions related to the Office of the Comptroller General and the positions of Comptroller General and Deputy Comptroller General. These provisions are also contained in the GAO Act, as introduced by Chairman Waxman. While we recognize the prerogative of the Congress to address these issues, we believe they should now be placed in abeyance pending confirmation of a new Comptroller General.

Establishing and Maintaining Constructive Union Relationships

As you know, on September 19, 2007, our Band I and Band II Analysts, Auditors, Specialists, and Investigators voted to be represented by the International Federation of Professional and Technical Engineers (IFPTE) for the purpose of bargaining with GAO management on various terms and conditions of employment. GAO management is committed to working constructively with employee union representatives to forge a positive labor-management relationship.

Since September, GAO management has taken a variety of steps to ensure it is following applicable labor relations laws and has the resources in place to work effectively and productively in this new union environment. Our efforts have involved:

- postponing work on several initiatives regarding our current performance and pay programs;
- delivering specialized labor-management relations training to our Band III, Band III-equivalent, SES, and Senior Level staff;
- establishing a new Workforce Relations Center within our Human Capital Office that is responsible for providing employee relations and labor relations advice and services to GAO management and leadership;
- hiring a Workforce Relations Center director, who also serves as our chief negotiator in collective bargaining deliberations.

- In addition, we routinely notify union representatives of meetings that may qualify as formal discussions, so that a representative of the GAO Employees Organization, IFPTE, can attend the meeting. We also regularly provide the GAO Employees Organization, IFPTE, with information about projects involving changes to terms and conditions of employment over which the union has the right to bargain.

As mentioned earlier, we were pleased that GAO and the GAO Employees Organization, IFPTE, reached a prompt agreement on 2008 pay adjustments. The agreement was overwhelmingly ratified by bargaining unit members on February 14, 2008, and we have applied the agreed-upon approach to the 2008 adjustments to all GAO staff, with the exception of the SES and Senior-Level staff, regardless of whether they are represented by the union. The agreement embodies the floor guarantee described earlier in this statement.

Pursuing Our Commitment to Diversity and Fair Treatment for All Staff

Recruiting, rewarding, and retaining a high-performing diverse workforce is critical if GAO is to successfully carry out its mission in support of the Congress. As you know, an effective GAO requires a first-rate workforce that is representative of our society and steeped in a wide variety of disciplines that can gather the facts and develop innovative solutions to both old and new problems challenging the federal government.

Meeting these challenges requires top leadership commitment, sustained effort, and a focus on continuous improvement. For example, we enhanced our professional development programs for entry level staff; initiated a formal agencywide mentoring program; and continue our strong support for flexible work schedules and teleworking to help GAO employees balance the demands of work and home. GAO's two most recent testimonies before this subcommittee outlined many other support measures and safeguards in place to help ensure fair and equitable treatment of all employees.[4]

As circumstances warrant, we also are committed to studying areas in depth where we have reason to believe that actions and improvements are needed. One such example is GAO's decision in August 2007 to contract with the Ivy Planning Group (Ivy) for an independent assessment of

[4]GAO-07-872T; and GAO, *Human Capital: Building Diversity in GAO's Senior Executive Service*, Statement of Ronald A. Stroman, Managing Director, Office of Opportunity and Inclusiveness, GAO-08-275T (Washington, D.C.: Nov. 13, 2007).

differences in the averages of African-American Analysts' performance compared with white Analysts and to provide the Ivy team with complete access to relevant data and staff. Shortly after the contract award, we provided Ivy with all requested data on appraisals; employee demographics; employee education and skills; and information on GAO's performance management, pay, development, and recruitment programs. Further, in response to additional Ivy requests after they conducted employee and management interviews and focus groups, we provided information related to hires and separations, employee feedback scores, and exit survey results.

We tasked Ivy with reviewing African-American and white Analysts' performance appraisal data from 2002 through 2006—which was the data available at the time Ivy's study began. In addition, we charged Ivy with assessing and comparing the skills, assignments, engagement roles, training, educational attainment, and recruiting practices at GAO for African-American and white Analysts, as well as with identifying best practices internally and externally that might enhance GAO's performance management systems and assist us in reducing any gaps. Ivy has been asked to recommend further steps that GAO can take to ensure fair, consistent, and nondiscriminatory application of GAO's performance management system.

Ivy has not yet finished its analysis and is not scheduled to issue a final report until April 2008. We are looking forward to receiving the final report and its recommendations. We will keep this subcommittee and other interested parties informed as we address the recommendations contained in this final report.

As we implement necessary improvements to address this issue, as well as others, we are fortunate to have a solid foundation upon which to build. For example, while we missed a few of the targets we established, our employee feedback survey scores, as shown in appendix I, for our "people" measures on staff development, staff utilization, leadership, and organizational climate have remained relatively stable even in a period of significant change. Further, we are proud that GAO was named second among large agencies across the federal government in the 2007 ranking of best places to work, which was issued by the Partnership for Public Service and the Institute for the Study of Public Policy Implementation at American University. In addition, when results were analyzed by demographic groups, GAO ranked second among female, African-American, and Hispanic employees.

This overall positive work environment is one of many reasons GAO's dedicated and talented workforce is able to effectively serve the Congress and produce solid results for the American people.[5] Last fiscal year, our work contributed to hundreds of improvements in government operations and benefits, as well as $45.9 billion in financial benefits or a $94 return for every dollar the Congress invested in us. We also contributed to over 270 congressional hearings and provided hundreds of valuable products to assist the Congress on topics as wide ranging as food safety, border patrol, and tax compliance.

In closing, I want to reiterate our appreciation for the subcommittee's consideration of these legislative proposals to strengthen GAO. We look forward to continuing our constructive dialogue with the subcommittee on these and other issues in the future. Thank you for the opportunity to share our views. Mr. Chairman, I would be pleased to answer any questions that you or other Members of the Subcommittee may have at this time.

[5]GAO, *Performance and Accountability Report*, *Fiscal Year 2007*, GAO-08-1SP (Washington, D.C.: Nov. 15, 2007).

Appendix I: Agencywide Summary of Annual Measures and Targets

Performance measure	2003 actual	2004 actual	2005 actual	2006 actual	2007 target	2007 actual	Met/ not met	2008 target
Results								
Financial benefits (dollars in billions)	$35.4	$44.0	$39.6	$51.0	$40.0	$45.9	Met	$40.0[a]
Nonfinancial benefits	1,043	1,197	1,409	1,342	1,100	1,354	Met	1,150
Past recommendations implemented	82%	83%	85%	82%	80%	82%	Met	80%
New products with recommendations	55%	63%	63%	65%	60%	66%	Met	60%
Client								
Testimonies	189	217	179	240	185	276	Met	220
Timeliness[b]	N/A[c]	89%	90%	92%	95%	94%	Not met	95%
People								
New hire rate	98%	98%	94%	94%	95%	96%	Met	95%
Acceptance rate	72%	72%	71%	70%	72%	72%	Met	72%
Retention rate								
With retirements	92%	90%	90%	90%	90%	90%	Met	90%
Without retirements	96%	95%	94%	94%	94%	94%	Met	94%
Staff development	67%	70%	72%	76%	75%	76%	Met	76%
Staff utilizationd[d]	71%	72%	75%	75%	78%	73%	Not met	75%[e]
Leadership	78%	79%	80%	79%	80%	79%	Not met	80%
Organizational climate	71%	74%	76%	73%	76%	74%	Not met	75%[f]
Internal operations								
Help get job done	3.98	4.01	4.10	4.10	4.00	4.05	Met	4.00
Quality of work life	3.86	3.96	3.98	4.00	4.00	3.98	Not met	4.00

Source: GAO.

Notes: Information explaining all of the measures included in this table appears in GAO Performance and Accountability Report, Fiscal Year 2007, GAO-08-1SP (Washington, D.C.: Nov. 15, 2007)—see the Data Quality and Program Evaluations section in Part II.

[a]Our fiscal year 2008 target for financial benefits differs from the target we reported for this measure in our fiscal year 2008 performance budget in January 2007. Specifically, we decreased our financial benefits target by $1.5 billion based on (1) our assessment of our past recommendations that were likely to be implemented in fiscal 2008 by federal agencies and the Congress and (2) the impact that our constrained budget might have had on the work that leads to financial benefits.

[b]Since fiscal year 2004, we have collected data from our client feedback survey on the quality and timeliness of our products, and in fiscal year 2006, we began to use the independent feedback from this survey as a basis for determining our timeliness.

[c]N/A indicates that the data are not applicable because we did not collect it from our client feedback survey this period.

[d]Our employee feedback survey asks staff how often the following occurred in the last 12 months: (1)my job made good use of my skills, (2) GAO provided me with opportunities to do challenging work, and (3) in general, I was utilized effectively.

[e]Our fiscal year 2008 target for staff utilization differs from the target we reported for this measure in our fiscal year 2008 performance budget in January 2007. We lowered the staff utilization target by 3 percentage points because we determined that, based on our past performance, the target was unrealistic, and we reset it at a level that is still challenging but more likely to be achieved.

[f]Our fiscal year 2008 target for organizational climate differs from the target we reported for this measure in our fiscal year 2008 performance budget in January 2007. We decreased the organizational climate target by 1 percentage point because we determined that based on our past performance, the target was unrealistic, and we reset it at a level that is still challenging but more likely to be achieved.

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PRINTED ON RECYCLED PAPER

EFCOG Human Capital Working Group

Carol L. Berrigan

Director, Industry Infrastructure

January 24, 2008

NEI

NUCLEAR ENERGY INSTITUTE

Trends in the Commercial Nuclear Industry

- Aging workforce
- Growing demand for skilled workers
- Increased industry attention
- Significant expansion of workforce development programs

NEI

Industry Strategy

- Understand the numbers
- Raise awareness at all levels
- Partner with other energy and construction sectors
- Deploy workforce development programs
- Increase recruiting efforts
- Increase retention efforts

Progress in Key Areas

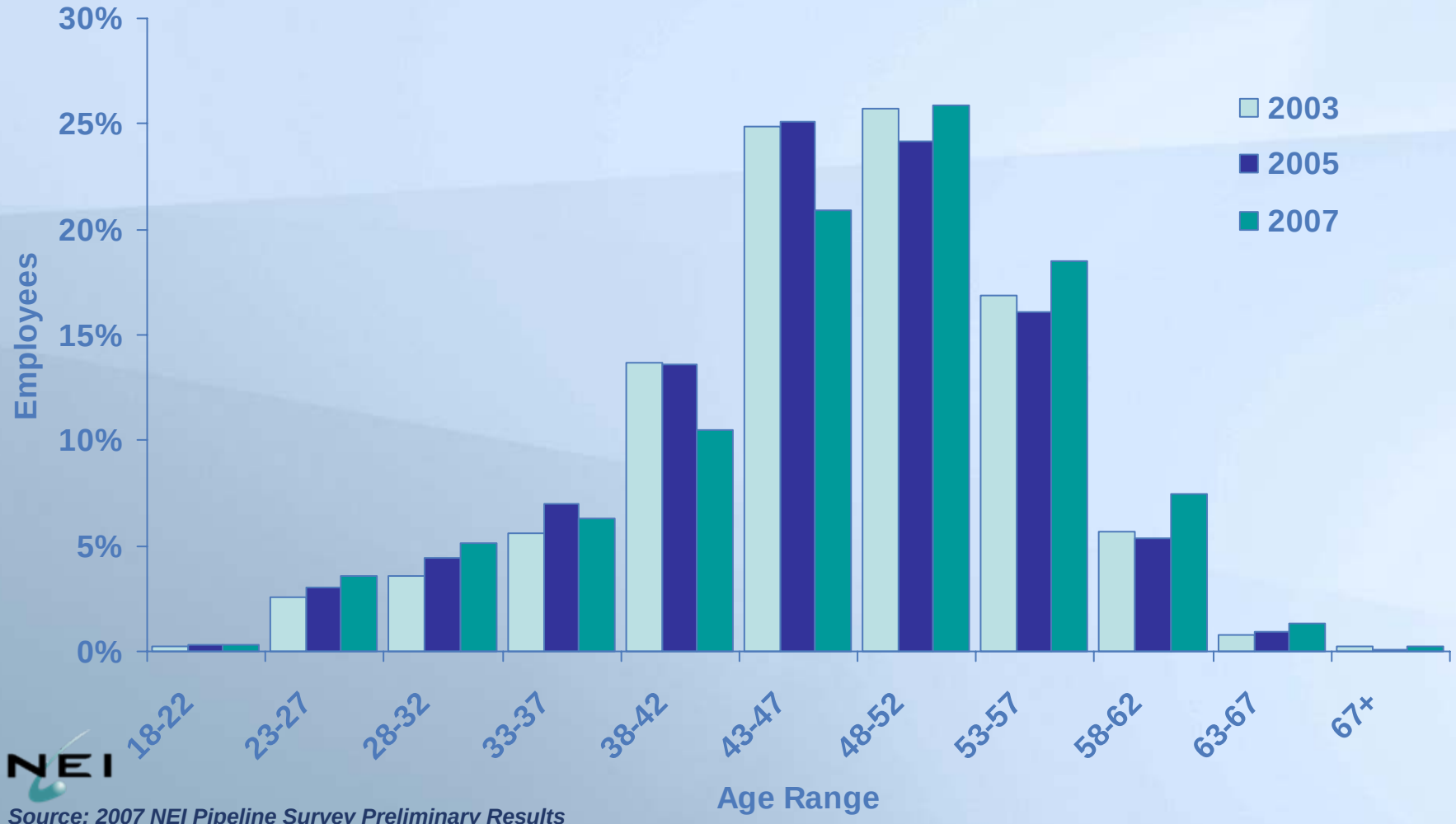
- Significant increases in nuclear engineering enrollments and graduation
- Development of work force development programs at community colleges
- Expansion of “grow your own” programs

2007 Survey Preliminary Results

- 20 of 26 utilities supplied data
- Data represents about 85% of utility employees
- Little change in age profiles—each curve has shifted to the right and little hiring is apparent
  - Engineering—13% under 33
  - Operations—14% under 33
  - Maintenance—6% under 33
  - Radiation Protection—4% under 33

NEI

Nuclear Industry Employment Distribution by Age



Source: 2007 NEI Pipeline Survey Preliminary Results

Electric Infrastructure Investment to 2020

Generating capacity	$250-300+ billion
Environmental controls	$45-50 billion
Transmission	$150+ billion
Distribution	$300+ billion
Total = At least $750 billion	

Source: Cambridge Energy Research Associates, Edison Electric Institute

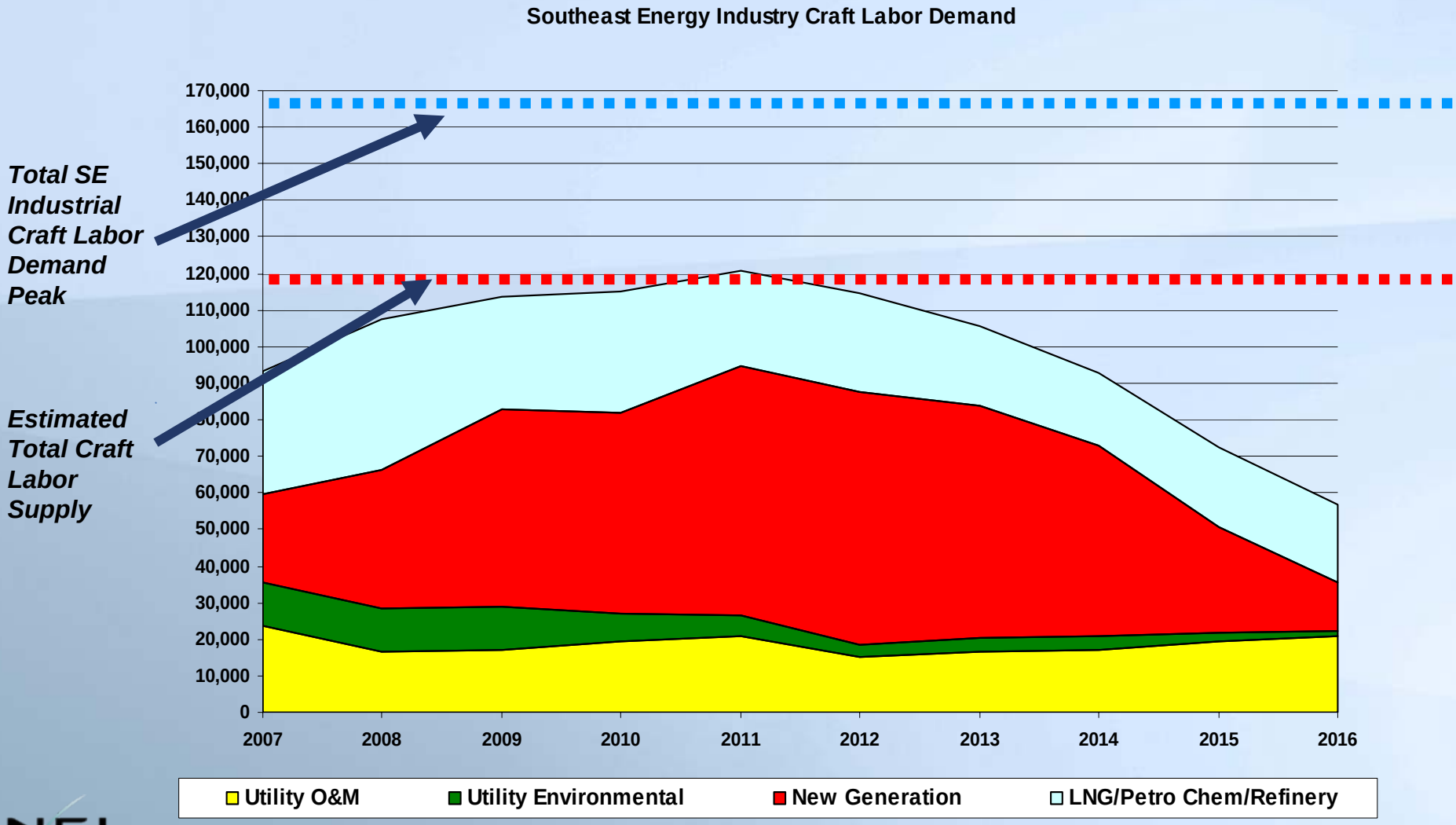
NEI

Skilled Trades—Indications of Shortages

- Numerous sources have indicated shortages in industrial skilled crafts.
  - Welders
  - Ironworkers
  - Pipefitters
- Preliminary data indicates demands will increase throughout the Southeast

NEI

Southeast Construction Labor Challenges



Data drawn from SEMTA and Southern Company market research.

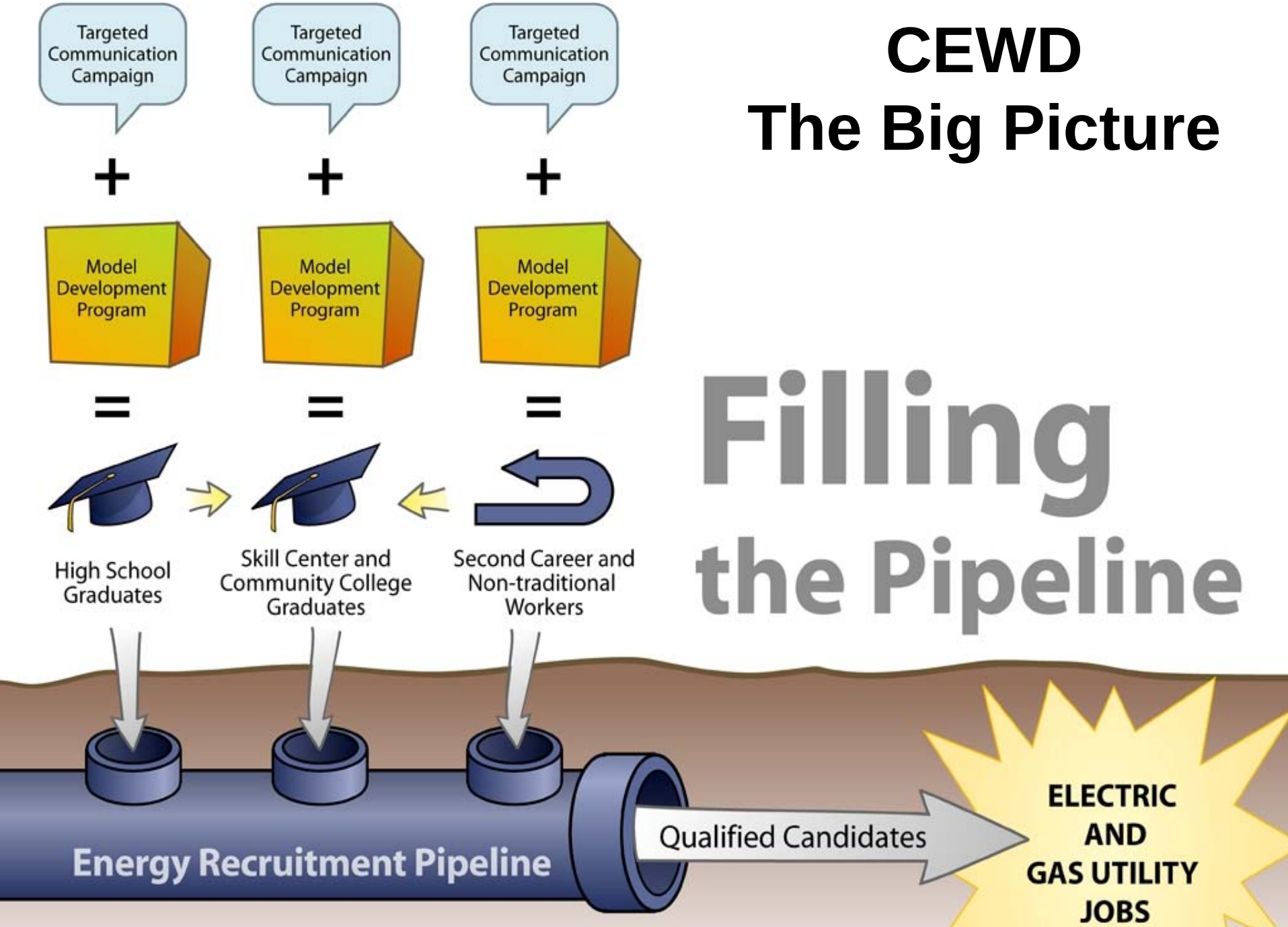
The Center for Energy Workforce Development (CEWD)

- Formed in March 2006 as a 501c3 corporation
- Partnership between EEI, NEI, AGA, and NRECA with utility membership
- Teaming to create workable solutions
  - Educational institutions
  - Public workforce system
  - Other key stakeholders

NEI

Center For ENERGY Workforce Development

CEWD
The Big Picture



The Education Continuum

Middle School → **High School** → **Technical and Community College** → **Military and Second Career**

Focus
Career Exploration

- Summer Camp
- Lego League
- Career Choices
- Science Fairs
- Career Day

NEI

The Education Continuum

Middle School → **High School** → Technical and Community College → Military and Second Career

Focus
Work Readiness and Skill Building

- Career and Tech Ed. Majors
- Career Academies
- Summer Academies
- Boy Scout merit badges
- Robotics Competitions
- Science Fairs

NEI

The Education Continuum

Middle School → High School → **Technical and Community College** → Military and Second Career

Focus
Specific Career Skills

- Boot Camps
- Regional Skill Centers
- Associate Degrees
- Common Curriculum
- Partnerships for hands on training

NEI

The Education Continuum

Middle School → High School → Technical and Community College → **Military and Second Career**

Focus
Transition Skills

- Job Corp
- Helmets to Hard Hats
- Career Transition Office training support

NEI

Increasing Employee Retention and Engagement

- U.S. Women in Nuclear
  - Nearly 2500 women and men
  - Professional development programming
  - Community outreach
- North American Young Generation in Nuclear
  - Roughly 3100 members
  - Professional development opportunities
  - Networking opportunities
- NEI Employee Retention Study and Toolkit

NEI

Plans for 2008

- Expand the ‘Get into Energy’ Web site
- Sponsor regional forums
- Refine and finalize the definition of skills necessary for success
- Deploy communication templates and a branding campaign based on the “Get into Energy” brand.
- Identify model processes and developing solution guides
- Communicate funding opportunities

FACT SHEET

Nuclear Industry's Comprehensive Approach Develops Skilled Work Force for the Future

April 2008

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Key Facts

- The nuclear energy industry has undertaken a comprehensive program to recruit, train and educate new workers.

- The average operating nuclear plant employs 400 to 700 people, and jobs at these plants pay substantially more than average salaries in the local area.

- University, community college and vocational training programs are critical to meet future staffing needs, and companies are pursuing initiatives to prepare a new generation of workers.

- The industry is working with government, educational and other organizations to address the industry's work force needs and is implementing specific policies and programs to develop the future nuclear work force.

Tight Labor Market Presents Challenges

A tightening labor market caused by an aging work force and increased competition for qualified and experienced workers and craftspeople challenges the nuclear utility industry, as it does American industry at large. The nuclear energy industry is responding to this challenge by forging partnerships with organized labor, government and professional groups; enhancing recruitment efforts; and fostering supportive public policy to train the next-generation work force.

The industry's efforts are paying off. The Nuclear Energy Institute's (NEI) 2007 Work Force Survey indicates an increasing number of young employees at nuclear vendors and within electric utilities in the engineering and operations fields. Further, the industry is increasing its focus on developing maintenance staff, radiation protection technicians and other specialized personnel through the creation of new educational programs and partnerships.

With expanded staffing requirements to support new nuclear plants, growing competition from other sectors and increasing attrition rates of current employees because of retirement and other factors, the nuclear industry is working to expand its aggressive efforts to maintain a highly qualified staff today and develop the work force of tomorrow.

With the peak in U.S. birth rates between 1946 and 1964, the post-war baby boom has created a rising median age. The U.S. Bureau of Labor Statistics projects that by 2012 the median age will reach 41.4 years. However, in the nuclear utility industry, where the median age is over 48 today, the trend is more acute. As much as 35 percent of the incumbent work force may be eligible to retire within five years. Another 11 percent of the work force may be lost through other attrition over the same period.

Nuclear Power Plants Offer High-Paying Jobs

Today, the typical nuclear plant employs 400 to 700 people, and jobs at these plants pay substantially more than average salaries in the local area. For example, the median salary for an electrical technician at a nuclear power plant is $67,517; for a mechanical technician, $66,581; and for a reactor operator, $77,782.

These jobs commonly include family medical benefits, pensions and incentive compensation plans.

To maintain the current nuclear work force, the industry may

need to hire as many as 25,000 more workers in the next five years.

In addition to meeting the work force needs at existing nuclear facilities, each new reactor will employ 1,400 to 1,800 people during construction, with peak employment of up to 2,800 individuals. These jobs include skilled trades, such as welders, pipe fitters, masons, carpenters, millwrights, sheet metal workers, electricians and heavy equipment operators. During operation, new reactors typically have a highly skilled work force of 400 to 700 employees.

Industry Responds With Multi-Pronged Approach

The industry is responding to these work force trends collaboratively with organized labor, government, educational institutions and non-profit organizations. These collaborations have yielded positive results from development of national demand projections for technicians, plant operators and engineers to increasing awareness of nuclear careers among teachers, students and work force development professionals.

The industry also is enhancing recruitment efforts, increasing the number of new hires in several disciplines and targeting untapped labor pools like veterans and minorities. Further, the industry has fostered development of curricula and new educational programs and deployed staff as instructors at community colleges to expand local talent pools. Utilities also have turned to policymakers at the national, regional and local levels to increase career awareness and to leverage public/private efforts in its work force development.

In addition, industry has begun a systematic engagement of the public work force and education systems to ensure that the energy and construction sectors are viewed as a priority in state-based work force development and educational programs.

Assessments Reveal Progress in Hiring

In 2007, NEI undertook another in its series of work force assessments. Working to identify the growing generational gap among nuclear energy industry workers, the surveys have monitored trends in industry work force demographics and helped project the personnel needs of electric utilities, contractors and vendors that supply equipment and services to the industry.

The 2007 survey shows encouraging signs that the industry's recruitment effort is having some notable success. For instance, the report found a 34 percent increase in the number of young engineers 18 to 27 years of age working in the utility work force from 2005 to 2007. During the same period, operations personnel 18 to 27 years of age increased 33 percent, while the young professionals employed in the vendor work force rose 58 percent.

Besides NEI surveys, the industry uses several secondary sources of data to assess work force trends that may affect the nuclear energy sector.

Examples include the 2007 utility staffing survey conducted by the Center for Energy Workforce Development (CEWD) and the Southeast Manpower Tripartite Alliance's industrial construction labor assessment. The report assessed the demographics of the broad utility industry. This survey examined four key career areas: operators, maintenance staff, linemen and plumbers/pipe fitters. The survey indicated that the electric utility industry could face significant retirements of employees in each of these fields over the next five years.

Expanding the Potential Nuclear Work Force

The future nuclear work force will reflect the changing demographics among the qualified pool of applicants and the growth of the U.S. nuclear energy industry. To expand the work force, the industry has developed new partnerships to address nuclear industry work force challenges through various programs aimed at improving career awareness and outreach; recruitment,

training and preparation; and retention of employees and their knowledge.

A centerpiece of these partnerships is CEWD. Formed in 2006, CEWD is a joint effort of NEI, the American Gas Association, Edison Electric Institute and the National Rural Electric Cooperative Association. The organization pursues partnerships with educational institutions and other stakeholders to create national models and collect and share good practices in work force development across the utility industry.

The industry also works to maintain broad support from local communities, labor organizations and educational institutions. NEI teams with stakeholders who understand the importance of work force issues, including organized labor, universities and community colleges, and government agencies.

Together, these groups work through schools, employers and nontraditional allies to reach current and future workers. They also explore institutional changes that will be required to achieve long-term success.

Public Policy Activities Aid Work Force Development

The industry has developed a public policy environment that is favorable to addressing the industry's work force needs and implementing specific policies and programs to develop the future nuclear work force. The approaches include:

- informing leaders and policymakers of job opportunities available in the energy sector, particularly in the nuclear industry
- raising policymakers' awareness of particular challenges the industry faces
- developing recommendations for policies and programs that can effectively address these challenges
- nurturing alliances to create a constructive dialogue with leaders and policymakers.

Nuclear industry involvement in public policy relating to the nuclear work force stems from activity to ensure that there is a sufficient training infrastructure available. Initial efforts focused on bringing nuclear engineering and health physics talent to the industry, government and research community through college and university programs. These efforts now have expanded to career technical schools and community colleges.

Federal, State Initiatives Target Energy Careers

The U.S. Department of Labor is an important partner in several work force initiatives. In 2003, President Bush established the High Growth Job Training Initiative to prepare workers to take advantage of new and increasing job opportunities in high-growth, high-demand and economically vital sectors of the American economy, including energy.

A $10 million Department of Labor grant program is available to address increased demand for skilled workers in the energy industry, including nuclear power plants. The funding, part of the High Growth Job Training Initiative, is available to job-training organizations and community groups that provide training leading to energy industry jobs in their localities.

The Labor Department announced the grants at the Energy Skilled Trades Summit that it co-sponsored with the state of Mississippi last fall. NEI also supported the summit, along with other energy trade associations.

Summit participants sought common ground and solutions to attracting people to skilled labor careers, including:

- aligning a company's philanthropy with work force planning goals
- industrywide recruiting in lieu of company-specific recruiting efforts
- gaining access to potential labor pools through community or faith-based organizations
- targeting engineering school dropouts with technical acumen but who may be better suited to the trades.

Nuclear Industry's Comprehensive Approach Develops Skilled Work Force for the Future

Several states also have created programs to encourage careers in key infrastructure sectors, such as energy. Florida, Maryland and Texas are among 10 states that have collaborated with the nuclear energy industry to create skilled crafts training programs.

Support for Educational Programs Yields Success

Funding is an important element in the industry's work force policy efforts. The industry and other partners worked with the government to increase funding from 1998 to 2007. The U.S. Nuclear Regulatory Commission's budget provides funding for university scholarships and fellowships.

In addition to funding, several key pieces of legislation have bolstered federal support of nuclear engineering and health physics education. NEI, the American Nuclear Society, the Health Physics Society and other stakeholders supported provisions of the Energy Policy Act of 2005 that sustained university nuclear engineering programs and the NRC's scholarship and fellowship program.

In 2007, the America Competes Act reinforced the U.S. Department of Energy's stewardship responsibility for university education in nuclear engineering and health physics. The bill authorizes $12 million in fiscal 2009.

The nuclear industry's efforts have produced notable results. Enrollments in undergraduate nuclear engineering programs have grown from 470 in the 1998-99 academic year to 1,933 in 2006-07. Graduate enrollments have climbed from 220 to 1,153 in the same period.

This fact sheet and additional information on the industry's staffing efforts, including a compendium of internship programs, are available on NEI's Web site at www.nei.org.

U.S. News & World Report
usnews.com

Thursday, October 2, 2008

A Worker Shortage in the Nuclear Industry

By Marianne Lavelle
Posted March 13, 2008

The hunt for workers is on in south Texas, two years before construction begins on the first new nuclear power plant in the United States in 30 years.

The huge engineering firm Fluor already is canvassing high schools within a 100-mile radius of Bay City, with an extraordinary offer: After graduation, enter Fluor's training program—free of charge—to learn carpentry, welding, electrical work, or another skilled trade. You'll eventually be sent for work and on-the-job training at one of Fluor's other construction projects in Texas: an oil refinery in Port Arthur or coal plant in Oak Grove. When NRG Energy, the company planning the two south Texas nuclear reactors, receives the government go-ahead to start building, around 2010, Fluor aims to bring those workers back to Bay City for specialized nuclear plant training and to start in on the job. The annual pay: $60,000 to $75,000.

"We need to start to attracting people and training today for the new crowd we'll need in the future," says Ron Pitts, senior vice president for nuclear power at Fluor. "We can't wait until we get a [construction and operating license]."

The reason for the hurry: Big energy construction will be booming in the next decade, concentrated in the South—not only nuclear generators but coal plants, liquefied natural gas terminals, oil refineries, and electricity transmission lines. All projects need skilled craft workers, and they are in drastically short supply.

The utility Southern Co. estimates that existing energy facilities already are short 20,000 workers in the Southeast. That shortfall will balloon to 40,000 by 2011 because of the new construction. Pay is inching up and hours are increasing for workers who are certified craftsmen. Fluor says skilled workers at the Oak Grove coal project are putting in 60-hour weeks instead of the well-into-overtime 50-hour weeks that had been planned.

Looking ahead, the nuclear industry views itself as especially vulnerable to the skilled-labor

shortage. It hasn't had to recruit for decades. Not only were no nuke plants getting built, but workers in the 104 atomic facilities already in operation tended to stay in their well-paid jobs for years. But in the next five years, just as the industry hopes to launch a renaissance, up to 19,600 nuclear workers—35 percent of the workforce—will reach retirement age.

"The shortage of skilled labor and the rising average age of workers in the electric industry are a growing concern," likely to push up the cost of nuclear power plant construction, said Standard & Poor's Rating Services in a recent report.

The nuclear industry faces a different world compared with when it last was hiring three decades ago. "Parents, guidance counselors, and society in general push high school students to complete their secondary education with the intention of then attending a four-year college program," concludes a recent white paper on the Southeast workforce issues prepared by the Nuclear Energy Institute. "High-paying skilled labor jobs, once considered excellent career options, are now perceived as second class."

Carol Berrigan, senior director for industry infrastructure at NEI, says that the industry needs to do more to get the word out that the jobs actually require substantial training and offer a good quality of life. The median salary for an electrical technician is $67,500; for a senior reactor operator, $85,400. "And the other thing that's nice about these jobs," Berrigan says, "is they are not going to go offshore."

Sheila Brey, a project manager at Entergy's James Fitzpatrick nuclear power plant near Oswego, N.Y., has loved working in the industry for 24 years, but she's quick to add that it isn't for everybody. "Handling nuclear technology is special," she says. "You have to be totally respectful of the technology. You have to have a high level of comprehension of that and a willingness to constantly improve and to take safety into consideration every step of the way."

Brey started out as one of those highly sought skilled workers—an instrument and control technician—in 1984. Now, she's taking classes, all with the help of education reimbursement from Entergy, toward her bachelor's degree in engineering. With colleagues retiring and high hopes in the industry for a new generation of nuclear plants, Brey says she sees the need for a new generation of workers: "This is the time the

knowledge transfer has to occur."

Tags: employees | labor | nuclear power

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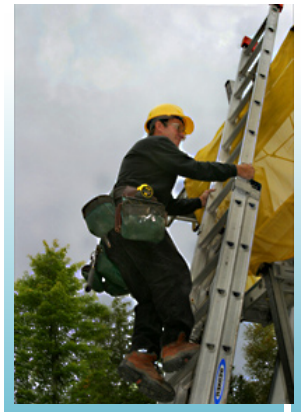
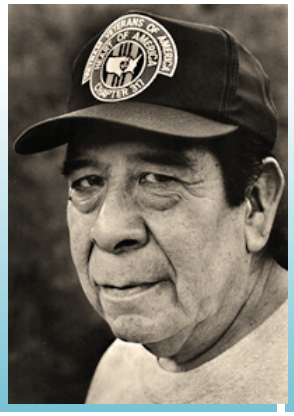
Save the Date:

February 17-18, 2009 | Washington, DC

Healthy Aging for Workers:

Anticipating the Occupational Safety and Health Needs of an Increasingly Aging Workforce

Conference Goals:

- Make the impact of work on older workers part of the national policy and research agenda
- Understand policy and program needs and research gaps to reduce the impact of chronic diseases on aging workers and increase the ability of individuals to work as they age
- Understand workplace programs and policies that reduce the adverse impact of work-related risk on older workers
- Refine the research agenda proposed in the 2004 National Academy of Science (NAS) Report on the Health and Safety Needs of Older Workers
- Develop near-term intervention strategies (focus on primary prevention) for preventing work-related injury and illness associated with a growing workforce of aging workers
- Attend to the special case of healthy aging of construction workers and others involved in hard physical labor.

This conference aims to refine the research agenda proposed in the 2004 National Academy of Science (NAS) Report on the Health and Safety Needs of Older Workers and to develop near-term intervention strategies for preventing work-related injury and illness associated with a growing workforce of aging workers. Since older workers may be increasingly vulnerable to age-related job discrimination, efforts to uncover new work-related injury and illness among an aging population must be done with care. Developers of thoughtful research agendas and intervention strategies in this area must strive to protect workers' health and safety as well as their jobs. Recommendations developed during this meeting will be in the context of NIOSH's NORA health disparities, which includes aging workers, NIOSH's research to practice initiative, NIOSH's WorkLife Initiative and the US Public Health Service's "Healthy People – 2010" objectives for the nation.

When:

February 17-18, 2009

Who should participate?

Participants will include occupational safety and health clinicians and practitioners and experts on aging, worker and employer representatives, federal government officials and staff and members of the US Congress interested in and responsible for aging and workforce protection issues and policies.

Call for Posters:

The Conference Planners' solicit abstracts that address the conference goals. Solicited abstracts will be presented as posters only. General topic areas related to preventing work-related injury and illness among older workers may include:

- **Occupational health and safety research**
- **Intervention research and practice**
- **Related demographic and economic research**
- **Related evidence-based policy research and development**

Program Topics:

- NAS Report Update
- Current Demographics
- International Approaches
- Public Policy Options
- Aging Issues in the Construction Industry
- Aging Issues in the Health Care Industry
- Aging Issues in Other Sectors

- Abstracts must be electronically submitted as Word or text files (double-spaced in 12 point Garamond or Times New Roman) and be no longer than 500 words (not including authors and affiliations)
- Abstracts will be accepted until October 25, 2008.
- Successful poster presenters will be notified in November 2008.
- Accepted abstracts will become part of the conferences' proceedings.
- Accepted Posters will be put up on February 17, 2009 before the meeting begins and taken down before the beginning of the afternoon sessions on February 18, 2009.

Please note, poster presenters will be required to register for the meeting.

Submit poster abstracts to:

Sarah Shiffert | sarah@degnon.org

Conference Registration information will follow.

This conference is made possible by funding from the National Institute for Occupational Safety and Health, grant no. 1 R13 OH00 9206-01 (NCTE) and the CPWR - Center for Construction Research and Training through NIOSH Cooperative Agreement OH008307. The contents are solely the responsibility of the authors and do not necessarily represent the official views of CPWR or NIOSH.

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Introduction

The Construction Chart Book, now in its fourth edition, marks the 10th year since it was first published in 1997. This fourth edition uses updated statistics to characterize the changing construction industry and its workers in the United States, monitor the impact of such changes on worker safety and health, and identify priorities for safety and health interventions in the future. While addressing a broad audience, this book focuses on aspects of the construction industry that are most important to the decision makers responsible for worker safety and health.

The data used are from a wide variety of available sources, most of which are large national datasets collected by government agencies, such as the U.S. Census Bureau and the Bureau of Labor Statistics. For the fourth edition, several newly released datasets are added to the analyses, including the American Community Survey, American Time Use Survey, and others. Data from NIOSH's Survey of Respirator Use and Practices are used for the first time in this edition. Data sources used for each page are briefly discussed; relevant publications and websites are carefully selected and cited throughout this book. Detailed footnotes accompanying the text and charts should enhance the information provided. Most of the tabulations have been conducted by the CPWR Data Center staff specifically for this book. Thus, some numbers may not be comparable to other publications using similar data sources due to different quantitative methods.

Most of the employment and demographic data compiled for this edition are updated to 2005 to match the latest available injury and illness data. The exceptions are the industry data from the Economic Census, which are collected every five years: the most recent year is 2002. Because the data represent the industry as it was several years ago, recent circumstances such as the housing/mortgage crisis and the consequential decline in residential construction are not covered.

This fourth edition, composed of about 180 charts and tables, is presented in five sections with text and charts displayed side by side for each topic. The Industry Summary section profiles the features of construction establishments and their owners, the value of construction work, and the impact of the changes in the industrial coding systems from the SIC to NAICS on construction statistics. The section on Labor Force Characteristics highlights the restructured demographics of the construction workforce and addresses topics such as union membership, the aging workforce, skills shortages, immigration, and the rapid increase of Hispanic workers in the construction industry. The Employment and Income section graphs the trends in construction employment, work hours, earnings and benefits (such as health insurance coverage and retirement plans), alternative employment (such as self-employment, contingent workers, and day laborers), worker misclassification, overtime, and so on. This section is followed by Education and Training, which depicts educational attainment, apprenticeships, and future projections in the construction industry.

The last section, Safety and Health, is greatly enhanced and expanded from previous editions. While this section continues to provide detailed construction injury statistics, additional calculations on health risk factors and chronic illnesses are included. This section also compiles the recent findings from research conducted by CPWR staff, CPWR consortium members, NIOSH researchers, and other published studies. Newly developed information includes results from the NIOSH lead surveillance program (ABLES), the latest reports on noise-induced hearing loss, respirator use, worker exposure to manganese and chromium during welding, and OSHA enforcement efforts, just to name a few. For the first time, this section presents an estimation of the total costs of construction fatal and nonfatal injuries.

Despite the attempt to serve as a comprehensive resource and reference tool for our broad audience, the results are limited by data availability, space, and other constraints. Limitations of this collection, suggestions for further research, as well as policy implications that could improve the existing data systems, are also included in this edition.

MAIN FINDINGS:

- The total number of construction establishments increased by about 9.2% from 2.55 million in 1997 to 2.78 million in 2002, of which 710,307 were establishments with payroll. About 3% of the increase in the number of payroll establishments resulted from the transition of the industrial coding systems.
- More than two million construction establishments had no payroll (nonemployer, such as sole proprietorships), yet they accounted for less than 9% of the dollar value of business done in the construction industry.
- Small construction companies abound. Construction establishments having one to nine employees accounted for 79% of the construction establishments with payroll, even though they employed only 24% of the workforce.
- During the last decade the construction industry has benefited from strong, sustained growth that has exceeded the national economy as a whole. As a result, construction grew from 4.1% of the total Gross Domestic Product (GDP) in 1997 to 4.6% in 2002, and 4.9% in 2005.
- Total construction employment expanded from 7.7 million in 1995 to 11.2 million in 2005. Growth has been most striking among the Hispanic workforce, which more than tripled in the last decade to 2.6 million in 2005.
- More than 700,000 construction workers held contingent jobs as of February 2005, which was 12% of the total U.S. contingent workforce. Despite a possible underestimation, this rate is still disproportionately high given that the construction industry shares less than 8% of the overall workforce.
- Day laborers make up a notable portion of the construction workforce. More than 11% of all construction businesses used day laborers on a regular basis. Hispanic contractors were about 40% more likely to use day laborers than non-Hispanic contractors.
- The construction workforce is aging. In 2005, the average age of construction workers was 39 years old, three years older than two decades ago.
- The workforce increasingly is divided into two demographics: the entry of a large number of young Hispanic workers and the existing workforce that is growing older. Therefore, it is expected that both occupational training and safety and health training will be in high demand.
- Construction employment is predicted to rise in the coming decade, although not as quickly as in previous years, adding 792,000 wage-and-salary jobs by 2014.
- The prevalence of employment-based retirement plans among construction workers is low. Only 10% of construction workers employed in small companies (fewer than 10 employees) participated in employment-based retirement plans in 2005, compared with 60% in companies with 500 or more employees. The type of plan has shifted significantly over the years from defined benefit (traditional pension) to defined contribution such as 401(k) plans.
- About 58% of construction wage-and-salary workers had employment-based health insurance in 2005, but just 30% of Hispanic construction workers had such coverage.
- Union members in construction have substantial advantages in educational attainment, wages, health insurance coverage, retirement plan enrollment, training, and longer employment tenures, compared with non-union workers. There are also significantly less racial and ethnic disparities in wages and benefits among union members.
- For construction overall, work-related death rates have decreased by 22% from 1992 to 2005, while rates of reported nonfatal injuries and illnesses with days away from work dropped dramatically by 55% during this period.
- Hispanic workers, and workers employed in small establishments (less than 20 employees), had a higher rate of deaths from injuries but a lower rate of nonfatal injuries and illnesses, compared with the construction industry as a whole.
- Falls and electrocutions are still leading causes of fatal injuries in construction. At the same time, the fatality rates for falls and electrocutions have declined dramatically over the past 15 years due to focused efforts on prevention.
- Being struck by an object, falls to lower level, and overexertion in lifting, remain the leading causes of nonfatal injuries. However, the rates have dropped steadily since 1992.
- The estimated direct and indirect costs of fatal and nonfatal construction injuries totaled $13 billion (2002 dollars) annually. The medical expenses of nonfatal injuries alone cost more than $1.36 billion per year; of which only 46% were paid by workers' compensation.
- The number of construction workers with elevated blood lead levels is disproportionately high compared with other workforce sectors.
- Overexertion when lifting caused 42% of the WMSDs with days away from work in construction.
- During the last decade, the prevalence of diabetes dramatically increased among workers in construction trades, particularly among those over age 55. About 41% of construction workers age 55 and older were diagnosed with hypertension in 2005.

How the Bureau of Labor Statistics Defines the Civilian Labor Force

Statistics on the civilian labor force are obtained from household (or population) and payroll (or establishment) surveys. These surveys complement each other, each providing data that the other does not. Data on characteristics of the construction workforce used in this book are mainly obtained from a household survey, the Current Population Survey (CPS), while detailed industrial classification information is derived from the Current Employment Statistics (CES), a payroll survey. Both of the surveys are conducted monthly by the U.S. Bureau of Labor Statistics (BLS).

CPS involves interviewing members of about 60,000 households randomly selected to represent the U.S. civilian non-institutionalized population. The CPS is a rich source of demographic and employment data. It collects national totals of the number of people in the civilian labor force by sex, race, Hispanic origin, age, and unionization; the number employed, hours of work; industry and occupational groups; and information on unemployment.

The civilian labor force (*see* Glossary) comprises all non-institutionalized civilians 16 years and over classified as employed or unemployed. The employed are those who during the reference week, (1) did any work for pay or profit or worked 15 hours or more as unpaid workers in a family enterprise and (2) had jobs but were not working because of illness, bad weather, vacation, labor-management dispute, or because they were taking time off for personal reasons, whether or not they were paid for the time off or were seeking other jobs. The unemployed did not work during the reference week, but were available for work and had looked for employment at some point in the previous four weeks. People on layoff or waiting to report to work are considered unemployed. (The civilian labor force excludes people in penal and mental facilities, homes for the aged, prisons, and on active duty in the Armed Forces.)

The CPS classifies the employed by industry, occupation, and type of employment. The employed are divided between the self-employed (*see* Glossary) and wage-and-salary workers, or those who receive wages, salaries, commissions, tips, or pay in kind from a private employer or a government unit. Unless otherwise noted, this chart book includes unincorporated and incorporated workers when estimating the number of self-employed. (Figures for the self-employed provided in other publications may include only the unincorporated self-employed, and thus may be smaller than the estimate.)

In 2005, 66% of the U.S. population were included in the civilian labor force (chart 9a). In that year, the construction workforce comprised 8% of the national workforce, while self-employed workers made up 23% of those employed in construction, fewer than in recent years (*see* chart book page 20). Four percent of the construction labor force was employed in the public sector in 2005, down from 6% in 1996 (chart 9b).

The CES, part of a cooperative program between the federal government and state unemployment insurance agencies, surveys about 160,000 businesses and government agencies, covering approximately 400,000 individual worksites. With a lag of about one year, BLS revises the payroll estimate to an almost complete count of U.S. payroll employment; this results in what is known as the "benchmark revision."[1] As with other government data systems, CES began publishing data using NAICS 2002 (*see* chart book page 1) in 2003. CES plans to discontinue the present production and nonsupervisory worker hours and earnings series and instead provide all employee hours and earnings for a more comprehensive information series starting in 2007.[2]

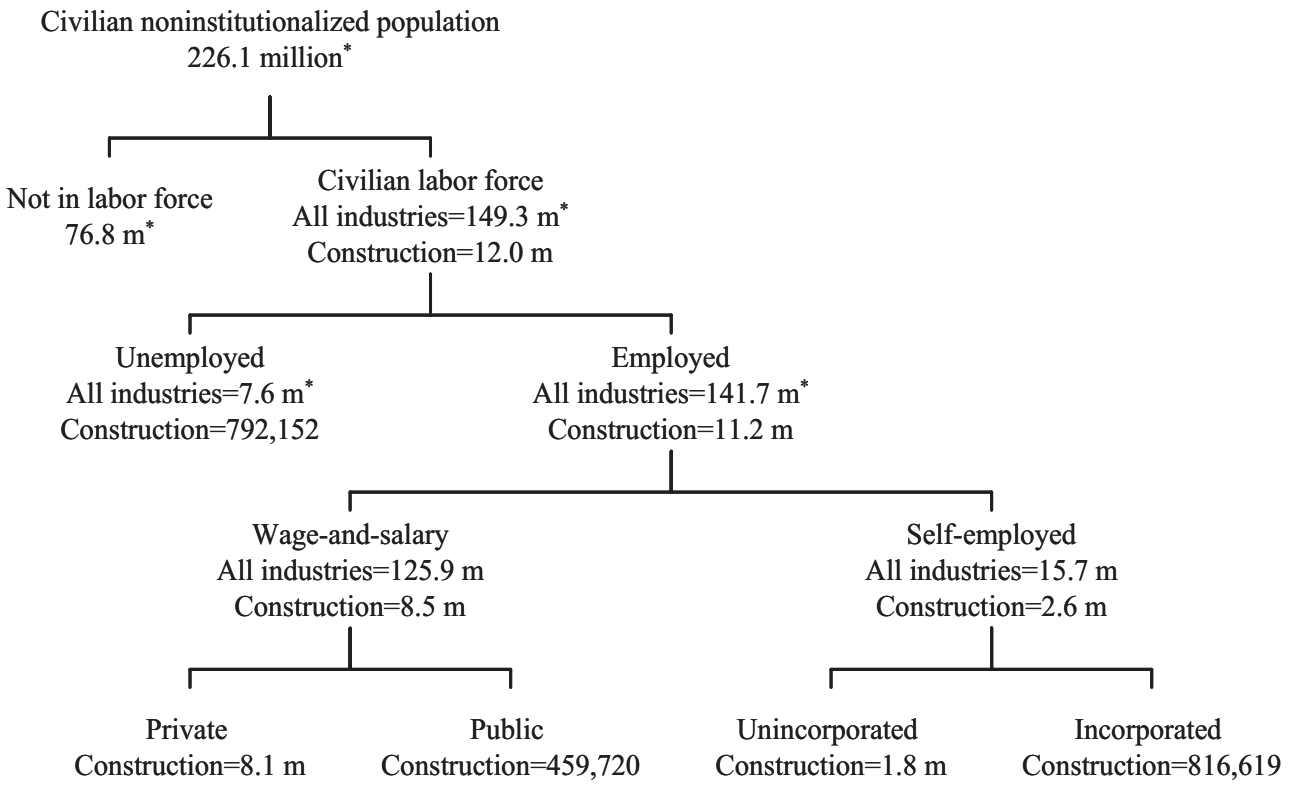
Beyond the survey designs, the two employment measures also differ in concept. First, CPS is based on residence whereas CES is based on unemployment insurance filings. Second, CES counts the number of jobs, while CPS counts the number of employed individuals. Therefore, a person with multiple jobs is counted several times in CES but only once in CPS. Third, their scopes are different. While CES covers only wage-and-salary workers (*see* Glossary) on nonfarm payrolls, CPS covers those individuals as well as agricultural workers, the self-employed, workers in private households, unpaid family workers, and workers in unpaid leave situations; CES includes wage-and-salary workers under the age of 16, while CPS does not. Finally, while the CES sample is updated annually, the CPS sample is updated only once every 10 years.

Although the two data systems have significant differences, they indicate a similar trend in employment over time (*see* chart book page 19). Both CPS and CES data are published monthly in *Employment and Earnings* by BLS. Comprehensive historical and current data are available from the BLS website: **http://www.bls.gov/cps/home.htm** for CPS data, and **http://www.bls.gov/ces/home.htm** for CES data, respectively.

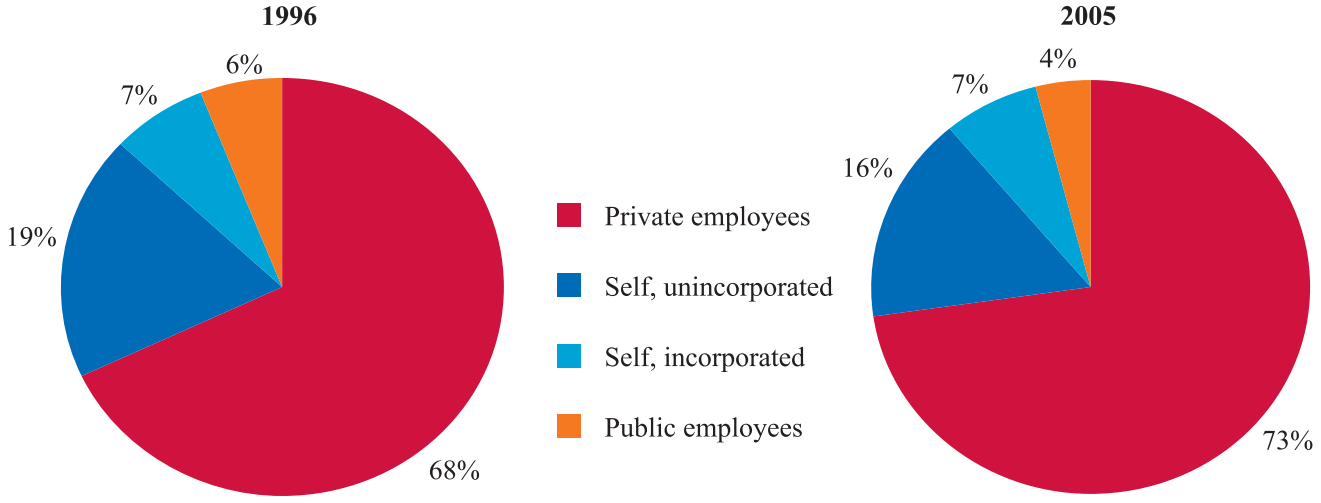
1. Federal Reserve Bank of San Francisco, Two Measures of Employment: How Different Are They? *FRBSF Economic Letter*, Number 2004-23, August 27, 2004.

2. U.S. Bureau of Labor Statistics, Changes to the Current Employment Statistics Survey, **http://www.bls.gov/ces/cesww.htm** (Accessed November 2007).

9a. Breakdown of the labor force, showing the number of wage-and-salary and self-employed workers in construction, 2005



9b. Type of construction employment, 1996 and 2005



Note: All charts - Charts cover all construction occupations, including managers and clerical staff.

Source: Chart 9a - U.S. Bureau of Labor Statistics, Household Data Annual Averages, 2005, www.bls.gov/cps/cpsa2005.pdf (Accessed November 2007) for figures with asterisks (*); other figures are from the 2005 Current Population Survey. Calculations by CPWR Data Center.

Chart 9b - U.S. Bureau of Labor Statistics, 2005 Current Population Survey. Calculations by CPWR Data Center.

Occupational Classification and Distribution in Construction

The U.S. Census Bureau defines "construction workers" as workers directly engaged in construction operations.[1] This definition includes journeymen, mechanics, apprentices, laborers, truck drivers and helpers, equipment operators, and on-site record keepers, but does not include individuals working in the construction industry in occupations such as executives, purchasing, accounting personnel, professionals, technical personnel, and those engaged in routine office functions. Supervisory employees above the working foreman level are not counted as construction workers. Following these definitions, the proportion of construction workers in the construction industry has declined from 86% in 1967 to 74% in 2002 (chart 10a).

Household surveys such as the Current Population Survey (CPS, *see* chart book page 9) and the American Community Survey (*see* chart book page 14) collect detailed information on respondent's occupation, such as job title or type of work reported by the respondent. Beginning in 2003, these household surveys adopted the 2002 Census Occupational Classification – a system developed to be consistent with the 2000 Standard Occupational Classification (SOC) system.[2]

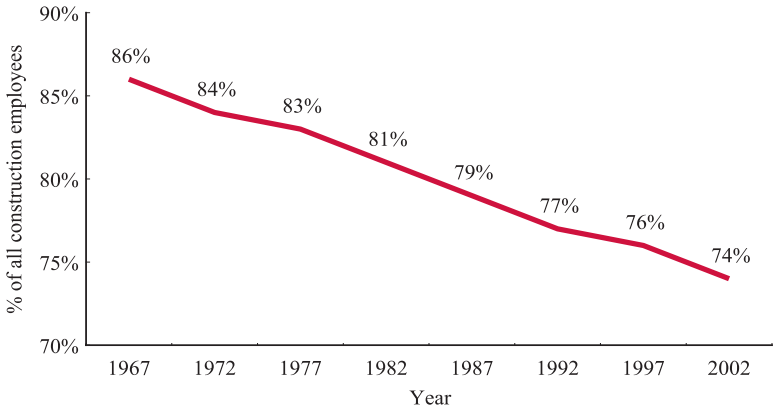
Using this coding system, CPS recodes the civilian workforce into 10 major occupational groups:

- Management, business, and financial occupations (0010-0950)
- Professional and related occupations (1000-3540)
- Service occupations (3600-4650)
- Sales and related occupations (4700-4960)
- Office and administrative support occupations (5000-5930)
- Farming, fishing, and forestry occupations (6000-6130)
- Construction and extraction occupations (6200-6940)
- Installation, maintenance, and repair occupations (7000-7620)
- Production occupations (7700-8960)
- Transportation and material moving occupations (9000-9750)

Drawing on CPS data, chart 10b depicts the number and proportion of employment by detailed occupational categories with the corresponding codes. Some related occupations are combined; for example, installation, maintenance, and repair workers are listed under the repairer occupation. As the CPS provides detailed demographic and employment information on an individual level, much of this chart book's demographic and employment data are taken from the CPS. Except for special notes, the regrouped categories are used consistently in this book for pages on demographics and employment by occupations. The numbers presented in this chart book may differ from other published counts because occupations may be grouped in different ways.

Some pages in this chart book, such as page 11, distinguish between "production" (or blue-collar) and "non-production" (or white-collar) workers. "Production workers" (coded in the CPS as 6200 to 9750) include skilled craft workers, construction laborers, helpers, and other occupations related to production, which account for a major proportion (77.7%) of the construction workforce (chart 10b). The balance are defined as "non-production workers," consisting of managerial and administrative support workers (coded 0010 to 5930). Very few respondents in construction (< 0.1%) were in farming, fishing, and forestry occupations (coded 6000-6130).

10a. "Construction workers" as a percentage of all construction employees, 1967-2002 (With payroll)



1. U.S. Census Bureau, 2002 Economic Census, Construction, EC02-231-236115 (RV), July 2005.

2. *Standard Occupational Classification Manual: 2000*. U.S. Office of Management and Budget. Lanham, MD: Bernan Press; and Springfield, VA: National Technical Information Service. Also *see* U.S. Bureau of Labor Statistics' website: http://www.bls.gov/soc/ (Accessed November 2007).

10b. Occupational classification and distribution in construction, 2005 (16 years and older)

Occupation	Code	Description	Number (thousands)	Percent
Carpenter	6230	Carpenter	1,622	14.5
Laborer	6260	Construction laborer	1,427	12.8
Foreman	6200	First-line supervisor/ manager of construction trade	897	8.0
Construction manager	0220	Construction manager	838	7.5
Admin support	5000-5930	Administrative support	644	5.8
Electrician	6350	Electrician	636	5.7
Painter	6420, 6430	Painter and paperhanger	621	5.6
Manager	0010-0430 (except 0220)	Manager (except construction manager)	460	4.1
Plumber	6440	Pipelayer, plumber, pipefitter, and steamfitter	455	4.1
Professional	0500-3650	Professional	383	3.4
Op engineer	6320	Operating engineer and other construction equipment operator	318	2.8
Repairer	7000-8960 (except 7310, 7410, 8140)	Installation, maintenance, and repair worker	309	2.8
Roofer	6510	Roofer	264	2.4
Heat A/C mech	7310	Heating, air conditioning, and refrigeration mechanic	261	2.3
Carpet and tile	6240	Carpet, floor, and tile installer and finisher	253	2.3
Drywall	6330	Drywall installer, and ceiling tile installer	239	2.1
Brickmason	6220	Brickmason, blockmason, and stonemason	213	1.9
Truck driver	9130	Driver/sales worker and truck driver	176	1.6
Service	3700-4980	Service/sales	162	1.4
Helper	6600	Construction helper	125	1.1
Concrete	6250	Cement mason, concrete finisher, and terrazzo worker	105	0.9
Welder	8140	Welding, soldering, and brazing worker	103	0.9
Highway maint	6730	Highway maintenance worker	81	0.7
Material moving	9000-9750 (except 9130, 9520)	Transportation and material moving	78	0.7
Sheet metal	6520	Sheet metal worker	77	0.7
Dredge	9520	Dredge, excavating, and loading machine operator	64	0.6
Plasterer	6460	Plasterer and stucco mason	49	0.4
Ironworker	6530	Structural iron and steel worker	48	0.4
Insulation	6400	Insulation worker	39	0.4
Fence erector	6710	Fence erector	33	0.3
Power installer	7410	Electrical power-line installer and repairer	29	0.3
Misc worker	6760	Miscellaneous construction and related worker	29	0.3
Inspector	6660	Construction and building inspector	27	0.2
Driller	6820	Earth driller, except oil and gas	20	0.2
Paving	6300	Paving, surfacing, and tamping equipment operator	20*	0.2
Glazier	6360	Glazier	20*	0.2
Elevator	6700	Elevator installers and repairer	14*	0.1
Iron reinforcement	6500	Reinforcing iron and rebar worker	13*	0.1
Boilermaker	6210	Boilermaker	7*	0.1
Other		Includes farming/fishing/forestry, HAZMAT removal, explosives, etc.	17	0.2
TOTAL			**11,178**	**100.0**

Note: Chart 10a - Yearly figures are based on quarterly averages. Construction workers are defined as nonsupervisory and nonclerical.

Chart 10b - Operating engineers maintain and run heavy equipment, such as bulldozers and tower cranes. A brazer joins metals using lower heat than welders use. "Other" includes farming/fishing/forestry, hazardous material removal worker, explosives worker, pile-driver operator, rail-track laying and maintenance equipment operator, and septic tank servicer and sewer pipe cleaner. * = sample size < 30. If a number (thousands) < 35, use with caution because relatively small sample sizes may make findings less reliable.

Source: Chart 10a - U.S. Census Bureau, 2002 Economic Census and previous years, Construction.

Chart 10b - U.S. Bureau of Labor Statistics, 2005 Current Population Survey. Calculations by CPWR Data Center.

Union Membership and Density in Construction and Other Industries

Over 1.2 million construction workers were union members in 2005, accounting for 14.2% of the 8.5 million wage-and-salary workers in construction. Another 54,000 construction workers who were not union members were represented by unions. Of the union members, nearly 1.1 million worked for private-sector companies, and the remainder – 152,000 – were government employees.

These statistics are from the Current Population Survey, which includes two questions about union membership and coverage. First, the survey asks, "On this (main) job, are you a member of a labor union or of an employee association similar to a union?" Respondents who answer "no" are then asked, "On this job, are you covered by a union or employee-association contract?" The survey asks these questions of wage-and-salary employees only.

Union membership rates are calculated using the number of respondents who answer "yes" to the union membership question, divided by the total number of respondents. "Union density" is union membership plus union coverage of workers not belonging to a union among employed wage-and-salary workers who respond to those questions.

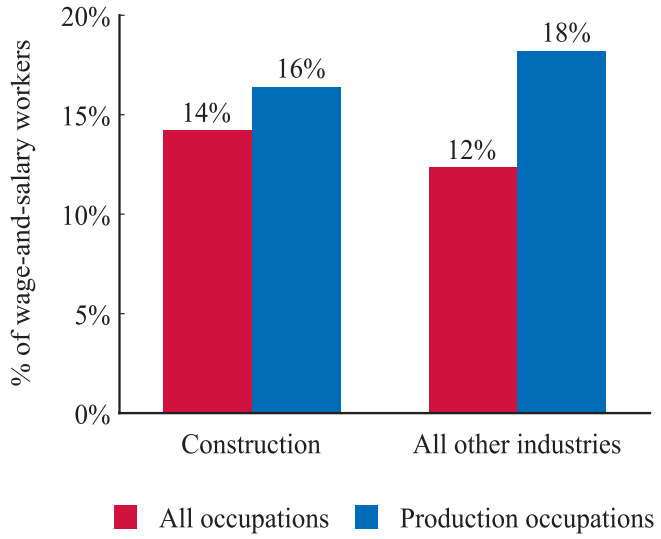
The union density rate of wage-and-salary workers (public and private sector) in construction is higher than in all industries. Also, the union density rate among construction production (blue-collar) workers is higher than density among wage-and-salary construction workers with all occupations (chart 11a).[1]

Public-sector construction has more than double the union density of private-sector construction - about 3 in 10 compared with 1 in 10, respectively (chart 11b).

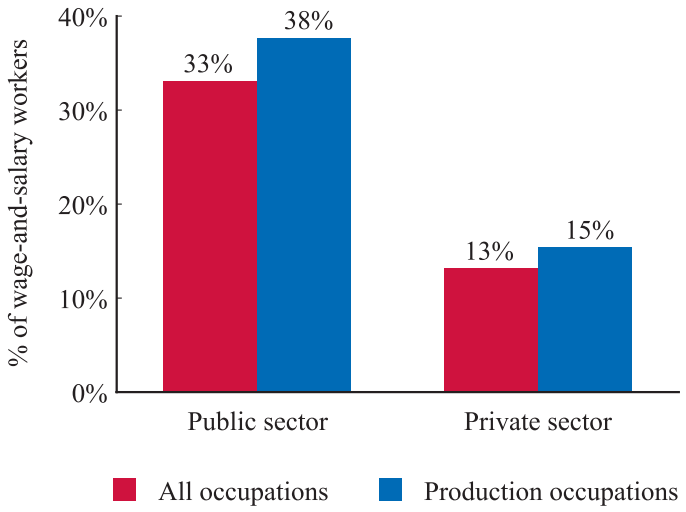
Union membership in construction varies as well among construction occupations (chart 11c) and geographic areas. Five states had an average union membership rate from 2003 to 2005 of more than 30% – with Minnesota, New Jersey, Alaska, Hawaii, and Illinois listed in increasing order (chart 11d).

Unlike this chart book, most publications refer to union density among private-sector wage-and-salary workers only. And, because the Current Population Survey interviews people who have permanent addresses and telephone numbers, it may miss some transient workers, of whom a large proportion works non-union. As a result, union density figures provided here may be slightly higher than presented elsewhere.

11a. Union density in construction and other industries, production occupations and all occupations, 2005 (Wage-and-salary workers)

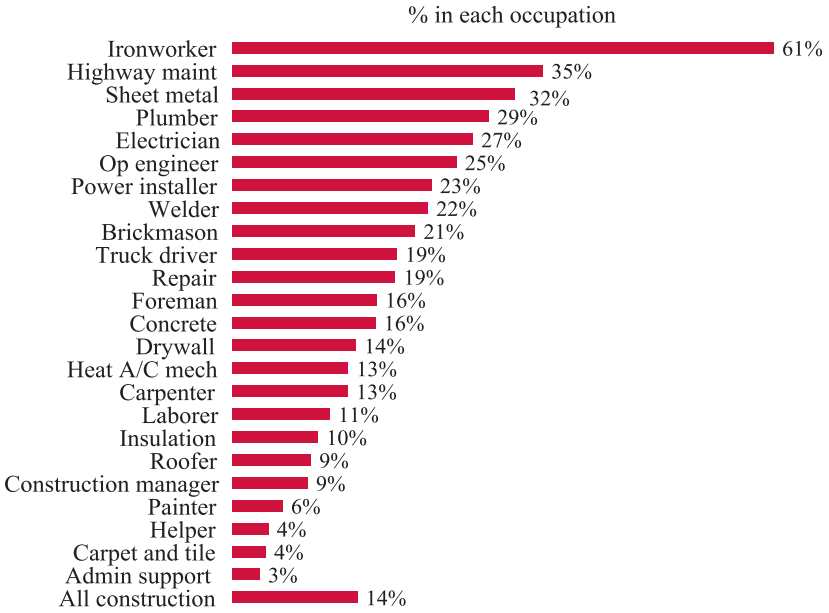


11b. Union density in public- and private-sector construction, production occupations and all occupations, 2005 (Wage-and-salary workers)

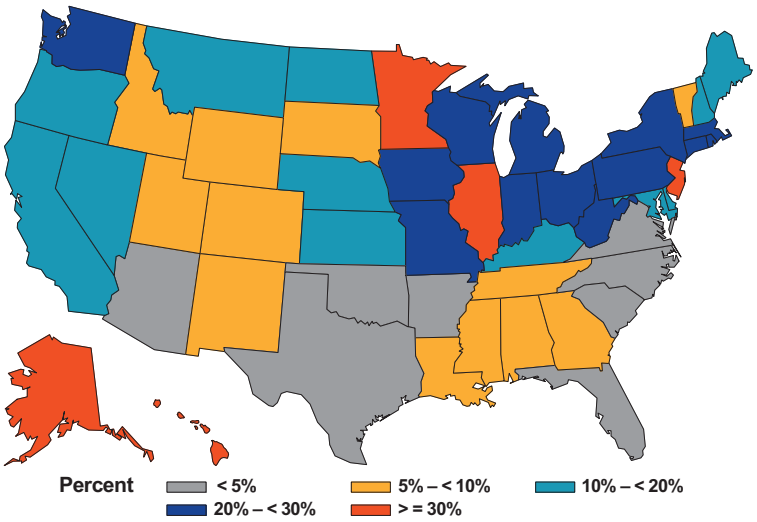


1. Production workers are all workers, except managerial and administrative support staff – and include the self-employed.

11c. Union membership, by selected construction occupation, 2005 (Wage-and-salary workers)



11d. Union density in construction, by state, 2003-2005 average (Wage-and-salary workers)



Note: Charts 11a and 11b - Production occupations, as distinguished from managerial and support staff, are coded as 6200-9750 in the Current Population Survey (*see* chart book page 10). Union density is union membership plus union coverage of workers not belonging to a union.

Chart 11c - These figures do not reflect total membership in any given union, which may include more than one occupation.

Source: Charts 11a, 11b, and 11c - U.S. Bureau of Labor Statistics, 2005 Current Population Survey. Calculations by CPWR Data Center.

Chart 11d - U.S. Bureau of Labor Statistics, 2003, 2004, and 2005 Current Population Survey. Calculations by CPWR Data Center.

Worker Age in Construction and Other Industries

The labor force in the United States is rapidly growing older. The average age of the national labor force jumped from 37.3 to 40.6 years of age between 1985 and 2005, while median age rose from 35 to 41 years old.[1] (The median is the midpoint; half the workers are older and half are younger.) This aging trend is expected to influence both construction employment and the economy overall; this trend portends significant labor and skills shortages.

Construction workers are typically younger than the national labor force, but, they follow trends in the national labor force, pointing to an aging workforce. In 2005, the average age of construction workers was 39 years old, three years older than in 1985 (chart 12a). The average age of construction workers peaked at 39.12 years of age in 2002, and then declined slightly to 39.04 years in 2005. During this same period, the average age for the entire workforce continued to grow from 39.98 to 40.63 years old. The slight drop in the average age of construction workers occurred during a period when a significant number of young Hispanic workers joined the construction workforce (*see* chart book pages 13, 14, 15, and 16). As a result of this influx, construction workers now are younger than workers in any other industry on average, younger even than those in agriculture and the retail sector, which also typically employ younger workers (chart 12b).

The upward shift in mean (average) and median age reflects the shifting structure of the construction labor force: fewer young workers entering the work force leads to an increasing predominance of older workers. From 1985 to 2005, the proportion of construction workers aged 45 to 54 years increased. The proportion of those aged 35 to 44 years increased from 22% to 27%, a 23% increase. At the same time, the proportion of younger construction workers, aged 16 to 19 years, decreased gradually (chart 12c). The proportion of those in the 20-to-24-year age group decreased from 14% to 11%, as did the proportion of those in the 25-to-34-year age group, from 33% to 26%, a 21% decrease for both age groups.

A major influence on the age composition of the labor force has been the baby-boom generation, those born between 1946 and 1964.[2] For many years, this group has accounted for a large portion of the construction workforce and the baby boomers are now starting to retire. In 2005, about 4.4 million baby boomers (who were between 41 and 59 years of age) worked in construction, accounting for 40% of the construction workforce. By comparison, in 2000 there were 4.6 million baby boomers accounting for 49% of the construction workforce. A similar trend appeared in the labor force overall: the number of baby boomers decreased from 62.9 million in 2000 to 59.6 million in 2005, and their share of the workforce declined from 46.5% to 42.1%. But these data suggest that baby boomers in construction are retiring earlier than those in the overall labor force.

The relatively earlier exit of the baby boomers in construction from the prime-aged workforce will have a profound effect on this industry. A considerable number of workers are needed to replace jobs vacated by retirees and jobs created from industry expansion (*see* chart book page 30). The baby-busters, born 1965-76 who are already active in the labor market, may not be able to fully fill positions left by retired baby boomers due to their much lower birthrate than the boomers. The large number of new immigrants (such as Hispanic immigrant workers) has partially diminished the labor shortage in construction, but many of them have a lower educational level (*see* chart book page 28) and are employed in lower-skilled jobs (*see* chart book page 16). Therefore, skills shortages in particular will continue to be a challenge to the construction industry in the next decade.

Looking to the future, the population over age 65 will climb dramatically in the coming decades. According to projections, the number of workers aged 65 and older will more than double by 2050, from 3.5% to 7.4% of the overall workforce,[3] as people work longer, due in part to reform of Social Security retirement benefits.[4] The growth of the older population combined with the increased participation rates among the elderly will cause the workforce to age continually until 2020 (chart 12d). This trend will bring increased attention to issues related to delaying retirement, retiree health benefits availability and affordability, long-term care, and income production in retirement.[5]

1. All the numbers used in the text, except for those with special notes, are from the 2005 Current Population Survey. Calculations by CPWR Data Center.

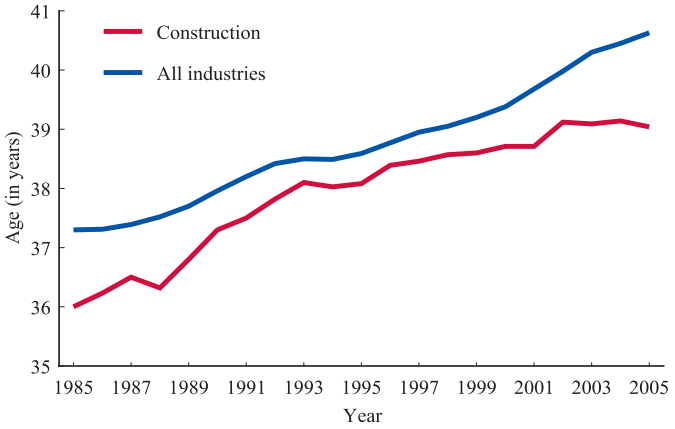
2. Mitra Toossi. Labor force projections to 2014: retiring boomers. *Monthly Labor Review*, November 2005, page 25-44.

3. Mitra Toossi. A new look at long-term labor force projections to 2050. *Monthly Labor Review*, November 2006, page 19-39.

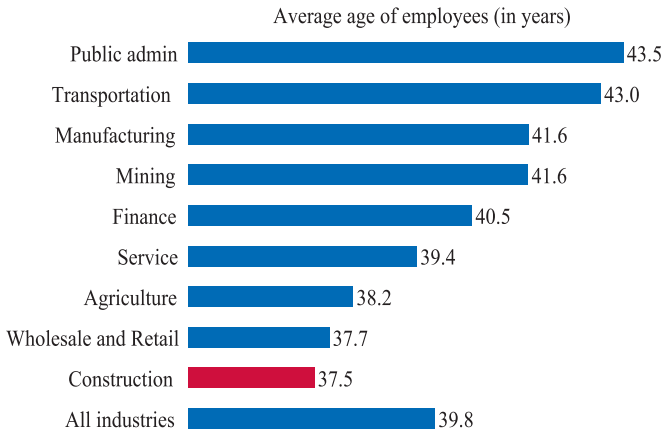
4. U.S. Social Security Administration, Social Security Basic Facts: **http://www.ssa.gov/pressoffice/IncRetAge.html** (Accessed November 2007). The age for collecting full Social Security retirement benefits will gradually increase from 65 to 67 over a 22-year period beginning in 2000 for those retiring at 62. It is estimated that there are currently 3.3 workers for each Social Security beneficiary. By 2032, there will be 2.1 workers for each beneficiary.

5. Jack VanDerhei, Craig Copeland, and Dallas Salisbury. 2006. *Retirement Security in the United States – Current Sources, Future Prospects, and Likely Outcomes of Current Trends*. The Employee Benefit Research Institute-Education and Research Fund (EBRI-ERF).

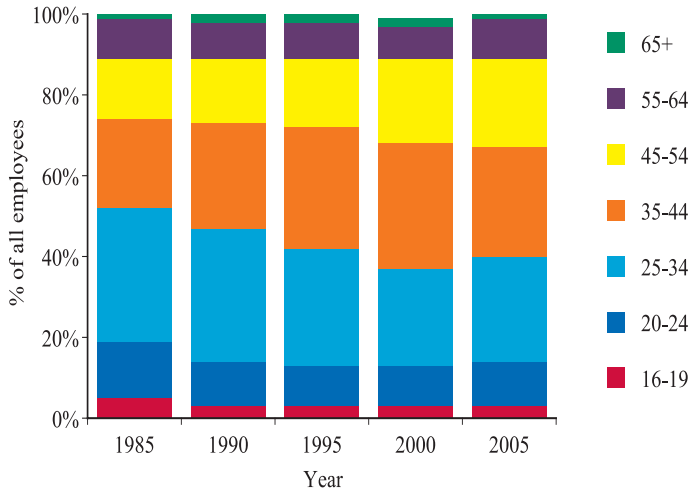
12a. Average age of workers, construction and all industries, 1985-2005 (All types of employment)



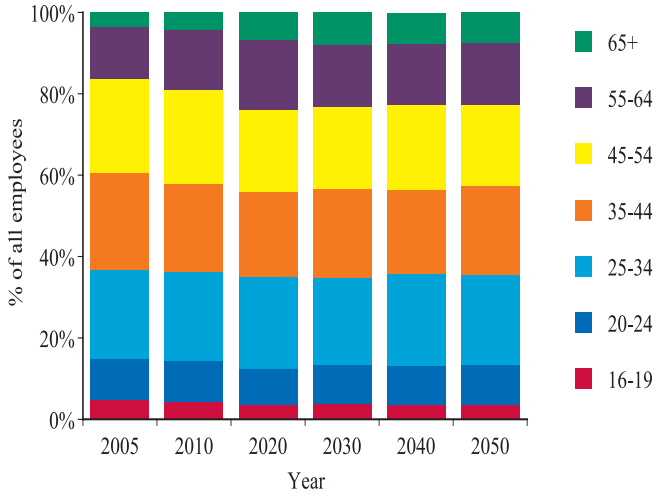
12b. Average age of employees, by industry, 2005 (Wage-and-salary workers)



12c. Age distribution in construction, selected years, 1985-2005 (All types of employment)



12d. Age distribution in all industries, selected years, 2005-2050 (All types of employment)



Note: Chart 12b - Excludes self-employed workers.

Source: Charts 12a and 12c - U.S. Bureau of Labor Statistics, 2005 and previous years Current Population Survey. Calculations by CPWR Data Center.

Chart 12b - U.S. Bureau of Labor Statistics, 2005 Current Population Survey. Calculations by CPWR Data Center.

Chart 12d - Mitra Toossi. A new look at long-term labor force projections to 2050. *Monthly Labor Review*, November 2006, page 19-39.

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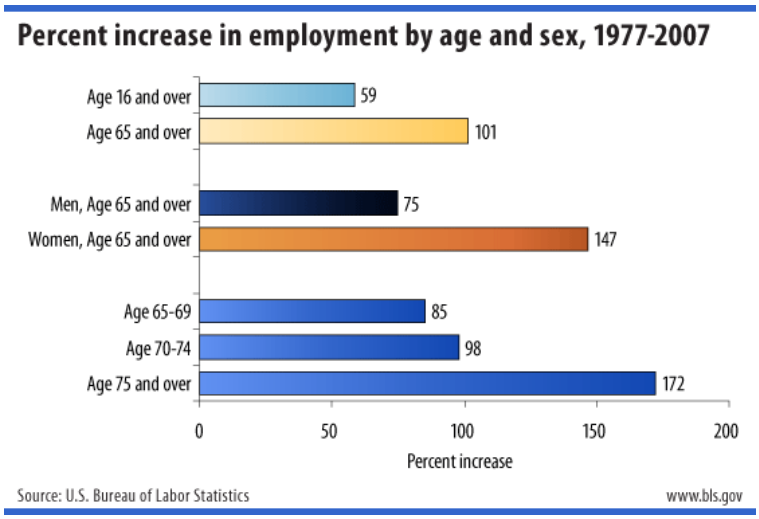
Older workers

Are there more older people in the workplace?

Between 1977 and 2007, employment of workers 65 and over increased 101 percent, compared to a much smaller increase of 59 percent for total employment (16 and over). The number of employed men 65 and over rose 75 percent, but employment of women 65 and older increased by nearly twice as much, climbing 147 percent. While the number of employed people age 75 and over is relatively small (0.8 percent of the employed in 2007), this group had the most dramatic gain, increasing 172 percent between 1977 and 2007.



Source: Current Population Survey (CPS) | Chart Data

Does this increase just reflect the aging of the baby-boom population?

No, because in 2007 the baby-boom generation — those individuals born between 1946 and 1964 — had not yet reached the age of 65.

Between 1977 and 2007, the age 65 and older civilian noninstitutional population — which excludes people in nursing homes — increased by about 60 percent, somewhat faster than the civilian noninstitutional population age 16 and over (46 percent). Yet employment of people 65 and over doubled while employment for everyone 16 and over increased by less than 60 percent. How can employment increase more than the population? A larger share of people 65 and older is staying in or returning to the labor force (which consists of those working or looking for work). The labor force participation rate for older workers has been rising since the late 1990s. This is especially notable because the 65-and-over labor force participation rate had been at historic lows during the 1980s and early 1990s.

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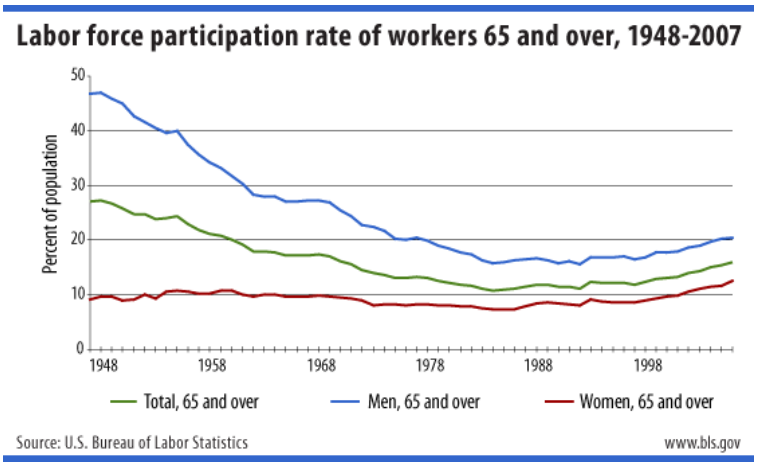
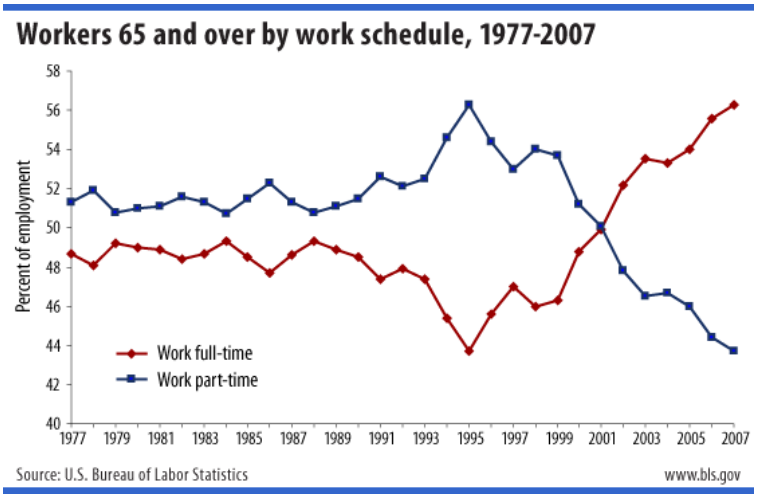


Source: Current Population Survey (CPS) | Chart Data

Are older workers choosing part-time or full-time employment?

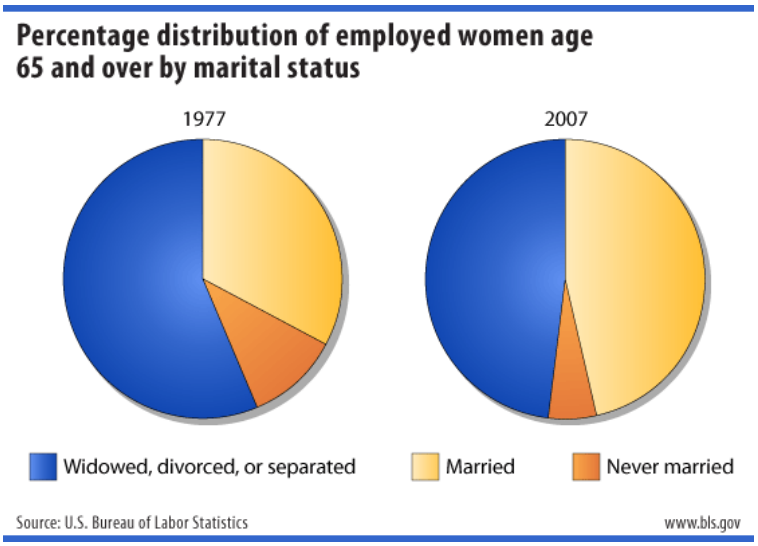
Since the mid-1990s there has been a dramatic shift in the part-time versus full-time status of the older workforce. The ratio of part-time to full-time employment among older workers was relatively steady from 1977 through 1990. Between 1990 and 1995, part-time work among older workers began trending upward with a corresponding decline in full-time employment. But after 1995, that trend began a marked reversal with full-time employment rising sharply. Between 1995 and 2007, the number of older workers on full-time work schedules nearly doubled while the number working part-time rose just 19 percent. As a result, full-timers now account for a majority among older workers: 56 percent in 2007, up from 44 percent in 1995.



Source: Current Population Survey (CPS) | Chart Data

What portion of employed older women are married?

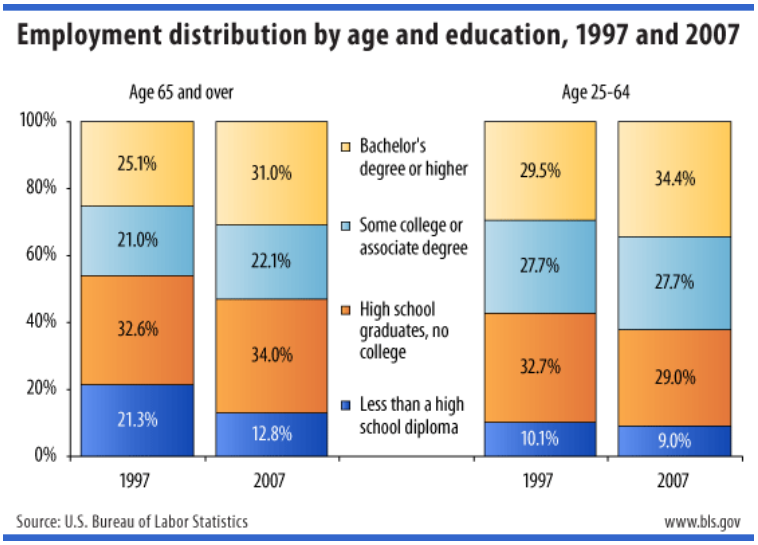
In 1977, about one-third of employed women 65 and older were married, but by 2007, married women accounted for nearly one-half of these workers. Women workers who were widowed, divorced or separated represented 56 percent of employed women 65 and older in 1977; by 2007 their share had fallen to 48 percent. During the same time period, the fraction of older women workers who were never married shrank from about 11 percent to about 6 percent.



Source: Current Population Survey (CPS) | Chart Data

How do older workers stack up against younger workers in terms of education?

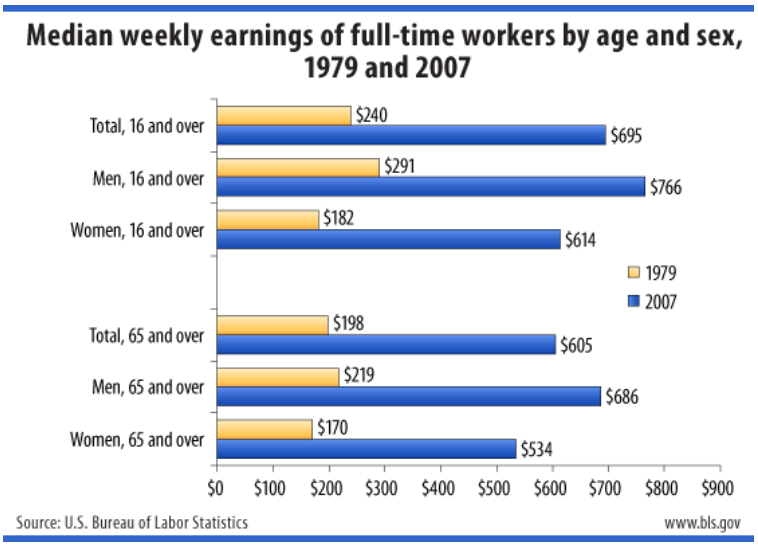
It wasn't that long ago that older and younger workers had very different educational backgrounds. In 1997, 21 percent of employed older workers had less than a high school education compared to only 10 percent of those ages 25-64. By 2007, older workers with less than a high school education accounted for just 13 percent of that group's employment, compared with 9 percent for younger workers.



Source: Current Population Survey (CPS) | Chart Data

How do wages of older workers measure up against wages for all workers?

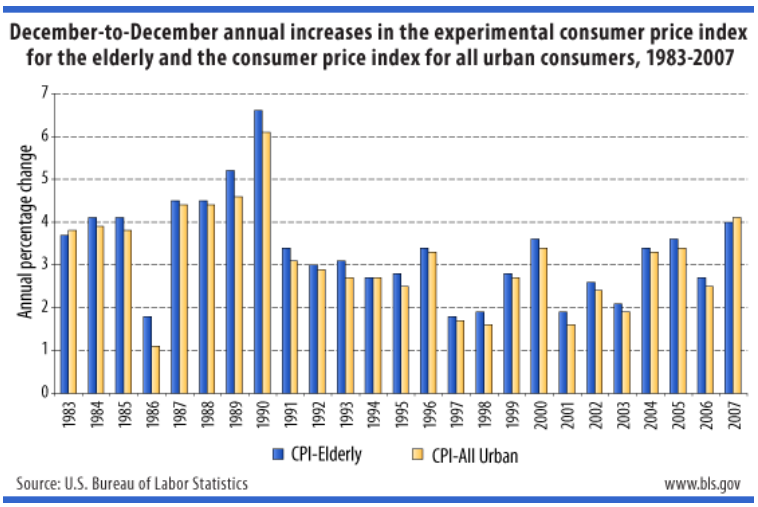
Earnings of workers 65 and older have long been below those of all workers. In 1979, median weekly earnings for full-time workers age 65 and older were $198 compared to $240 for all full-time employees age 16 and up. In 2007, earnings of older workers were $605 per week, still below the median of $695 for all workers. (All of these earnings amounts are in current dollars.) Over the long term, however, earnings of older workers have risen at a slightly faster pace than the total workforce. In 1979, median earnings of older full-time employees were 83 percent of those ages 16 and up; but, by 2007, that ratio had climbed to 87 percent.



Source: Current Population Survey (CPS) | Chart Data

How does inflation affect older workers?

A number of years ago, the Bureau of Labor Statistics created an experimental consumer price index (CPI) for Americans 62 years of age and older. In this index, items purchased more frequently by the older population, such as medical care, have a higher weight than in the official CPI (which covers a much broader share of the population); items purchased less frequently, such as clothing, have a lower weight. Data from the experimental series show that the annual inflation rate for seniors has been equal to or greater than the inflation rate for all urban consumers in every year since that series began except for 1983 and 2007. However, the yearly differences have been fairly small; over the past 25 years the index for older Americans has risen an average of 3.3 percent each year, as compared to 3.1 percent for the official CPI.

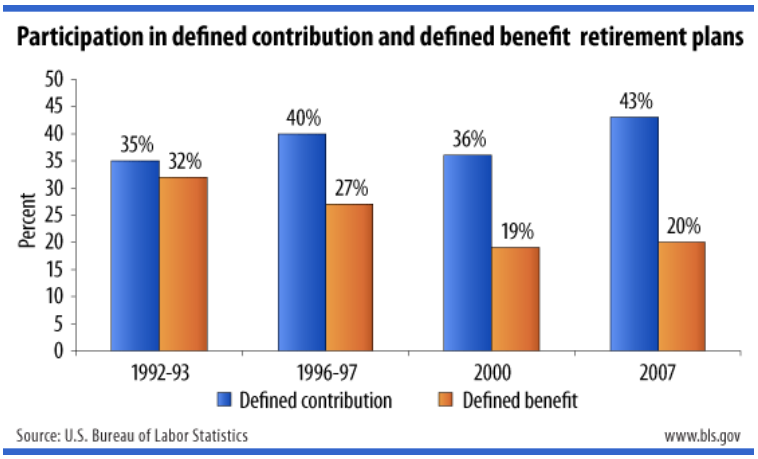


Source: Consumer Price Index (CPI) | Chart Data

How have retirement benefits changed?

Among all workers, participation in defined benefit plans has fallen while participation in defined contribution plans has risen. In defined benefit plans, companies promise to pay workers a specified amount in retirement benefits. In defined contribution plans, companies promise to contribute a specified amount, but make no assurance as to the final payout. Among all workers, there has been a decrease in the percentage covered by defined benefit ("payout") plans and an increase in the percentage covered by defined contribution ("pay in")

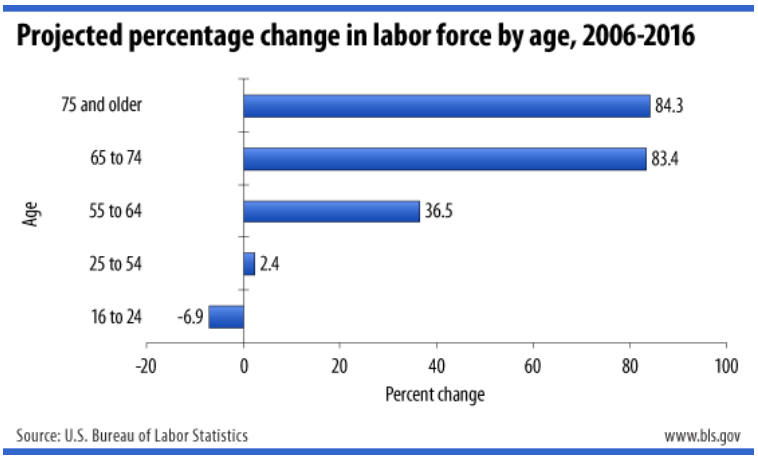
plans. For more and more workers, this means that risk — in terms of steady retirement income — has been transferred from the employer to the eventual retiree.



Source: National Compensation Survey - Benefits | Chart Data

Is this graying of the workforce expected to continue?

Definitely. BLS data show that the total labor force is projected to increase by 8.5 percent during the period 2006-2016, but when analyzed by age categories, very different trends emerge. The number of workers in the youngest group, age 16-24, is projected to decline during the period while the number of workers age 25-54 will rise only slightly. In sharp contrast, workers age 55-64 are expected to climb by 36.5 percent. But the most dramatic growth is projected for the two oldest groups. The number of workers between the ages of 65 and 74 and those aged 75 and up are predicted to soar by more than 80 percent. By 2016, workers age 65 and over are expected to account for 6.1 percent of the total labor force, up sharply from their 2006 share of 3.6 percent. (For more data see Civilian labor force by sex, age, race, and Hispanic origin.)



Source: Employment Projections | Chart Data

With the baby-boom generation about to start joining the ranks of those age 65 and over, the graying of the American workforce is only just beginning.

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Workforce Issues

Construction

Through a meeting with association representatives on November 25, 2003, subsequent Executive Forums, and a review of current industry research, ETA staff identified three primary types of workforce challenges currently facing the construction industry: pipeline challenges, skill development challenges, and capacity challenges. A sample of key challenges facing the industry includes the following:

- The construction industry faces a critical, and growing, shortage of workers. "The most critical issue facing the construction industry today is the growing gap between the supply of and demand for skilled construction laborers," noted a report from the Construction Users Round Table in 2001. (Source: Construction Users Round Table, Workforce Development Survey, November 2001)
- The image of the construction industry could be improved. For example, some job seekers believe that construction occupations are not safe, are not aware of employment opportunities in the industry, and are not aware of the earnings potential available through a career in the industry.
- Youth entering the construction industry often lack the skills and background that the industry requires. These requirements include employability skills, such as work ethic, and academic training, such as the background in math required by certain occupations.
- The aging of the construction workforce is a significant challenge for the industry. With baby boomers retiring, the industry is losing skilled, qualified workers.
- Workers with limited English language skills comprise a significant portion of the construction workforce. Communicating with these workers can be challenging, and improving their English language skills can help these workers advance in the industry.

- Snapshot
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Construction Industry

Innovative Workforce Solutions to Help Growing Construction Industry Address Hiring, Training, and Retention Challenges

In September 2004, U.S. Secretary of Labor Elaine L. Chao announced a series of investments totaling more than $25 million to address the workforce needs of the construction industry. These investments result from forums which the U.S. Department of Labor hosted over the past year with construction industry leaders, educators, and the public workforce system to identify the industry's hiring, training, and retention challenges.

Other Construction Industry Information

- Profile
- Profile - PDF Version
- Investments
- Report
- Report Appendix

DOL has sought to understand and implement industry-identified strategies to confront critical workforce challenges. It has listened to employers, representatives from industry associations and labor-management organizations, and others associated with the construction industry regarding their efforts to identify challenges and implement effective workforce strategies. However, the challenges they face are far too complex for one institution or industry sector to solve alone. DOL's Employment and Training Administration is supporting comprehensive partnerships that include employers, labor-management organizations, the public workforce system, and other entities that have developed innovative approaches that address the workforce needs of business while also effectively helping workers find good jobs with good wages and promising career pathways in the construction industry.

This set of workforce solutions is based on the construction industry's priorities that address issues such as:

- expanding the pipeline of youth entering the construction industry;
- enhancing the capacity of secondary schools to prepare youth to enter post-secondary programs and employment in the construction industry;
- providing a career lattice approach to the recruitment, education, training, professional development, and job placement of construction workers;
- helping alternative labor pools, such as women, learn about career opportunities and gain skills needed in the construction industry;
- enhancing the capacity of community colleges and the public workforce system to help alternative labor pools enter the industry;
- developing accelerated training programs that help dislocated workers quickly enter the construction industry; and
- creating comprehensive partnerships that help entry-level workers enhance their skills and utilize apprenticeship and other training programs.

The grants are intended to provide genuine solutions, leadership, and models for partnerships that can be replicated in different parts of the country.

In addition to investing in comprehensive solutions that address the construction industry's pressing workforce challenges, the U.S. Department of Labor recently helped launch a national initiative to increase awareness of career opportunities in the skilled trades. Through "Skills to Build America's Future," the U.S. Department of Labor is working with the National Association of Home Builders, the National Heavy & Highway Alliance, and the Construction Industry Round Table to promote the skilled trades. The initiative utilizes a wide array of innovative strategies, from partnerships with schools to sponsorships with sports leagues to TV and radio ads. Like so many industries, the construction industry seeks an enhanced image, and the "Skills to Build America's Future" initiative is a strategic effort that will boost the profile of key occupations in construction.

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Back to Top

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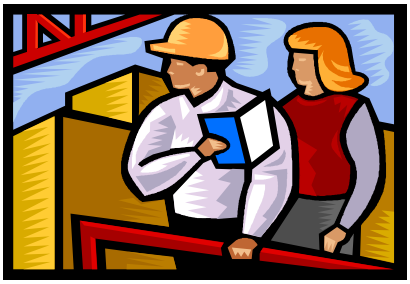
America's Construction Industry: Identifying and Addressing Workforce Challenges

Report of Findings and Recommendations
For
The President's High Growth Job Training Initiative in the Construction Industry



An ETA/Business Relations Group Report

December 2004

Table of Contents

Preface	Page i
Executive Summary	Page iii
Introduction: Identifying and Addressing Workforce Challenges	Page 1
Section I: Overview of the Construction Industry and Sectors	Page 3
Section II: The President's High Growth Job Training Initiative	Page 8
Section III: Identification and Analysis of the Construction Industry's Workforce Challenges and Solutions	Page 12
Section IV: Implementation of Solutions and Next Steps	Page 20
Section V: Appendices	Page 23
• Appendix A: Participants in Executive Forums and Industry Round Table Discussion	Page 24
• Appendix B: Construction Industry's Solutions Matrices	Page 26
• Appendix C: Overview of Skills to Build America's Future Initiative	Page 64

Preface

The following report, prepared by the U.S. Department of Labor (DOL), Employment and Training Administration (ETA), details the efforts around President George W. Bush's High Growth Job Training Initiative in the construction industry. It provides an overview of the construction industry, outlines the President's High Growth Job Training Initiative in the construction industry, examines the workforce challenges facing the industry, and discusses possible solutions to address the industry's challenges.

Each year, the Federal Government invests over $15 billion in the public workforce investment system to provide employment and training services across the United States. As part of its ongoing efforts to use taxpayer dollars more effectively and efficiently, ETA is implementing the President's High Growth Job Training Initiative. The Initiative, of which this report is a part, is designed to demonstrate the power of a demand-driven workforce system that tailors local workforce investment activities to reflect the workforce needs of local employers. Recognizing the relationship between workforce development and economic development, ETA promotes partnerships between *education*, *employment*, and *economic development*. Through these partnerships, workers can gain the skills they need to succeed through training programs designed by local employers and delivered through community colleges and other education and training institutions. Effective partnerships must be truly driven by, and responsive to, the needs of employers. The President's High Growth Job Training Initiative models the power of this approach in 12 high growth industries.

The construction industry was selected for the President's High Growth Job Training Initiative in large part because total employment in construction is projected to increase by over one million new jobs between 2002 and 2012. In addition, other industries and sectors depend on construction to build and maintain the facilities and infrastructure that are vital to their daily operations. Finally, many occupations in construction (e.g. carpenters, electricians) are also integral to other industries, so workforce solutions that target these occupations may benefit other industries as well.

The construction industry provides job seekers with extensive career opportunities. Growth is projected for occupations throughout the industry, from laborers to construction managers. These positions offer good wages and have varying education and training requirements, from short term on-the-job training to post-secondary education such as a Bachelor's degree. Further, construction is truly a national industry, with job opportunities available throughout the country.

The construction industry has demonstrated a strong commitment to workforce development. For example, key stakeholders in the industry, including trade associations, employers, and labor- management organizations, are heavily involved in apprenticeship programs, which ensure that workers have the skills that employers demand and helps them progress in the labor market. Over 6,000 apprenticeship programs for the construction industry are currently registered with DOL's Office of Apprenticeship Training, Employer and Labor Services. Further, the industry's

stakeholders have already developed a wide array of innovative solutions to address its workforce challenges. Solutions range from partnering with Job Corps to providing child care on the job site.

ETA recognizes and commends this commitment, and the President's High Growth Job Training Initiative will work collaboratively with the industry to expand its workforce development efforts. As this report details, the construction industry faces a number of pressing workforce development challenges, including boosting its image and training entry-level workers. Comprehensive partnerships among education, employment, and economic development are needed to effectively address these challenges, and ETA seeks to partner with industry to model such collaborations.

This report is a review and analysis of ETA's work with the construction industry under the President's High Growth Job Training Initiative. It is intended, in part, to provide employers, educators, the workforce investment system, policymakers, and funding sources with a strategic guide to the most critical workforce challenges facing the industry and identify some of the preliminary solutions developed through the partnership of private industry, the public workforce system, and education.

To those who gave generously of their time, effort, and other resources for this work, thank you for your thoughtful contributions. To those reading about this Initiative for the first time, ETA looks forward to your input in building a system to train a world-class construction workforce for our country.

Executive Summary

Growth Projections for the Construction Industry

The construction industry is projected to be among the economy's top ten largest sources of employment growth through 2012. The construction industry is projected to grow at an average annual rate of 1.3 percent between 2002 and 2012, adding over one million new jobs. Employment growth is projected for a wide variety of occupations throughout the construction industry.

Education and Training in the Construction Industry

Basic education and training requirements vary across the construction industry. In many construction occupations, emphasis is on "on-the-job training" and apprenticeships. Apprenticeship programs are one of the primary workforce solutions being implemented in the construction industry. Over 6,000 apprenticeship programs for the construction industry are currently registered with the Office of Apprenticeship Training, Employer and Labor Services (OATELS) of the U.S. Department of Labor (DOL). As of October 2004, 156,223 enrollees took part in OATELS sponsored apprenticeships in the construction industry. There are also a number of other post-secondary academic programs targeted at training for occupations in the construction industry that are offered by community colleges, universities, and other entities. In addition to on-the-job training, apprenticeship, and academic programs, the industry has implemented a wide array of innovative strategies to address its workforce challenges.

The President's High Growth Job Training Initiative

The President's High Growth Job Training Initiative is designed to provide national leadership for a demand-driven workforce system that ensures no worker is left behind. It is a strategic effort to prepare workers for new and increasing job opportunities in high growth/high demand and economically vital industries and sectors of the American economy. Through the initiative the Employment and Training Administration (ETA) identifies high growth/high demand industries such as construction, works with industry leaders to determine their key workforce challenges, and invests in demonstration projects that help ensure individuals gain the skills that they need to get good jobs with good wages in rapidly expanding or transforming industries. The foundation of this initiative is partnerships between the publicly funded workforce investment system, business and industry representatives, and education and training providers, such as community colleges. The purpose of these partnerships is to develop innovative solutions or replicate models that address a targeted industry's workforce issues.

Why Construction Was Targeted Through the President's High Growth Job Training Initiative

Construction was one of the industries targeted through the President's High Growth Job Training Initiative in large part because it is projected to be among the economy's top 10 largest sources of employment growth through 2012. In addition, other sectors of the economy depend on the construction industry to build and maintain the facilities and infrastructure that are vital to their daily operations. Finally, many occupations in construction (e.g. carpenters, electricians) are also integral to other industries, so workforce solutions that target these occupations may benefit other industries as well.

How Workforce Challenges and Solutions Were Identified

The President's High Growth Job Training Initiative advanced through a three-phase process to identify the workforce challenges of the construction industry, as well as potential solutions. During the first phase, an environmental scan of the industry was conducted to provide a baseline for assessing the industry's needs. ETA Assistant Secretary Emily Stover DeRocco convened five Executive Forums in Washington, D.C. with leaders in the construction industry to learn more about the industry's workforce challenges. Industry leaders informed ETA that construction is experiencing workforce challenges in four broad areas. First, the image of the industry could be improved among key demographic groups, including youth, parents, educators, and guidance counselors. Second, the industry faces recruiting challenges, including recruiting youth and individuals in non-traditional labor pools. Further, the skills of youth could be improved, and the capacity and capability of some of the education and training providers that serve youth could be enhanced. Finally, the skills of both entry-level and incumbent workers could be improved, and the capacity and capability of some of the education and training providers that serve these workers could be enhanced.

ETA then hosted a Construction Workforce Solutions Forum where approximately 60 industry leaders identified over 400 potential solutions to the industry's workforce challenges (see Appendix B for the top twenty-eight solutions identified by participants). The following is a brief overview of the four key challenges and the types of solutions identified:

1. Image and Outreach

Industry leaders noted that the industry's image could be enhanced in a number of areas, including safety, skill requirements, and corporate culture. For example, industry leaders reported that jobs in the industry are seen as dangerous. Further, industry leaders reported that the image of the construction industry could be improved among several different demographic groups, including youth, parents, educators, and guidance counselors. For example, youth and guidance counselors are not aware of the skills required by many occupations in construction.

Potential solutions for addressing this challenge include launching a national media campaign to improve the image of the industry and expanding or creating construction "career academies" in high schools.

2. Recruitment

A number of industry leaders noted that the construction industry is experiencing a shortage of workers. This current shortage is complicated by two trends: the growth of the industry, and the retirement of the "baby boomers." Further, the construction industry has difficulty recruiting individuals from two general demographic groups: youth and non-traditional labor pools (e.g. women). The industry has difficulty recruiting individuals from these demographic groups for several reasons, including a lack of awareness of job opportunities in the industry and a poor industry image.

Attendees generated a host of potential solutions to recruit workers, such as providing offenders with training while they are incarcerated and marketing the industry at non-traditional venues (e.g. NASCAR events and rodeos).

3. Skill Development and Education and Training Capacity: Youth

Industry leaders reported that some youth lack academic and employability skills needed in the construction industry. For example, some youth lack the math and/or language skills required in the industry, while others could have a stronger work ethic. At the same time, industry leaders reported that the capacity and capability of some education and training providers that serve youth could be improved. For example, some vocational-technical high schools lack key resources, such as books and curriculum, and secondary school teachers could benefit from spending time in apprenticeship programs.

Attendees identified a range of solutions for helping youth enhance their skills, such as developing summer construction camps for kids and boosting the capacity of secondary schools by having employers "adopt" these institutions.

4. Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers

The fourth broad workforce challenge currently facing the construction industry is developing the skills of entry-level and incumbent workers, as well as boosting the capacity and capability of education and training providers that serve these workers. Attendees highlighted a number of skill development challenges facing entry-level workers, such as the safety and advancement challenges experienced by individuals who possess limited English proficiency. Other entry-level workers lack the skills to effectively use the increasingly complex technology being utilized in the construction industry, such as equipment used in heavy construction projects. Incumbent workers face challenges as well, particularly a need to boost their leadership and management skills. Some workers have little experience working with non-traditional labor pools. Further, the capacity of some education and training providers that serve entry-level and incumbent workers could be improved. For example, some community colleges lack the capacity to accommodate additional students.

Attendees identified several solutions for potentially addressing these challenges, such as developing a comprehensive, partnership-lead career academies and developing more web-based training options.

Next Steps

ETA supports comprehensive business, education, and workforce development partnerships to develop innovative approaches or replicate models that operationally demonstrate how a demand-driven workforce system can more effectively serve the workforce needs of business while also helping workers find good jobs with good wages and promising career pathways. Grants awarded under the President's High Growth Job Training Initiative will implement unique, industry-driven skills training, certification, and career ladder development programs that support identified construction workforce and economic development needs.

Based on the challenges identified by the construction industry and highlighted in this report, DOL has made a series of investments totaling more than $19 million to address workforce needs in the areas of image and outreach; recruitment; skill development and education and training capacity of youth; and skill development and education and training capacity of entry-level and incumbent workers. The demonstrations address the needs of the industry broadly, as well as those of specific industry sectors.

ETA is committed to identifying successful models and resources through the President's High Growth Job Training Initiative in construction and sharing them with the public workforce system. Sharing these models and resources will enable industry stakeholders around the country to develop effective partnerships that simultaneously help the industry address its key workforce challenges and help prepare workers for jobs in a high growth industry that is vital to the economy.

Introduction

Through work on the President's High Growth Job Training Initiative, the Employment and Training Administration (ETA) of the U.S. Department of Labor (DOL) recognizes that workforce development is not separate from economic development and that employment, education, and economic development professionals must work together to solve the workforce challenges of the 21st century economy.

The challenges facing construction stem in part from the demographic trends occurring in America's workforce. It is useful to understand these national workforce shifts, as they provide a context for construction's specific workforce challenges. For nearly two decades, the United States has seen a marked increase in both the size and educational level of the labor force; as a result, the country has experienced strong economic growth. The depth and breadth of the labor pool has been driven by the large numbers of baby boomers, women, and immigrants entering the workforce, as well as a substantial increase in the number of college-educated workers. The current reality is that such growth in new and educated native-born workers has ended. The number of native-born workers age 35-44 will be smaller in the next 30 years and more than 60 million current employees will likely retire during this period.[1] Further, the percentage of the workforce with college degrees is expected to grow very slowly.[2] The construction industry, like others, will be searching for skilled individuals or individuals with strong learning skills who can be effectively and efficiently trained.

In addition to these demographic trends, it is important to note that many industries also face a host of other pressing workforce challenges. For example, the image of the construction industry could be improved – youth are not aware of the skills required by occupations in the industry, and jobs in the industry are seen as dangerous. Further, difficulty recruiting both youth and individuals in non-traditional labor pools is an additional challenge facing the construction industry. These are just two examples from construction – many industries are also coping with a range of other workforce challenges, in addition to the demographic trends described above.

The changing demographics of the workforce and other issues create new challenges and opportunities for employers, and the President's High Growth Job Training Initiative works collaboratively with employers to address their needs by investing in comprehensive workforce partnerships comprised of key industry stakeholders. The President's High Growth Job Training Initiative promotes a demand-driven approach to solving workforce issues, working with industry leaders to identify and address workforce challenges. During Executive Forums, ETA asks industry leaders to describe current and anticipated demand for workers, skill shortages, views on pipeline capacity, promising workforce practices, and knowledge of the existing public workforce system at the local, state, and federal levels. Through Workforce Solutions Forums, ETA works

[1] Facts on Immigration, National Immigration Law Center, March 2001, page 1.
[2] DT Ellwood. "The Spluttering Labor Force of the 21st Century. Can Social Policy Help?" National Bureau of Economic Research, June 2001.

with a wide array of stakeholders to explore potential solutions to the industry's challenges, and ultimately invests in innovative partnerships.

While the demographic shifts in America's workforce and other trends pose daunting hiring and training challenges for employers, these challenges can be overcome through comprehensive collaborations among key industry stakeholders. Through the President's High Growth Job Training Initiative, ETA is investing in innovative partnerships in twelve high growth industries, including construction.

Overview of this report

This report is a review and analysis of the work of the President's High Growth Job Training Initiative in the construction industry. It is organized into the following five sections:

Section I **Overview of the Construction Industry and its Sectors**
Introduces the construction industry and its workforce. The overview provides background on the construction industry and its primary sectors, including job growth projections, education and training requirements, and the changing nature of the industry.

Section II **The President's High Growth Job Training Initiative**
Describes the process by which the President's High Growth Job Training Initiative engaged the construction industry and served as a catalyst to identify workforce challenges and implement solutions.

Section III **Construction Industry Workforce Challenges and Solutions**
Identifies the workforce challenges in the construction industry and reports the industry's recommendations on potential solutions to address those challenges.

Section IV **Implementation of Solutions and Conclusions**
Provides insight into implementation strategies and offers concluding comments.

Section V **Appendices**

Section I
Overview of the Construction Industry and its Sectors

Many types of businesses are involved in the construction industry, including those that construct buildings, set-up and complete engineering projects (such as highways and utility systems), prepare sites for new construction, and subdivide land for sale as potential building sites. Construction work may include new developments, additions, alterations, or maintenance and repairs.

The U.S. Bureau of Labor Statistics (BLS) identifies three primary sectors in the construction industry: construction of buildings contractors, heavy and civil engineering construction contractors, and specialty trade contractors. Construction of buildings contractors build residential, industrial, and commercial buildings. Heavy and civil engineering construction contractors are involved in building sewers, roads, highways, bridges, tunnels, and other types of heavy-construction projects. Specialty trade contractors are engaged in specialized activities such as carpentry, painting, plumbing, and electrical work.[3]

Construction industry representatives define the industry somewhat differently, identifying residential, commercial, and industrial as the three primary sectors. Heavy-highway construction is categorized within the industrial sector by some representatives in the industry; others identify it as a fourth sector in itself. Recognizing that construction stakeholders identify with different sector definitions, the Employment and Training Administration (ETA) of the U.S. Department of Labor (DOL) has made every effort to include stakeholders from all sectors in the President's High Growth Job Training Initiative in the construction industry.

Size of the Industry and Projected Growth

The construction industry generated 4.4 percent of the Gross Domestic Product (GDP) or $480 billion in 2003.[4] This industry also employs 28 percent of those working in goods-producing industries, including manufacturing, natural resources, and mining; the construction industry employs about 5.2 percent of the national workforce.[5] The construction industry is projected to be among the economy's top 10 largest sources of employment growth through 2012, as it is predicted to grow at an average annual rate of 1.3 percent between 2002 and 2012. BLS projects that total employment in the construction industry will increase from 6,731,700 in 2002 to 7,745,400 in 2012, an

[3] U.S. Department of Labor, Bureau of Labor Statistics, "Construction Industry at a Glance" http://www.bls.gov/iag/construction.htm
[4] U.S. Department of Commerce, Bureau of Economic Analysis, "Gross Domestic Product by Industry" http://www.bea.gov/bea/dn2/home/gdpbyindy.htm
[5] U.S. Department of Labor, Bureau of Labor Statistics, "Construction Industry at a Glance" http://www.bls.gov/iag/construction.htm

increase of over one million new jobs.[6] Construction is the only goods-producing industry in which employment is projected to grow over this time period.

Why the Construction Industry Will Grow

Although household growth may slow slightly over the coming decade, the demand for residential construction is expected to continue to grow. The demand for larger homes with more amenities, as well as for second homes, will continue to rise, especially as the baby boomers reach their peak earning years and can afford to spend more on housing. At the same time, as the number of immigrants increases and as the "echo boomers" (the children of the baby boomers) start to replace the smaller "baby bust" generation in the young adult age groups, the demand for manufactured housing, starter homes, and rental apartments also is expected to increase.[7]

Employment is expected to grow in nonresidential construction because replacement of many industrial plants has been delayed for years, and a large number of structures will have to be replaced or remodeled. Construction of nursing homes, convalescent homes, and other extended care facilities will increase due to the aging of the population and the growing use of high-technology medical treatment facilities. Construction of schools will increase to accommodate the children of the “echo” boom generation. Employment in heavy and civil engineering construction is projected to increase due to growth in highway, bridge, and street construction, as well as in maintenance and repairs to prevent further deterioration of the nation’s highways and bridges.[8]

Employment and Salaries in Construction

As noted above, the construction industry is projected to grow at an average annual rate of 1.3 percent between 2002 and 2012 for a ten-year growth rate of approximately 14 percent. Further, it is important to note that occupations throughout the industry will experience substantial employment growth. Table 1: Occupational Statistics, Training and Earnings for Selected Construction Industry Occupations (page 5) lists various occupations that are expected to increase in employment by at least ten percent between 2002 and 2012. While these occupations have varying education and skill requirements, all are projected to experience a significant increase in total employment.

Construction workers earn more, on average, than workers in other industries. BLS reports that construction workers have an average hourly wage of $18.51 as compared to $15.03 for all workers in the private sector, and $17.75 for all occupations.[9] These figures vary by region and type of employment.

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[6] Jay Berman, “Industry Output and Employment Projections to 2012,” Monthly Labor Review, February 2004, page 65.
[7] U.S. Department of Labor, Bureau of Labor Statistics, “Career Guide to Industries: Construction” http://www.bls.gov/oco/cg/cgs003.htm
[8] ibid.
[9] U.S. Department of Labor, Bureau of Labor Statistics, “National Compensation Survey: Occupational Wages in the United States, July 2003” http://www.bls.gov/ncs/ocs/sp/ncbl0635.pdf

Table 1: Occupational Statistics, Training and Earnings for Selected Construction Industry Occupations[10]

Occupation	Total employment		2002-2012 change in total employment		2002-2012 average annual job openings due to growth and total replacement needs	2002 Median annual earnings (Dollars)	Postsecondary-education or training category
	2002	2012	Number	Percent			
Total, all occupations	144,014,000	165,319,000	21,305,000	14.8	26,812,000	-	-
Construction laborers	938,000	1,070,000	133,000	14.2	177,000	24,740	**Moderate OJT
Electricians	659,000	814,000	154,000	23.4	71,000	41,390	*Long-term OJT
First-line supervisors/managers of construction trades and extraction workers	633,000	722,000	89,000	14.1	72,000	47,670	Work experience
Plumbers, pipefitters, and steamfitters	492,000	584,000	92,000	18.7	60,000	40,170	*Long-term OJT
Painters, construction and maintenance	448,000	500,000	52,000	11.6	73,000	29,070	**Moderate OJT
Construction managers	389,000	435,000	47,000	12.0	49,000	63,500	Bachelor's degree
Installation, maintenance, and repair workers, all other	185,000	207,000	23,000	12.2	23,000	33,010	**Moderate OJT
Roofers	166,000	197,000	31,000	18.6	41,000	30,180	**Moderate OJT
Helpers-Installation, maintenance, and repair workers	150,000	181,000	30,000	20.3	36,000	21,440	Short-term OJT
All other construction trades and related workers	110,000	146,000	35,000	32.0	19,000	22,900	**Moderate OJT
Helpers-Electricians	99,000	117,000	18,000	17.9	18,000	23,090	Short-term OJT
Helpers-Carpenters	97,000	111,000	14,000	14.0	17,000	21,510	Short-term OJT
Construction and building inspectors	84,000	95,000	12,000	13.8	10,000	41,620	Work experience
Helpers-Pipelayers, plumbers, pipefitters, and steamfitters	79,000	88,000	9,000	10.9	14,000	22,230	Short-term OJT

*More than 12 months of on-the-job training or combined work experience and formal classroom instruction. This can include formal and informal apprenticeships that may last up to five years.
** Skills needed to be fully qualified can be acquired during 1 to 12 months of combined on-the-job experience and informal training.

[10] U.S. Department of Labor, Bureau of Labor Statistics, "Detailed Employment Projection Statistics for Occupational Employment, Training, and Earnings" http://www.bls.gov/EMP/#data

Education and Training in the Construction Industry

Basic education, skills requirements and training vary throughout the construction industry. Individuals may enter many jobs in the construction industry without any formal classroom training after high school. Most of the "skilled crafts" require proficiency in reading, mathematics, and safety training.

In many construction occupations, emphasis is on "on-the-job training" and apprenticeships. Some jobs require a few days of training while the skills required for others are substantial. Advanced skills can be learned through apprenticeships or other employer-provided training programs. Skilled workers such as carpenters, bricklayers, plumbers, and other construction trade specialists need either several years of informal on-the-job experience or apprenticeship training. Then, as they demonstrate their ability to perform assigned tasks workers move to progressively more challenging work and responsibilities and earnings increase. Apprentices may qualify for jobs in related, more highly skilled, occupations. For example, after several years of experience, painters' helpers may become skilled painters. Another alternative is to attend skills training at a community college, vocational/technical school or other educational institution where formal classes and hands-on training are combined.

Education and Training for Construction Management

Managerial personnel in the construction industry usually have a college degree or considerable experience in their specialty. Some community colleges and four year colleges and universities provide construction programs. The American Council for Construction Education (ACCE) is recognized by the Council for Higher Education Accreditation as the accrediting agency for four year baccalaureate-degree programs and two-year associate-degree programs in construction, construction science, construction management, and construction technology. Apprenticeship programs are increasingly linked to community college programs. Many registered apprenticeship graduates can receive college credit for the education and training completed in their apprenticeship program, receiving between half and two-thirds of the credits needed to earn an Associate's degree.

Apprenticeship

Apprenticeships are frequently used in the construction trades. Employers, employer associations, and joint labor-management organizations, known collectively as apprenticeship sponsors, provide apprentices with instruction that reflects the industry's needs. Apprenticeship programs, which usually last between three and five years, offer classroom instruction alongside on-the-job training under the close supervision of an experienced craft worker. Minimum qualifications, application and selection procedures, training content, wage progressions, and completion requirements are determined by individual apprenticeship programs. It is estimated that each apprentice receives training worth $40,000-$150,000.

ETA and state apprenticeship agencies register and certify apprenticeship programs. Over 6,000 apprenticeship programs for the construction industry are currently

registered with the DOL's Office of Apprenticeship Training, Employer and Labor Services (OATELS). As of October 1, 2004, 156,223 enrollees took part in OATELS-sponsored apprenticeships in the construction industry. The construction industry contributes an estimated $250 million annually to support apprenticeship in the industry. To identify apprenticeship programs in local areas around the country, please visit the following web site: http://www.careervoyages.gov/skillstobuild-main.cfm.

Industry Associations and Labor-Management Organizations

Key stakeholders in the construction industry include industry associations and labor-management organizations. Industry associations serve different types of companies and contractors, and provide their members with a wide range of services. Many industry associations are heavily involved in workforce development, from sponsoring apprenticeship programs to conducting extensive image and outreach campaigns. Labor-management organizations represent the various construction trades. These organizations have an array of responsibilities, and many form joint apprenticeship committees with employers with shared responsibility and supervision of their apprenticeship programs. Labor-management organizations are also involved in other types of workforce development initiatives, such as partnering with Job Corps centers and helping workers enter the industry through the Helmets to Hardhats program.

Innovative Approaches to Training

In addition to on-the-job training, apprenticeship, and academic programs, the industry has implemented an array of innovative strategies to address workforce challenges. An example of an innovative approach to training is the congressionally-funded Helmets to Hardhats program, which connects National Guard, Reserve, and transitioning active duty servicemen and women to jobs in the construction industry. More than 15,000 candidates have registered at www.helmetstohardhats.org.

Another example of an innovative solution in the construction industry is the ACE Mentor Program, which encourages high school students to pursue career opportunities in architecture and construction by matching them with mentors from design and construction firms. Components of the program include visits to local construction companies, field trips to colleges, and a year-long, team based design project that requires students to use skills needed in the workplace. There are many other innovative solutions being implemented in the construction industry. For more information on the ACE Mentor Program, visit the following web site: www.acementor.org.

Section II
The President's High Growth Job Training Initiative

The President's High Growth Job Training Initiative is designed to provide national leadership for a demand-driven workforce system that ensures no worker is left behind. It is a strategic effort to prepare workers for new and increasing job opportunities in high growth/high demand and economically vital industries and sectors of the American economy. The initiative is designed to ensure that worker training and career development resources in the public workforce system are targeted to helping workers gain the skills and competencies they need to obtain jobs and build successful careers in these industries. Through the initiative the Employment and Training Administration (ETA) of the U.S. Department of Labor identifies high growth/high demand industries, works with industry leaders to determine their workforce challenges, and invests in demonstration projects that help ensure individuals can gain the skills they need to get good jobs in rapidly expanding or transforming industries.

The foundation of this initiative is partnerships between the publicly funded workforce investment system, business and industry representatives, and education and training providers, such as community colleges. The purpose of these partnerships is to develop innovative solutions or replicate models that address a particular industry's workforce issues. These solutions demonstrate how a demand-driven workforce system can more efficiently serve the workforce needs of business while effectively helping workers find good jobs with good wages and promising career paths.

The President's High Growth Job Training Initiative process engages each partner in its area of strength. Industry representatives and employers define workforce challenges facing the industry and identify the competencies and skills required for the industry's workforce. Community colleges and other education and training providers assist in developing competency models and training curricula and train new and incumbent workers. The publicly funded workforce investment system accesses human capital (youth, unemployed, underemployed, and dislocated workers), assists with training programs, and places trained workers in jobs.

ETA is modeling the power of this partnership at the national level through investments in demonstration projects in twelve high growth industries, including the construction industry. Each of the 12 industries was selected because it meets one or more of the following criteria: (1) is projected to add substantial numbers of new jobs to the economy; (2) has a significant impact on the economy overall; (3) impacts the growth of other industries; (4) is being transformed by technology and innovation requiring new skills sets for workers; or (5) is a new and emerging business that is projected to grow.

Investments in these sectors are designed to achieve four broad outcomes:

1. Targeted investment of workforce development resources and support for private and public sector partnerships to ensure the development of workers' skills in demand occupations based on industry need.

2. Increased integration of community and technical college efforts with business and the public workforce system activities to meet the skills training needs of high growth industries.
3. Increased opportunities for employers to use apprenticeship training as skills development methodology, combining on-the-job training and academics, to ensure a pipeline of skilled workers.
4. Providing workers with paths to career enhancing opportunities in high growth occupations.

By expanding the local workforce system's capacity to be market-driven, responsive to local economic needs, and a contributor to the economic well-being of the community, ETA is promoting workforce quality, enhanced productivity, and economic competitiveness.

The President's High Growth Job Training Initiative Process in the Construction Industry

Construction is one of the industries targeted through the President's High Growth Job Training Initiative in large part because it is among the economy's top 10 largest sources of employment growth through 2012 (see Section I for more information on the industry's employment projections). In addition, other sectors of the economy depend on the construction industry to build and maintain the facilities and infrastructure that are vital to their daily operations. Finally, many occupations in construction (e.g. carpenters, electricians) are also integral to other industries, so workforce solutions that target these occupations may benefit other industries as well.

Phase I: Gathering Information

The first step in the President's High Growth Job Training Initiative in the construction industry was to develop an environmental scan of the industry to provide a baseline for assessing construction's workforce needs. After completing the environmental scan, staff from the Business Relations Group (BRG) met with representatives from four industry associations to validate the information gathered in the scan, discuss the structure of the industry and key trends, and begin to identify pressing workforce challenges. See Appendix A for a list of associations that participated in this meeting.

The Executive Forums

ETA Assistant Secretary Emily Stover DeRocco then convened Executive Forums with leaders in the construction industry. Held in Washington, D.C., the forums served as an opportunity for industry leaders to discuss their current and future workforce issues and concerns with ETA. There were five separate Executive Forums: one focused on the workforce challenges experienced by employers involved in the construction of buildings, two focused on the workforce challenges experienced by employers involved in heavy construction projects, a cross-sector forum was co-sponsored with the Construction Industry Round Table, and one was held with representatives from labor-management organizations. See Appendix A for a list of employers, associations, and organizations that were represented at the Executive Forums.

Forum Outcomes: Construction Industry Workforce Challenges

Industry leaders identified a wide range of workforce challenges during these forums. Examples of specific challenges which surfaced repeatedly during the forums included:

- The industry's current shortage of workers. A number of industry leaders noted that they are already experiencing shortages of workers.
- The industry's need to improve its image. For example, occupations in the industry are seen as dangerous, and there is little awareness of the high skill level required for many jobs in the industry.
- The need to improve the skills of youth. Industry leaders cited a lack of basic academic and employability skills among some youth, as well as insufficient capacity and capability among some of the education and training providers that serve this demographic group.
- The need for some entry-level workers to enhance their language skills. Individuals with limited English proficiency comprise a significant percentage of the construction workforce, and language barriers can ultimately affect the safety and health of construction workers as well as limit their training opportunities.

Based on extensive feedback gleaned through the Executive Forums from industry leaders, ETA distilled the list of challenges into four broad areas. First, the image of the industry could be improved among key demographic groups, including youth, parents, educators, and guidance counselors. Second, the industry faces recruiting challenges, including recruiting youth and individuals in non-traditional labor pools. Further, the skills of youth could be improved, and the capacity and capability of some of the education and training providers that serve youth could be enhanced. Finally, the skills of both entry-level and incumbent workers could be improved, and the capacity and capability of some of the education and training providers that serve these workers could be enhanced. These challenges are discussed in detail in Section III.

The Construction Workforce Solutions Forum

Following the Executive Forums and the analysis of industry leaders' input on workforce challenges, ETA worked with representatives from a variety of the industry's key stakeholders to validate these challenges, and explore potential solutions. On June 16 and 17, 2004, over 60 industry leaders participated in ETA's Construction Workforce Solutions Forum in Irving, Texas. Applying its demand driven, partnership-based approach, ETA invited representatives from businesses, industry associations, labor-management organizations, the public workforce investment system, educational institutions, and other entities to participate in the forum.

Attendees identified over 400 potential solutions to the industry's workforce challenges. Participants determined that 28 solutions were the highest priority and developed them in more detail. ETA has consolidated each of the promising workforce solutions identified by attendees into a single master "solutions matrix" that offers strategic guidance and suggests where public and private resources should be invested. See Appendix B for the highest priority solutions that were developed. For a list of all the solutions identified at the forum, please visit the BRG's web site: www.doleta.gov/BRG/JobTrainInitiative/.

Section III
Workforce Challenges and Solutions in the Construction Industry

Through the President's High Growth Job Training Initiative in the construction industry, the Employment and Training Administration (ETA) of the U.S. Department of Labor (DOL) has worked with industry leaders to identify the primary workforce challenges facing the construction industry, as well as possible solutions to those challenges. Extensive feedback from industry leaders during the Executive Forums enabled ETA to determine the construction industry's workforce needs. At the Construction Workforce Solutions Forum, a wide variety of stakeholders worked together to validate the industry's workforce challenges and to identify potential solutions to those challenges. The following section of this report provides background on the four broad categories of challenges facing the construction industry and a brief overview of the solutions to each of those challenges that attendees identified during the Construction Workforce Solutions Forum.

Challenge: Industry Image and Outreach

Perhaps the most complex and pressing challenge facing the industry is to improve the industry's image. During the Executive Forums, attendees reported that the industry's image could be enhanced in a number of key areas, including safety, skill requirements, and corporate culture. For example, industry leaders reported that jobs in the industry are seen as dangerous. Poor industry image, tough working conditions, and the industry's perceived poor safety record have contributed to the decline in the number of people willing to enter and remain in the industry.[11] Further, the image of the industry could be improved among several demographic groups, including youth, parents, educators, and guidance counselors. For example, youth and guidance counselors are not aware of the skills required by many occupations in the industry; and young people making career choices can be highly influenced by an educational system that does not understand the industry and by parents and friends who are unaware of its many benefits and opportunities.[12]

Further research reinforces leaders' comments that youth's perceptions of careers in the construction industry could be improved. A Wall Street Journal Almanac Poll of high school-aged vocational technology students ranked "construction worker" 248th out of 250 possible occupation choices, ahead of "dancer" and "lumberjack" and just edged out by "cowboy."[13] Further, fewer youth are involved in extracurricular activities that provide them with exposure to career opportunities in construction. According to Skills USA-VICA, which coordinates vocational clubs in high schools, fewer students are

[11] The Construction Industry Institute, "Report: The Shortage of Skilled Craft Workers in the U.S.," September 2003: http://construction-institute.org/services/catalog/more/182_1_more.cfm
[12] "Confronting the Skilled Construction Workforce Shortage: An Update," The Construction Users Roundtable, June 2004: Page 1.
[13] "Causes of the Construction Skilled Labor Shortage and Proposed Solutions," Abdol R. Chini, Brisbane H. Brown, and Eric G. Drummond, The M.E. Rinker, Sr. School of Building Construction, University of Florida, Gainesville, Florida: April 1999.

learning carpentry this year than last, while clubs for computers and culinary arts have growing memberships.[14]

Solutions: Industry Image and Outreach

During the Construction Workforce Solutions Forum, industry stakeholders discussed strategies for helping the industry improve its image among four key demographic groups – youth, parents, educators, and guidance counselors. Rather than develop discrete strategies targeted at individual demographic groups, the stakeholders in the image and outreach workgroup chose to develop three broad solutions to improve the industry's image that could be targeted at multiple groups: launching a national media campaign, helping supervisors and owners look proactively at long term solutions, and expanding or creating "construction academies" in high schools.

National Media Campaign

Attendees believe that a national media campaign can help improve the image of the industry. This campaign could utilize different mediums (e.g. TV, radio), and spokespersons from different demographic groups (e.g. women, Native Americans, Hispanics). The campaign could emphasize the career ladders in the industry, and provide perspectives from different types of workers in the industry, such as managers and individuals in different crafts. A number of different stakeholders need to be involved for this campaign to be successful, including associations, educators, and the media. Attendees noted that this campaign faces several barriers to implementation, including money and the ingrained stereotypes about the industry. A national media campaign could dispel many of the negative myths and stereotypes that accompany the construction industry throughout the media.

Supervisors/Owners Proactively Look at Long Term Solutions

Incumbent workers in the construction industry do not view themselves as positively as they could; their image of the industry could be improved as well. Owners of construction companies, as well as supervisors, need to identify lasting, long-term strategies for boosting incumbent workers impressions of themselves and the industry. These strategies could include ensuring that companies identify the career ladders that exist for employees and provide continuing training for workers. Owners and supervisors need to work with incumbent workers to identify and implement these strategies.

Expand or Create a Construction Academy in High Schools

Creating construction academies across the country would help ensure that students have the skills needed in the industry. Attendees believe that these academies should use a magnet school approach, provide scholarships to graduates, and utilize a nationally recognized curriculum. It is critical that a variety of groups – businesses, students, parents, educators, and guidance counselors – support the academies and

[14] "Skilled Construction Labor Shortage Underscores Need for More and better Training," Kathy Price-Robinson, The Engineered Wood Association, http://www.apawood.org/level_b.cfm?content=pub_ewj_arch_s00_help

understand the opportunities that these academies can provide. Key stakeholders in the success of these academies are associations, educators, and school districts.

It is important to note that DOL is currently involved in a project that will help the construction industry address its workforce development needs: the "Skills to Build America's Future" initiative. "Skills to Build America's Future," sponsored by DOL, the Construction Industry Round Table, the National Association of Home Builders, and the National Heavy & Highway Alliance, promotes career opportunities in the skilled trades. The initiative utilizes a wide array of innovative strategies, from partnerships with schools to sponsorships with sports leagues to TV and radio ads. For more information on the "Skills to Build America's Future Initiative," please see Appendix C.

Challenge: Recruitment

During the Executive Forums, industry leaders reported that the construction industry is experiencing a significant shortage of workers. One reported that the industry is "starving for folks," while another said that his company simply cannot "find enough bodies." Industry stakeholders noted that the construction industry has difficulty recruiting individuals from two general demographic groups: youth and non-traditional labor pools (e.g. women). Some industry representatives point out that the pipeline of potential employees is essentially empty and yet demand is growing, not standing still.[15] Though the industry has made extensive efforts to target youth, it is challenging for the industry to recruit them. At the same time, women and other representatives of non-traditional labor pools are not as prevalent in the industry as they could be.

Construction industry executives identified at least three reasons that the industry has difficulty recruiting individuals from these demographic groups. First, some job seekers are simply not aware of job opportunities in the industry; industry leaders reported that youth, guidance counselors, and members of non-traditional labor pools could have a greater understanding of career opportunities in the industry. Second, the poor image of the industry (e.g. dangerous working conditions, low skill requirements) hinders recruiting efforts. Third, some incumbent workers have little experience working with members of non-traditional labor pools.

Recent research strongly supports these findings, and indicates that the industry's recruitment challenges may only grow more significant. A Construction Industry Institute study indicates that 75 percent of contractors are experiencing shortages of workers. In the face of these shortages it appears the industry will need to recruit hundreds of thousands of workers each year. The construction industry is projected to experience significant growth, as total employment increases from approximately 6.7 million jobs in 2002 to approximately 7.7 million jobs in 2012. In addition to finding workers for these new jobs, the industry will be coping with retirements as "baby boomers" leave the workforce. As a result of job growth, retirements, and attrition, the construction industry will need to attract 240,000 workers each year to replace those

[15] "Who Will Build the Houses?" William H. Lurz, Professional Builder, January 1999: Page 83.

leaving the workforce or retiring, while still allowing for industry growth.[16] These trends indicate that recruiting will become an increasingly prominent workforce challenge.

Solutions: Recruitment

Based on feedback gleaned through the Executive Forums, ETA asked attendees to identify potential solutions to recruiting three general demographic groups: youth, non-traditional labor pools, and traditional labor pools. Attendees suggested numerous strategies.

Recruiting Youth

Participants suggested that high school science and math courses could be created to target the construction industry. These courses could ensure that skills learned are transferable to industry, and articulate with community college and apprenticeship programs. A second strategy for recruiting youth is providing them with state-level labor market information via the Internet. It would be beneficial to offer youth information on wages, benefits, and career ladders. Finally, attendees suggested that the industry could recruit youth by partnering with local high school trade classes. Industry associations could develop internet-based and CD games about different construction occupations, while companies could provide students with tours of the job site and guest speakers.

Recruiting Non-Traditional Labor Pools

One potential solution that participants discussed is targeting training to prisoners while they are incarcerated. This solution could include starting pre-apprenticeship or apprenticeship programs in prisons, matching prisoners to employers and local Workforce Investment Boards (WIBs), and advertising the benefits of hiring prisoners to employers (e.g. tax incentives, trained workers). A key barrier to implementing this solution is the poor perception of this population. Individuals with disabilities are a demographic group that could be more prevalent in the construction industry, and a second solution suggested by participants is matching jobs that could be performed by this population with local needs. It will be important to increase employer awareness of the benefits of hiring individuals with disabilities, and involving local vocational rehabilitation staff in any collaboration.

Recruiting Traditional Labor Pools

Participants also identified several strategies for recruiting traditional labor pools. This includes efforts to market the industry, focusing on the benefits of working in the industry. Attendees suggested using non-traditional venues for marketing the industry, such as NASCAR events, rodeos, and graduations. Recruiting in rural areas and small towns could also help attract traditional labor pools to the construction industry. Strategies for recruiting in these areas must be based on solid research about rural culture and demographics, and could utilize local resources such as local chambers of commerce. Increasing industry awareness of the resources available through the public

[16] "Who Will Be the Builders of Tomorrow?" Buildings.com Magazine, http://www.buildingsmag.com?Articles/detail.asp?ArticleID=1846

workforce investment system could also help hiring efforts. WIBs could highlight their ability to post available job openings, and industry associations could develop information about the public workforce investment system for their members.

Challenge: Skill Development and Education and Training Capacity: Youth

One of the overarching workforce challenges that emerged from the Executive Forums is that some youth lack the academic and employability skills needed to be successful in the construction industry. Throughout the Executive Forums, attendees reported that youth lack both the math and language skills required in the industry, as well as a wide range of employability skills. Several attendees reported that young people lack a strong work ethic. Loyalty was another attribute that industry leaders found lacking in today's youth. At the same time, industry leaders reported that the capacity and capability of education and training providers that serve youth could be improved. For example, some vocational-technical high schools lack key resources, such as books and curriculum, and secondary school teachers could benefit from spending time in apprenticeship programs.

Solutions: Skill Development and Education and Training Capacity: Youth

Based on this feedback, participants at the Construction Workforce Solutions Forum were asked to identify solutions in three specific areas: increasing the skill levels of youth, enhancing the capacity and capability of education and training providers, and increasing partnerships and information sharing among key stakeholders.

Increase the Skill Levels of Youth

One strategy for increasing the skill levels of youth is involving teachers and administrators in trade-sponsored externships, which could help key personnel at secondary schools, better understand the connection between education and the workplace. Teachers and administrators may need incentives to participate in an initiative like this, such as stipends or continuing education credit. Developing summer construction camps that serve youth from grade school through high school could also increase skill levels. These camps could provide youth with very interactive learning environments, offering field trips, hands-on learning exercises, and other activities. Finally, businesses could partner with school systems to help form academic and skill development curriculum.

Capacity and Capability of Education and Training Providers

Organizations that serve workers (both labor-management organizations and other entities), industry associations, and other stakeholders could work together to support apprenticeship programs. These programs need to include standardized basic skills curricula for each construction specialty. Secondary schools also need to ensure that students that do not go on to college - those that are "career-bound" - learn math, reading, and communication skills. Schools could help students acquire these skills by demonstrating their practical application, and ensuring that courses are specifically tailored for the "career-bound" as well as the "college-bound." Employers could boost the capacity of education and training providers by "adopting" secondary schools; this would also help the industry market the construction trades to students and improve recruitment efforts. Finally, legislators need to be educated on the importance of trade and industrial classes that introduce technical skills so they can become advocates for these programs.

Partnership and Information Sharing

The construction industry can help youth develop the necessary skills by modifying training to appeal to the current generation of youth. This could include identifying innovative ways to deliver curriculum and providing flexible schedules for receiving training. Multiple stakeholders could also work together to develop a national marketing effort that is specifically designed to provide youth with select information on the construction industry (e.g. career ladders, local resources for training, etc.). Expanding on the Skills to Build America's Future Initiative, this collaboration could include multiple stakeholders, such as employers, labor-management organizations, educators, and parents.

Challenge: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers

The fourth broad type of workforce challenge currently facing the construction industry is developing the skills of entry-level and incumbent workers, as well as boosting the capacity and capability of education and training providers that serve these labor pools.

Throughout the Executive Forums, attendees highlighted a number of skill development challenges facing entry-level workers, such as the challenges experienced by individuals for whom English is not their first language. This demographic group comprises a significant percentage of the construction workforce, and many of these workers could improve their language skills. Limited English language skills can hinder their safety and the safety of their peers, and can also check their career ladder progression.

Other entry-level workers lack the skills to effectively use the increasingly complex technology being utilized in the construction industry, such as equipment that is used in heavy construction projects. Incumbent workers face challenges as well, such as a

need to boost their leadership and management skills. Some incumbent workers have little experience working with non-traditional labor pools.

The education and training providers that serve entry-level and incumbent workers also face a range of challenges. Some providers have limited capacity (e.g. community colleges sometimes lack the space to accommodate more students). Further, while there are many different stakeholders providing education and training in the construction industry, these organizations could collaborate more frequently to provide composite training.

Solutions: Skill Development and Education and Training Capacity: Entry-Level and Incumbent Workers

Guided by this feedback, participants at the Construction Workforce Solutions Forum were asked to identify solutions in four specific areas: skill levels of entry-level workers, leadership and management skills of incumbent workers, capacity and capability of education and training providers, and partnerships and information sharing among key stakeholders.

Skill Levels of Entry-Level Workers

One solution for increasing the skill levels of entry-level workers is developing a pre-apprenticeship/pre-employment program that is led, supported, and funded by a partnership. One key attribute of this program should be an assessment and screening process that identifies the most qualified candidates for the program. Candidates should be assessed in a wide range of skills, including logic and critical thinking, language skills, and mechanical aptitude. In addition to a broad based overview of the construction trades, this program could introduce trainees to several fundamental trades-related skills, such as precision measuring, reading blue prints, and safety. Key partners in the development of this program could include industry associations, labor-management organizations, DOL, and WIBs.

Leadership and Management Skills of Incumbent Workers

Industry associations could include cultural awareness, ethics, and diversity training in their continuing education and other training programs. Leadership buy-in and commitment are essential to the successful inclusion of these topics in association training programs, and these programs must ultimately be utilized by workers in the field rather than just top management. Associations could also provide enhanced opportunities and pathways to workers in under-represented groups to pursue management and leadership skills training. Role models and mentors are critical to efforts to help under-represented groups pursue management positions, and individual employees could be “groomed” for these positions.

Capacity and Capability of Education and Training Providers

Community colleges and equipment manufacturers could collaborate to create a skill training program for a specific trade. A key component of this approach would be opportunities for students to pursue employment opportunities with companies linked to

the program. A separate, though related, solution that includes variety of stakeholders – including WIBs, education and training providers, and employers – is to create a training program for the skilled trades that is based on the specific needs of a local area. This option hinges on identifying regional economic trends, including the projected growth of the construction industry and other key labor market information, and completing an inventory of providers' capacity. Developing and implementing web-based training could also boost the capacity and capability of education and training providers.

Partnership and Information Sharing

A wide array of stakeholders in construction, including industry associations, labor-management organizations, employers, and DOL, could work together to develop a comprehensive career pathway in the construction industry. This career pathway could include training options that are available for workers at different points in their career progression, from pre-apprenticeship career preparation to skill upgrading for journeymen to management skill acquisition. DOL could act as an ombudsman, distributing communications via the Internet and trade journals.

Section IV
Implementation of Solutions and Next Steps

The Employment and Training Administration (ETA) supports comprehensive business, education, and workforce development partnerships to develop innovative approaches or replicate models that operationally demonstrate how a demand-driven workforce system can more effectively serve the workforce needs of business while also effectively helping workers find good jobs with good wages and promising career pathways. Grants awarded under the President's High Growth Job Training Initiative implement unique and innovative, industry-driven skills training, certification, and career ladder development programs that support identified construction workforce and economic development needs.

Based on the challenges identified by the construction industry and highlighted in this report, the U.S. Department of Labor (DOL) has made a series of investments totaling more than $19 million to partnerships between businesses, community colleges, workforce investment boards, and others to address the workforce needs of the construction industry. These investments address the following challenges:

- expanding the pipeline of youth entering the construction industry;
- enhancing the capacity of secondary schools to prepare youth to enter post-secondary programs and employment in the construction industry;
- providing a career lattice approach to the recruitment, education, training, professional development, and job placement of construction workers;
- helping alternative labor pools, such as women, learn about career opportunities and gain skills needed in the construction industry;
- enhancing the capacity of community colleges and the public workforce system to help alternative labor pools enter the industry; and,
- creating comprehensive partnerships that help entry-level workers enhance their skills and utilize apprenticeship and other training programs.

Solutions are national, state, and local in scope and address industry challenges in unique and innovative ways. The following are brief summaries of solutions in which ETA invested in order to address the aforementioned industry challenges. For more detailed information on these investments, including grantees, partners, and outcomes, please visit www.doleta.gov/BRG.

- Create a systemic approach to construction industry workforce development that provides a continuum of recruitment, career exploration, education, and training, beginning with middle and high school and continuing through post-secondary education and life-long learning. Ten national sites will be chosen to serve 2,500

individuals, including high school students, incumbent workers, and dislocated workers. Sites will offer training in crafts, such as carpentry, electrical wiring, plumbing, and heating and air conditioning. Develop an associate's degree or equivalent credential that incorporates the skills needed in residential construction.

- Launch an outreach campaign to attract women into the construction industry. This campaign will include professional outreach and marketing materials that focus on women, as well as orientation sessions and job fairs that focus on construction industry careers. Help women address their barriers to employment through an array of education, training, and support services, such as career planning, placement, and mentoring by women currently working in the industry. Work with One-Stop Career Centers, apprenticeship information centers, and community colleges to enhance their capacity to serve women.

- Create a Construction Academy that provides high school students with an array of construction-specific courses and career opportunities in the construction industry. Develop a standards-based curriculum that fits in with construction certificate and degree programs at community colleges. As sophomores, students will receive an overview of construction careers and begin developing construction specific-skills. Then, during their junior and senior years, students will focus on acquiring the skills needed in specific trades and occupations. Through a speaker's bureau, employers will visit schools and provide students with information on careers in the industry. An internship program also will help students gain hands-on experience.

- Train and license high school instructors in skill standard certifications so that they can teach and certify students in advanced manufacturing and construction skills. Work with employers, community and faith-based organizations, and One-Stop Career Centers to identify entry-level and incumbent workers with a strong interest in advancing their construction or advanced manufacturing careers, to enhance their academic skills and access support services, and help them enroll in an industrial mechanic program or other types of training. Create an eight-week maintenance technician training program that is accessible for dislocated workers.

- Sustain existing construction career academies in two cities, and develop additional career academies in eight local communities. Career academies will be established in communities with a demonstrated need for workers and interest among multiple partners in participating in the academy. Academies will receive technical assistance in a number of areas, such as developing curriculum and forming partnerships between businesses and educational institutions. The grantee will develop guidelines to help employers, educators, and stakeholders in local areas that are not part of the grant develop their own construction career academies.

- Develop and test an innovative, industry-driven curriculum that focuses on the traditional building arts, such as carpentry, ironwork, masonry, timber framing, plasterwork, and stone carving. Establish partnerships with industry organizations for future internship programs. Work with other national and international

organizations with shared interests in building arts to develop a sustainable and replicable training and development model that can be implemented throughout the country.

- Serve adjudicated youth through a training program that combines academic instruction with construction skill development and enables youth to build affordable housing in local communities. Provide youth with significant support systems, including: mentoring that will continue for at least a year after the program; follow-up education, employment, and personal counseling services; and participation in community service and civic engagement. Work with local One-Stop Career Centers to place youth in employment upon completion of the program.

Conclusion

The construction industry is vital to the American economy. The industry employed 6.7 million workers in 2002, and total employment in construction is projected to grow by over one million new jobs between 2002 and 2012. Further, other industries depend on construction to build and maintain the facilities and infrastructure that are crucial to their daily operations. However, the industry faces a wide array of workforce challenges, from an industry image that could be improved to difficulty recruiting youth and individuals in non-traditional labor pools. These challenges must be addressed to ensure the continued vitality of construction and other industries.

Through the President's High Growth Job Training Initiative in construction, ETA has invested in a wide array of innovative workforce partnerships. These investments were made after ETA worked closely with industry leaders to determine the primary hiring and training challenges facing the industry. These partnerships demonstrate how a demand-driven workforce system can more efficiently serve the workforce needs of business while effectively helping workers find good jobs with good wages and promising career paths.

However, these investments are just one step in ETA's ongoing commitment to the construction industry. ETA is committed to identifying successful models and resources through the President's High Growth Job Training Initiative and sharing them with the public workforce system. Sharing these models and resources will enable industry stakeholders in states and localities around the country to develop successful partnerships that help the industry address its key workforce challenges while preparing workers for jobs in a high growth, economically vital industry.

Section V
Appendices

Appendix A: Participants in Executive Forums and Industry Round Table Discussion

Appendix B: Construction Industry's Solutions Matrices

Appendix C: Overview of Skills to Build America's Future Initiative

CURRENT STRATEGIES TO EMPLOY AND RETAIN OLDER WORKERS

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CONTENTS

Executive Summary ..... **ii**

I. Introduction **1**

II. Benefits and Challenges to Engaging Older Workers **2**

- **A. The Changing Retirement Landscape** 3
- **B. Challenges Confronting Older Workers and Employers** 4

III. Current Employer Strategies to Hire and Retain Older Workers **7**

- **A. Flexible Work Arrangements** 7
- **B. Phased Retirement Plans** 14

IV. Other Strategies to Improve Employment Opportunities for Older Workers **20**

- **A. Helping Older Workers Find Employment** 20
- **B. Training Older Workers to Meet Employer Needs** 24
- **C. Building Relationships with Employers to Increase Employment Opportunities** 27

V. Summary and Future Prospects **30**

References **33**

Executive Summary

As the U.S. population ages and the number of people reaching traditional retirement ages increases, employers may need to do more to attract and retain older workers, many of whom are highly experienced, knowledgeable, and skilled. To attract older workers, however, employers may need to rethink traditional workplace practices. Many older people prefer part-time work so they can enjoy more relaxed lifestyles and pursue leisure activities. Others need flexible schedules to accommodate family care responsibilities or their own physical limitations. Many older people can afford to cut back their work hours only if they have access to employer retirement benefits. Policies that prevent part-time workers from collecting retirement benefits from their current employer often force older workers to leave their career job and work reduced schedules elsewhere, squandering firm-specific skills accumulated over long careers.

Low employment rates at older ages may also result from difficulties matching older job applicants with appropriate employers, or from employer perceptions—real or imagined—that older Americans cannot meet their workforce needs. Some older people may lack the proper mix of skills required in high-growth industries. Some employers may be reluctant to hire older workers because they fear they are too costly or because employers do not appreciate the attributes many older workers embody, including maturity, experience, and dependability. Governments, nonprofit organizations, and educational institutions can promote employment at older ages by training older people, helping them find employment, and combating negative stereotypes about older workers.

This report, commissioned by the U.S. Department of Labor's Employment and Training Administration to support the work of the Taskforce on the Aging of the American Workforce, describes current strategies used by employers to help attract and retain older workers and by nonprofit organizations, educational institutions, and the government to facilitate their employment.

Current Employer Strategies to Hire and Retain Older Workers

Existing employer efforts to improve hiring and retention of older workers include creating flexible work arrangements and offering formal and informal phased retirement options.

Flexible Work Arrangements

Flexible work arrangements may appeal to older adults who no longer wish to work traditional full-time schedules, either because of additional personal obligations (such as the need to care for aging parents or spouses or to help with grandchildren), worsening health, declining physical energy or stamina, or a preference to sacrifice some income for more control over their time without giving up paid employment entirely. Some older workers with enough savings or access to pension benefits can maintain their living standards with lower earnings.

Flexible work arrangements include the following:

- part-time employment;
- flexible work schedules, including flextime (which grants employees some control over the timing of the workday) and compressed work schedules (which allow employees to work longer days but shorter weeks);
- job sharing;
- changing jobs within the company, which can facilitate shifts to part-time work and offer new opportunities to older employees seeking new challenges;
- telework arrangements, which enable employees to work from home or teleworking centers closer to home than their normal workplace. These arrangements require appropriate workplaces free from distractions with necessary communications equipment. They are not appropriate for all jobs, such as those that require equipment that cannot be placed in individual homes and those that entail face-to-face interaction with customers or fellow employees; and
- snowbird programs, which allow employees to shuttle between two locations seasonally. These arrangements are economically viable for large organizations in such sectors as retailing and health care services with customer bases that also migrate over the course of the year.

Phased Retirement Options

Many workers prefer to phase into retirement gradually with their current employers instead of changing employers or moving directly from full-time work to full retirement. But traditional defined benefit (DB) plans inhibit these arrangements. Many older employees cannot afford to reduce their work hours unless they can draw on their retirement benefits, but federal law restricts employers' ability to pay benefits from DB plans to workers who remain on their payrolls. However, the movement by many private employers from traditional DB plans to defined contribution retirement plans and hybrid plans (such as cash balance plans) that do not discourage work past the traditional retirement age should make phased retirement options easier to implement. Some employers are also pursuing other strategies to accommodate their workers' interest in phased retirement, such as allowing employees to continue working without losing traditional pension benefits, creating formal plans to move older employees to part-time work, rehiring retired employees as part-time workers, and using former employees as contractors.

Deferred Retirement Option Plans (DROPs). DROPs allow DB pension plan participants to work beyond their plan's retirement age without forfeiting pension benefits. When a worker reaches retirement age, the employer deposits into a DROP account the pension benefits it would have paid if the employee had retired. The employee later receives the benefits with interest when he or she stops working. DROPs have been instituted in many public school districts facing teacher shortages, but legal complications have limited their use in the private sector.

Transition to Part-Time Employment for Older Workers. Before enactment of the Pension Protection Act of 2006 (PPA), IRS regulations did not allow firms to pay retirement benefits from DB plans before termination of employment, except in a limited way. PPA allows payment

of benefits to in-service workers who are age 62 or older, although new regulations under PPA are still pending. Even before this change, some firms have been able to institute programs that allow older workers to reduce their hours gradually while still receiving some pension and health benefits. Other employers are able to meet regulatory requirements and pay retirement benefits to older workers by terminating the employees and rehiring them part time. The law is unclear about what constitutes termination of employment, but it would seem that some time would need to elapse between terminating and rehiring before the former employee could be considered a new hire.

Hiring Former Employees as Independent Contractors. As an alternative to paying pension benefits to active employees, the firm could terminate employment and then rehire the former employee as a consultant or independent contractor. Independent contractors do not receive employee benefits, but they can receive full retirement benefits while working for their previous employer. Although there are no restrictions on paying pension benefits to former employees who are independent contractors, issues arise in determining whether the provider of labor services is really an independent contractor.

Strategies by Government and Other Service Providers to Boost Older Adults' Employment

Federal, state, and local governments, as well as nonprofit organizations and post-secondary educational institutions, help older workers find employment and secure job training and educate employers about the value of older workers. The Workforce Investment Act of 1998 (WIA) adult and dislocated worker programs, delivered through a system of One-Stop Career Centers, and the Senior Community Service Employment Program (SCSEP) are two of the federally funded programs that provide job search and readiness assistance to older workers. SCSEP services are restricted to low-income older adults. Additionally, nonprofit organizations and community colleges are developing initiatives to help older workers return to or remain in the workforce.

Helping Older Workers Find Employment

Job and Career Centers. Older workers can find job search assistance at One-Stop Career Centers and SCSEP sites. The U.S. Department of Labor's Employment and Training Administration has developed service protocols for use in One-Stop Career Centers to train older worker specialists so they can better understand the employment barriers that many older adults face. Some states, such as Maine and Wisconsin, are developing materials and resources in their One-Stop Career Centers especially for older clients. The SCSEP sites often use One-Stop job search services for their low-income enrollees.

Several local areas provide services through alternatives to traditional One-Stop or SCSEP offices. In Ohio, for example, the Mature Services program operates four employment centers geared specifically for seniors, using SCSEP grants and WIA funds to finance employment services and intensive "job clubs." National career centers also assist older people seeking employment, usually by recruiting workers for particular industries.

Employment Web Sites. Internet job sites and job banks that target older workers are becoming increasingly popular. Many provide guidance to older adults about how to find jobs best suited to their needs, including tips on identifying employers that value their expertise and offer work environments that welcome older people. The AARP web site, for example, lists job sites, provides job search advice, and vets employers friendly to older workers. It also provides information on careers, self-employment, workplace flexibility, and how to cope with job loss. Some web sites are industry specific, such as YourEncore.com, which recruits engineers, scientists, and product developers.

Job Fairs. Many state and local offices of the aging, workforce agencies, local One-Stop Career Centers, and nonprofit service providers organize job fairs for older workers. For example, Operation A.B.L.E. (Ability Based on Long Experience) of Greater Boston hosts Mature Worker Career Fairs to help match employers with job seekers age 45 and older.

Job Counseling. At One-Stop Career Centers, staff and older worker specialists provide job counseling to older workers seeking new employment. Staffers can identify high-growth industries, companies with job openings, and the skills needed to obtain these jobs, and advise older workers on how to pursue job openings, interview with employers, and deal with various age-related issues. Other counseling services can be obtained from organizations such as Senior Employment Resources, a private nonprofit organization that offers advice to older job seekers on career directions, resumes and interviews, and networking. SCORE, a national nonprofit association funded by the U.S. Small Business Administration, also offers counseling to budding entrepreneurs of all ages.

Training Opportunities for Older Workers

Publicly funded training programs have been serving older workers for decades. Although previous legislation authorized special funding blocks for older workers, WIA consolidated these funds into a single funding stream for all adults in an effort to provide universal access to these services. This legislation does, however, allow states and local areas to give priority to special populations, such as older workers, when allocating training funds. Some states have recently begun to focus on older workers' training needs and to tailor some services and funding for older workers. State or local dislocated worker programs funded through WIA (or Trade Adjustment Assistance, when layoffs are trade-related) serve a significant number of older workers. DOL also funds SCSEP sites through competitive grants to state governments and national nonprofit organizations to train workers age 55 and older.

Community colleges are leading efforts to develop job training opportunities for older workers. Such colleges as Portland Community College and Central Florida Community College are recruiting workers age 45 and older, creating educational and vocational training programs tailored to older peoples' learning styles, and offering student advisor and supportive services for older students. The Grand Rapids Community College Older Learner Center has created Project Mature Worker to provide older workers specialized employment and training services and meet local employers' skill needs.

Educating Employers on the Value of Older Workers

Many states, local workforce agencies, community colleges, and advocates for older adults have begun campaigns to educate employers and industry associations about the benefits of hiring and retaining older workers. States working to educate employers and develop partnerships to improve employment opportunities include Arizona, Arkansas, and Iowa. Arizona, for example, developed the Mature Workforce Initiative. It features a "seal of approval" to identify businesses that are friendly to older workers and a pilot program to connect businesses with older workers through all One-Stop Career Centers in the state.

Outlook for Older Workers

The key issue for future employment prospects is how the business community will respond to the increased availability of older workers. Relatively few employers have actively begun to recruit older workers, primarily because they do not yet foresee worker shortages. The industries that have most vigorously recruited older workers, such as health care and energy, already face imminent labor shortages. As the population ages and worker shortages develop, more employers may adapt workplace polices to appeal to older people. However, some observers who believe that globalization will enable people working overseas to meet the U.S. economy's employment needs dispute claims that labor shortages are inevitable and that the demand for older workers will soar.

Current practices by some employers raise additional concerns about how older workers might fare in the future. Many Americans claim that older people face discrimination in the labor market, and several studies have found that employers favor younger workers over older workers. Unless changing demographics or public awareness campaigns lead employers to change their attitudes, many older workers may encounter problems finding meaningful employment. Initiatives and partnerships developed by states and advocacy groups such as AARP and the National Council on Aging to educate employers about the benefits of hiring older workers may help older job applicants overcome employment barriers.

Future employment prospects may be least promising for older workers with limited skills. The steady deterioration over the past quarter-century in the earnings capacity of workers with limited education does not bode well for the employment prospects of low-skilled workers at any age, but older workers with few skills may be especially vulnerable. Because workers with less education work disproportionately in physically demanding jobs and experience more health problems than those with more education, low-skilled older adults may be less physically able to work than other older people. Employer surveys indicate that managers are less likely to embrace older rank-and-file workers than older professionals. Government programs such as WIA and SCSEP that train low-skilled older adults and help them find employment may be critical to safeguarding their financial security in old age.

I. Introduction

Older people are emerging as a major untapped labor source that could limit potential worker shortages. As the U.S. population ages and the number of people reaching traditional retirement ages increases, employers may need to attract and retain more older workers, many of whom are highly experienced, knowledgeable, and skilled. Many people report in surveys that they wish to remain working after traditional retirement ages, health status at older ages is generally better now than in the past, and many jobs are less physically demanding. Nonetheless, employment rates remain low at older ages.

Employers may need to rethink traditional workplace practices to attract older workers. Because many older people who wish to remain employed do not want traditional full-time work schedules, some employers are experimenting with flexible work arrangements, including part-time employment, flexible schedules, telework, contract work, and job sharing. Some employers are also creating phased retirement arrangements so employees can reduce their work hours but still retain health and retirement benefits. Nonprofit organizations, community colleges, and the government are promoting employment at older ages by developing job search assistance and training programs for older workers and partnerships with employers and industry groups.

This report describes current strategies in the private sector along with the government, nonprofit, and education sectors to help attract and retain older workers. This study was commissioned by the U.S. Department of Labor's Employment and Training Administration to support the work of the *Taskforce on the Aging of the American Workforce*. Chaired by Assistant Secretary of Labor for Employment and Training Emily Stover DeRocco, the taskforce includes senior representatives from nine federal agencies that administer programs affecting the lives of older Americans. It was charged with recommending strategies to address the challenges and opportunities created by an aging workforce.

The report is organized as follows. Section II reviews the challenges faced by older people looking for employment and employers that wish to hire them. Section III describes current employer strategies to hire and retain older workers, and Section IV identifies current strategies and practices by government, nonprofit organizations, and educational institutions that could improve employment opportunities for older workers. These two sections also provide examples of actual practices in use today. The final section summarizes the report, offers some conclusions, and discusses the outlook for older workers in coming years.

II. Benefits and Challenges to Engaging Older Workers

The aging population poses a serious threat to the nation's economic security. The growing size of the older population will increase the number of older Americans who qualify for publicly financed retirement and health benefits in coming years, relative to the number of younger adults who typically work and pay taxes. Between 2000 and 2020, the number of working adults for every nonworking adult age 65 or older will fall from 4.5 to 3.3, if current employment patterns continue (Johnson and Steuerle 2004). The shrinking labor pool threatens American economic growth, living standards, Social Security and Medicare financing, and funding for all other government programs. If current employment patterns and benefit levels persist, workers will have to pay higher taxes to support more retirees, employers will face labor shortages (particularly in certain industries), retirement benefits will likely be cut, and the growth in per capita economic output will slow.

But demographic change tells only part of the story. Future outcomes depend largely on individual employment decisions by workers and employers. Although labor force participation rates for older women have been rising over the past half-century as paid employment increased for women of all ages, participation rates for older men are lower now than they were 50 years ago, when health problems were more prevalent and jobs were generally more physically demanding. In 2005, for example, only 20 percent of men age 65 or older participated in the labor force, down from 47 percent in 1948 (Bureau of Labor Statistics 2006a). If people work longer, the economy can produce more goods and services, boosting living standards for both workers and nonworkers and generating additional tax revenue to fund all kinds of government services. For example, if men age 55 or older in 2020 worked at the same rate as they did in 1950 instead of the rate that prevailed in 2000, the ratio of working adults to nonworking older adults in 2020 would be 4.1 instead of 3.3 (Johnson and Steuerle 2004). Restoring the 1950 labor force participation behavior of older men would eliminate about two-thirds of the expected drop in the old-age dependency ratio between 2000 and 2020. Alternatively, if every worker delayed retirement by five years, relative to retirement plans based on current work patterns, the additional income and payroll taxes they would pay would more than cover the Social Security trust fund deficit for the foreseeable future (Butrica, Smith, and Steuerle 2007).

In addition to improving the economic outlook, working longer can enhance individual well-being. Those who delay retirement can raise their own retirement incomes by avoiding early retirement reductions to their Social Security and defined benefit (DB) pension benefits, accumulating more Social Security and pension credits and other savings, and reducing the number of retirement years that they must fund. By working until age 67 instead of retiring at age 62, for example, a typical worker could gain about $10,000 in annual income at age 75, net of federal income taxes and health insurance premiums (Butrica et al. 2004).[1] Delaying

[1] Most people can increase lifetime Social Security benefits by delaying benefit take-up, even if they do not work any additional years (Coile et al. 2002). The system increases monthly payments for those who wait to collect benefits to offset the reduction in the number of payments they receive over their lifetime. But, as life expectancy has increased, these bonuses now exceed the actuarially fair amount, overcompensating beneficiaries who delay claiming.

retirement may also promote physical and emotional health by keeping older adults active and engaged and imbuing their lives with meaning (Calvo 2006).

A. The Changing Retirement Landscape

The crucial question, then, is whether coming demographic changes will lead to higher employment rates and later retirements for older adults. A number of factors suggest that employment rates for older Americans will rise in the coming years. Improved health and declines in physical job demands leave older people better able to work today than in the past (National Center for Health Statistics 2006; Johnson, Mermin, and Resseger forthcoming; Steuerle, Spiro, and Johnson 1999).[2] Recent Social Security changes increase work incentives at older ages. The normal retirement age for full Social Security benefits recently increased from 65 to 66 and will reach 67 for those born after 1959. Delayed retirement credits have been raised to better compensate retirees who take up benefits after the normal retirement age. And Congress repealed the earnings test, which reduces Social Security benefits for employed recipients who earn more than a limited amount, for beneficiaries past the normal retirement age.

Changes in employer-provided pension and retiree health benefits are also likely to encourage boomers to remain at work. Traditional DB pensions, which provide workers with lifetime retirement annuities usually based on years of service and earnings near the end of the career, discourage work at older ages (Stock and Wise 1990). They often provide substantial subsidies for early retirement and penalize workers who remain on the job past the plan's normal retirement age, because workers who delay retirement by a month forfeit a month of benefits.

Over the past 30 years, however, employers have been shifting from traditional DB pensions to defined contribution (DC) plans (Pension and Welfare Benefits Administration 2001-02), which do not encourage early retirement. Employers typically make specified contributions into individual DC accounts that workers access at retirement, generally as lump-sum payments. Because contributions continue as long as plan participants remain employed and workers with a given account balance can receive the same lifetime benefit regardless of when they chose to begin collecting, DC plans do not generally penalize work at older ages. As a result, people in DC plans tend to work about two years longer than DB participants (Friedberg and Webb 2005). Thus, the shift to DC plans should increase older Americans' labor supply.

The erosion in employer-provided retiree health benefits is also likely to limit early retirement. Retiree health insurance, which pays health expenses for early retirees who have not reached the Medicare eligibility age of 65, discourages work by reducing retirement costs that arise from the loss of employer health benefits. Workers offered retiree health benefits by their employers retire earlier than workers who lose their health benefits (Johnson, Davidoff, and Perese 2003; Rogowski and Karoly 2000). Rising health care costs and the introduction of an accounting rule in 1993 that requires employers to recognize on their balance sheets the full

[2] There is some evidence, however, that the trend toward better health in late midlife has ended and perhaps reversed. For example, the share of surveyed adults age 51 to 56 reporting health problems increased between 1992 and 2004 (Soldo et al. 2006), and disability rates at age 40 to 49 increased between 1984 and 2000 (Lakdawalla, Bhattacharya, and Goldman 2004).

liability of future retiree health costs have led many employers to terminate their retiree health plans. In 2005, only 33 percent of employers with more than 200 employees offered retiree health benefits, down from 68 percent in 1988 (Kaiser Family Foundation and Health Research Educational Trust 2005).

Perhaps in response to these various trends, older adults are now working longer than they did 20 years ago. Between 1985 and 2005, the share of men in the labor force increased from 46 to 53 percent at age 62 to 64 and from 24 to 34 percent at age 65 to 69 (Federal Interagency Forum on Aging-Related Statistics 2006). The increase among men older than 65, when Medicare eligibility begins, suggests that the desire for health insurance coverage is not the sole factor boosting participation rates. Over the same period, female labor force participation rates rose from 29 to 40 percent at age 62 to 64 and from 14 to 24 percent at age 65 to 69 (reflecting the aging of a cohort of women with higher participation rates at younger ages than earlier cohorts).

Several surveys also suggest that boomers intend to work into old age. For example, 68 percent of older workers in one recent poll said they intended to work in retirement (AARP 2003). The mean self-reported probability of working full-time past age 65 among workers age 51 to 56 participating in the Health and Retirement Study increased from 27 percent in 1992 to 33 percent in 2004 (Mermin, Johnson, and Murphy 2007). Another AARP poll found that 38 percent of older workers want to phase into retirement gradually instead of leaving the labor force all together (AARP 2005). A recent MetLife survey found that boomers are increasingly concerned about their ability to afford an early retirement (MetLife Mature Market Institute 2005).

B. Challenges Confronting Older Workers and Employers

Despite these encouraging signs, a number of obstacles remain to lengthening work lives, discouraging both employees from working longer and employers from hiring and retaining them. On the labor supply side, Social Security payroll taxes create disincentives to work at older ages for people who have spent most of their adult lives in the labor force. Social Security benefits are based on average indexed monthly earnings, computed over the 35 years with the highest indexed earnings. For workers with fewer than 35 years of employment, an additional year of work and contributions eliminates a year of zero earnings from the benefit computation, often raising future benefits substantially. But for those with longer employment histories, an additional year of work will raise future Social Security benefits only if current earnings exceed adjusted earnings in the least remunerative of the top 35 years already used in the computation. This gain in benefits is not typically large enough to compensate for the additional payroll taxes that workers must pay (Butrica et al. 2004).

Even for older workers who have not completed 35 years of qualified work the net increase in Social Security benefits is often small because the benefit formula favors people with low lifetime earnings over those with high lifetime earnings. In addition, people with spouses who earn substantially more than they do often receive no additional Social Security benefits in

return for the payroll taxes they pay, because many end up collecting benefits based on their spouse's earnings history.[3]

Social Security's retirement earnings test remains in effect for those who have not yet reached the full retirement age, currently 66. The earnings test reduces current benefits for people who have not reached the full retirement age by $1 for every $2 of earnings above a specified annual threshold, set at $12,960 in 2007 (and adjusted each year by the average change in earnings). Many of those whose benefits are taxed away would eventually recover or more than recover them (depending on how long they live) through higher benefits in the future, but many people are unaware of (or do not respond to) this feature of the law. In addition, the earnings test may signal older people that they should not work, discouraging employment more than the financial incentives alone suggest.

Certain fringe benefits also discourage work at older ages. As noted earlier, workers in DB pension plans often lose pension wealth if they work beyond the plan's normal retirement age. Although these plans are much less common now than they once were, they continue to cover about one in five workers in the private sector (particularly those in large, unionized firms) and nearly all workers in the public sector (Bureau of Labor Statistics 2006b). Retiree health benefits also encourage retirement before age 65 by providing affordable health insurance before Medicare eligibility for people who choose to stop working. Many people without retiree health benefits are forced to work until they qualify for Medicare at age 65 because private nongroup insurance is expensive at older ages, especially for people with health problems. Although these benefits are also disappearing, nearly all public-sector workers and about one in six private-sector workers had access to retiree health benefits from their employers in 2003 (Buchmueller, Johnson, and Lo Sasso 2006).

Federal laws and regulations complicate employer efforts to provide the flexible work options that many older people prefer, discouraging them from remaining in the labor force. For example, restrictions on DB pension payouts to active workers make it difficult for workers to phase into retirement because many cannot afford to reduce their work hours without access to their pension benefits. Also, until recently, age discrimination laws made it difficult for employers to offer phased retirement programs that treat certain older workers differently from others. However, in response to a recent Supreme Court ruling, the U.S. Equal Employment Opportunity Commission issued new regulations in July 2007 clarifying that the Age Discrimination in Employment Act does not prohibit employers from favoring older workers over younger workers (even when the younger workers in question are age 40 or older).[4]

On the demand side, the perceived high costs of older workers may deter employers from hiring and retaining them. For example, wages usually rise with age. If this relationship reflects only age-related productivity gains, then it should not pose employment barriers for older workers. But it may also reflect the workings of internal labor markets that tie pay to seniority regardless of individual productivity. Average health care costs also rise with age, raising the cost of employing older people and often making total compensation rise with age more quickly

[3] As married women's average lifetime earnings increase relative to men's, however, more married women are receiving benefits based on their own earning histories.
[4] 72 Fed. Reg. 36873 (2007).

than productivity. Medicare secondary payer rules, which designate employer-sponsored health benefits as the primary payer of health care costs for Medicare-covered workers, further raise the cost of workers age 65 and older. DB pension plans raise the cost of hiring and retaining older workers because pension benefits in traditional plans that pay benefits based on highest earning years accrue rapidly in the years immediately before the plan's retirement age.

Older workers may also face age discrimination in the workplace. In a 2005 survey of 800 adults working or looking for work, 36 percent said that employers treated older workers less fairly than younger workers, and 71 percent said that older workers were more likely to be laid off (Reynolds, Ridley, and Van Horn 2005). Fully 60 percent of workers age 45 to 74 responding to a 2002 survey said they felt older workers were the first to go when employers cut back their workforces (AARP 2002). Two-thirds of the same group of respondents said they believed workers face age discrimination in the workplace, based on what they had experienced or seen.

Quasi-experimental evidence provides additional evidence that some employers may favor younger workers over older workers. One study examining how managers reacted to hypothetical workplace situations found that they generally perceived older workers as less flexible and more resistant to change than younger workers and that they were reluctant to promote older workers to jobs requiring flexibility, creativity, and high motivation (Rosen and Jerdee 1995). Another study found that employers were less likely to call back older job applicants than otherwise identical younger applicants (Lahey 2005).

There is also evidence that some employers are reluctant to invest in training older workers (Frazis, Gittleman, and Joyce 1998). Without adequate training, older workers run the risk of having their skills become obsolete, particularly in industries undergoing rapid technological change. Employers may fear that they will be unable to recoup their training costs before older workers retire.

Finally, some observers question whether a widespread labor shortage will actually materialize in the U.S. As globalization increases, according to this view, overseas workers will be able to meet the U.S economy's employment needs (Freeman 2006), limiting the demand for older U.S. workers.

III. Current Employer Strategies to Hire and Retain Older Workers

This section describes employer strategies to help attract and retain older workers. The first group of strategies encompasses flexible work arrangements and includes a wide range of alternatives to the traditional, full-time, 9AM to 5PM, five-days-a-week work schedule at a single place of employment. Flexible work arrangements may appeal to workers of all ages, especially those with disabilities or care responsibilities. Parents with young children, for example, may find these arrangements attractive. But flexible arrangements can be a particularly powerful tool to retain or attract older workers, who may be willing to extend their careers only if they can free themselves from standard work schedules. The second group of strategies includes phased retirement alternatives and focuses especially on the design of benefit packages that might encourage people to remain with the same employer longer. These include part-time work arrangements that allow employees to retain health and retirement benefits, programs to rehire former employees as contractors, other creative ways of retaining the services of former employees part time, and alternative ways of making pension benefits available to those still working or removing the penalty for additional work that exists in many DB plan arrangements.

A. Flexible Work Arrangements

Flexible work arrangements may appeal to older adults who no longer wish to work traditional full-time schedules, either because of additional personal obligations (such as the need to care for aging parents or spouses or help with grandchildren), worsening health, declining physical energy or stamina, or simply a preference to sacrifice some income for more control over their time without giving up paid employment entirely. Older workers may have accumulated enough savings or gained full or partial access to pension benefits and employer-sponsored health benefits so they can maintain their living standards with lower earnings but still need some labor income.

As discussed in more detail in this section, flexible work arrangements include part-time employment, flexible work schedules, telework, contract work, and job sharing. Flexibility may also include arrangements that enable workers to perform new work tasks in different ways or change the organization's work design. Changes in the nature of work assignments are often necessary to accommodate changes in work schedules and the allocation of work assignments as workers age.

An important benefit of flexible work arrangements is that they can enable employees to extend their careers with the same employer or in the same occupation or industry instead of moving to self-employment or to different occupations or sectors where part-time work schedules are more common (such as retailing). By staying in the same firm or occupation, employees can continue to use the human capital and experience that they have accumulated over a lifetime of work, raising their compensation and preventing the loss of these specialized skills, attributes, and knowledge to the employer.

Although this section focuses on the use of flexible work arrangements to make work more attractive to older people, the proliferation of these arrangements can transform the

workplace for all workers. Thus, as the workforce ages, workplace changes designed to attract and retain older workers may change the nature of employment relationships at all ages.

Part-Time Employment. Part-time employment helps employees balance demands of work and personal life. According to an AARP survey, nearly 7 in 10 workers who have not yet retired plan to work into their retirement years or never retire (AARP 2003). However, part-time employment and other forms of workplace flexibility is very important to many older workers because it allows them to set their own hours, take time off to care for relatives, enjoy more free time, or attend to other life priorities, and work a reduced schedule before completely retiring.

While older workers have many reasons to want to work part time, a potential issue is its impact on pensions, health benefits, and other employee benefits. IRS regulations under the Employee Retirement Income Security Act (ERISA) limit a company's ability to pay benefits from a DB pension plan to employees who continue to work for them, while retaining the plan's tax-exempt status. Employers may no longer wish to bear the same share of health insurance premiums for part-time workers as full-time workers, but federal law may limit their ability to adjust their contributions. The interrelationships between benefits and part-time employment are discussed more fully in the section below on phased retirement plans.

Flexible Work Schedules. Rather than go to a part-time schedule, many workers who maintain full-time schedules may prefer some control over their work hours. Flexible work schedules can help employees meet care responsibilities, coordinate personal chores with other family members, enjoy more free time, reduce commuting time, and schedule medical appointments, out-of-town family travel, and other intermittent activities.

Flexible schedules allow workers to determine the timing of the workday (*flextime)* or the workweek or longer periods (*compressed work schedules*) with the consent of their employer. Typically, workers in flextime programs must show up during certain core hours (such as 10AM through 3PM) on days that they work, but otherwise can set the time they arrive and leave for the day. Workers on compressed work schedules may do all their work in eight 10-hour days instead of 10 eight-hour days, or, more typically, they can work nine days in a two-week period with an extra day off every other week. In addition to flexible hours, another possibility is for employers to allow employees to work extra hours ad hoc (at their mutual convenience), and then grant compensatory leave.

The Bureau of Labor Statistics (2005) reports that in 2004, 27.5 percent of the labor force had flexible schedules that enabled them to vary the time they began or ended work. Flexible work schedules were more common among whites and Asian-Americans than among African-Americans and Hispanics, and more prevalent in managerial and professional occupations and among sales and office workers than in construction, natural resource industries, and transportation. While more than 25 percent of workers had flexible work schedules, only about 10 percent were enrolled in formal, employer-sponsored flextime programs. Employers who sponsor flexible work programs generally offer a variety of options, as shown in the examples in box 1.

Box 1. Examples of Flexible Work Schedules in the Private Sector

Volkswagen of America provides a menu of ways for its full- and part-time employees to create flexible schedules, including flextime, compressed work schedules, job sharing, and telecommuting. Employees are also allowed some schedule changes to move between full- and part-time employment. Many older workers phase into retirement by moving to part-time work. Retirees are also actively recruited back into employment with part-time and flexible schedules, consulting/contracting opportunities, and short-term work assignments.

Mercy Health System offers its employees numerous flexible schedule options, including weekend-only work, work-at-home opportunities, and seasonal work programs that allow employees to take extended leaves.

Lee Memorial Health System is another employer in the health care industry that offers flexible work options. These include part-time work, compressed workweeks, job sharing, temporary work schedules, and phased retirement. Lee Memorial has also developed a seasonal-months-off (SMO) program that grants employees up to six months off during slow seasons (usually summer). Both full- and part-time workers can the use the program, which allows workers to maintain their health, dental, vision, long-term care, and life insurance benefits at the same rate that prevailed before their SMO break. Additionally, Lee Memorial offers a reduced schedule program, similar to the SMO program, that allows employees to work reduced schedules for up to six months without losing their benefits.

Source: AARP (2007).

While flexible schedules are becoming more prevalent, the Fair Labor Standards Act (FLSA) somewhat restricts private employers' use of flexible schedules and compensatory leave by requiring them to pay overtime wages to hourly employees who work more than 40 hours in a week. Although the FLSA protects workers who do not wish to work more than 40 hours in a week from potential employer pressure for overtime work to meet short-term needs, it also limits some flexible arrangements that both employees and employers may prefer. The federal government may be able to make better use of flexible schedules because the FLSA allows it to grant compensatory leave instead of overtime pay to employees who work more than 40 hours in a week. The government permits federal workers at all levels other than the Senior Executive Service to use flexible schedules. The Bureau of Labor Statistics (2005) reports that 29 percent of federal workers in 2004 worked flexible schedules. (See box 2 for more details.)

Job Sharing. Job sharing arrangements can help older employees as they move from full-time work to part-time work. Employers may benefit from the enhanced skill sets that often result when two people share a single job. Some employers, as mentioned in box 3, encourage job sharing as a way to extend the careers of older employees.

Box 2. Flexible Work Schedules in the Federal Government

The federal government makes extensive use of flexible work arrangements. These include alternative work schedules (AWS) and teleworking. Detailed rules and regulations for these programs are posted on the U.S. Office of Personnel Management (OPM) web site (OPM 2007) and on a joint telework website maintained by OPM and the General Services Administration (OPM and General Services Administration 2007).

OPM defines two types of AWS: flexible work schedules (FWS) and compressed work schedules (CWS). Under both types of AWS, full-time employees must work 80 hours during a designated pay period. Agencies have the authority to establish alternative work schedules, depending on their needs.

FWS consists of workdays with core hours and flexible hours. Core hours are the designated period of the day when all employees must be at work. Flexible hours are the part of the workday when employees may choose their time of arrival and departure. CWS allows employees to fulfill their responsibility to work 80 hours in a two-week time period in fewer than 10 working days by working more than 8 hours per workday.

An OPM study reported that 91 percent of agency locations surveyed in 2000 had implemented flexible work schedules and 94 percent had implemented compressed work schedules (OPM Office of Merit Systems and Oversight 2000). The majority of employees (67 percent) and managers/supervisors (68 percent) agreed that employees were given the opportunity to work at home, but about 25 percent of respondents in both groups disagreed. Supervisors and managers generally supported the programs but expressed concern about their loss of control over the workplace, especially about office coverage and their ability to schedule meetings on Mondays and Fridays.

However, employers may have more difficulty implementing job sharing than other flexible work options. It requires clear delineation of work responsibilities as well as frequent communication among the job sharers and their manager. If one job sharer leaves, the other may be forced to return to full-time work or lose his or her job unless another job sharer can be found. Nonetheless, both the company and the employees who share jobs can benefit if all parties have a long-term commitment to the arrangement (Sheley 1996).

Changing Jobs within the Company. Some employers allow employees to change jobs within the company. Sometimes a way to facilitate shifts to part-time work, this option can also offer new opportunities to older employees who have become less motivated in their existing position and are seeking new challenges or it can enable employees to shift to new positions better suited to their changing capabilities or preferences. Box 4 provides examples of companies that encourage workers to change jobs within the company.

Box 3. Examples of Job Sharing

Abbott, a global health care company with about 65,000 employees, recently developed a job-sharing program, with the assistance of its employees, to deal with its aging workforce in Europe, Japan, and the United States. Older employees are encouraged to use the job-sharing program in conjunction with other flexible work options so they can stay on the job longer and better achieve a work-life balance (Abbott 2007).

Unified School District of Wichita, Kansas is an early example of job-sharing programs for older workers. As shrinking school enrollment forced the district to reduce its staff, the school system began offering a job-sharing program rather than laying off workers. The program allows teachers age 55 and older to move to half-time schedules but maintain full-time pension contributions (Colbert 1985).

Lancaster Labs, a Pennsylvania technology company with more than 800 employees, provides both formal and informal job sharing opportunities for its workforce and encourages older workers to participate. To retain workers in a tight labor market, the company managers remain as flexible as possible in approving job-sharing arrangements. Arrangements can be temporary or permanent depending on employee needs and can range from working a few days a week to a few hours a day. More than two employees can share a job if that arrangement fits into a 40-hour workweek (Business and Legal Reports 2000).

Box 4. Examples of Companies That Facilitate Internal Job Changes

Dow Chemical Company has programs for "career deceleration" that allow older workers to move into less intense positions, such as those that involve mentoring younger workers or teaching courses. This program allows older workers who may be required by government regulations to retire from a particular job to move into different positions within the company rather than leave the firm (Dychtwald, Erikson, and Morison 2006).

Duke Power allows employees to post their jobs and swap them with others at the same pay scale. Employees must receive approval from their supervisors, who are encouraged to permit these exchanges and be open to movement across departments. Some companies, such as ***Bell Canada*** and ***CNA Insurance***, have even more liberal policies on moving within the company and allow employees with sufficient tenure to transfer without manager approval (Mullich 2005).

Deloitte Consulting developed the Senior Leaders program as a way to retain its aging workforce. The program allows selected employees, nominated by a committee, to redesign their role at the company and customize a new, second career within the firm. This customization usually includes plans for flexible hours, alternative work locations, and work on special projects (Dychtwald et al. 2006).

Telework. Under telework arrangements, employees work either from home or from teleworking centers closer to home than their normal workplace. The main benefit of teleworking is the saving of commuting time. It is also a way of accommodating workers with difficulty commuting because of physical impairments that affect driving (e.g., poor vision) or limit use of public transportation (e.g., lack of strength or mobility) or those who might need to perform personal chores or schedule appointments during the workday. In addition to benefiting employees who choose telework, the widespread use of telework arrangements can reduce traffic congestion, thus benefiting those who continue commuting to downtown offices.

To be successful, telework arrangements require that employees have appropriate workplaces free from distractions and interruptions with necessary communications equipment. At-home employees need dedicated workspaces in their homes with telephone service, a computer, and access to the Internet and internal office e-mail systems, if applicable. Teleworking centers may be appropriate for employees without suitable workspaces at home or for those whose work requires sophisticated office equipment or secure communications that cannot be efficiently provided to a large number of separate residences.

Telework is not suitable for all workers. It does not work, for example, for jobs that require equipment that cannot be placed in an individual home (such as manufacturing jobs) or that entail face-to-face interaction with customers or fellow employees. Telework requires that employers be able to monitor worker performance based on tangible work product, without the need to observe them at work. Nonetheless, off-site work possibilities are increasing as the number of workers in such sectors as financial services, information technology, and communications services rises. Many companies are now offering telework opportunities, including Quest Diagnostics, IBM, and ARO Inc (AARP 2007; Dychtwald et al. 2006).

Time spent teleworking is work time and cannot be used for child care or to meet other personal responsibilities. Employees may choose to telework during regular working hours. But teleworking also facilitates use of flextime; employees who miss work part of the day can make it up at another time because they have easy access to their at-home workplace. Nonetheless, teleworking employees may need to be accessible to supervisors or coworkers via phone or email during core work hours.

The International Telework Association and Council tracks the number of employees working from home. According to their latest report, the number of Americans whose employer allowed them to work from home at least one day a month grew from 9.9 million to 12.4 million between 2005 and 2006, an increase of 25 percent (World at Work 2007). Between 2004 and 2006, the number of teleworkers increased 63 percent. Including contract teleworkers (self-employed individuals who work from home at least one day a month), 28.7 million workers—almost a fifth of the total workforce—worked from home at least one day a month in 2006. Two-thirds of teleworkers had a broadband Internet connection in 2006, a much larger percentage than for the overall population. Teleworkers are more likely to be male than female and are more likely to be married and have higher levels of education and income than the general population. (See box 5 for examples of private-sector employers providing telework options and box 6 for information on the federal government's telework policy.)

Box 5. Examples of Companies That Use Teleworking

As a first step into teleworking, ***AT&T's*** environmental, health, and safety group created a virtual office within the larger company. This group, with approximately 50 employees, moved from working at physical office locations to working mostly from home. The positive results from that initial experiment, combined with improved technology, led AT&T to create a companywide telework policy. About 30 percent of its management staff have now gone "virtual," and 41 percent of them work an average of two days a week at home. Each telework arrangement is individualized, and managers must ensure that the arrangements benefit both the employee and the firm. AT&T reports several advantages to its telework policy, including cost savings and improvements in business continuity (e.g., during bad weather or disasters) and employee performance and retention (Dychtwald et al. 2006).

Box 6. Teleworking in the Federal Government

The federal government actively encourages its employees to telework. The FY 2001 Department of Transportation and Related Agencies Appropriation Act requires each executive agency to "establish a policy under which eligible employees of the agency may participate in telecommuting to the extent possible without diminished employee performance." The government defines three types of telework:

- Full-time telework, in which employees complete almost all their duties outside a traditional office setting. (This group often includes people who work far from the office.)
- Part-time telework, in which employees telework on a regularly scheduled basis (such as one or more days a week, alternative weeks, or several days a month).
- Episodic telework, in which employees work from home irregularly, either to complete specific projects or to accommodate short-term personal needs.

The U.S. Office of Personnel Administration reports that 140,694 federal employees teleworked in 2004, an increase of 37 percent from 2003 (OPM 2005).

U.S. Trade and Patent Office (USTPO) has a broad telecommuting/telework policy to address work-life balance issues and to help with recruitment. The agency has 13 telecommuting programs, with 220 trademark examiners and 600 patent examiners participating. USTPO expects to increase the number of telecommuters in the future by 500 employees. The agency provides its employees with interchangeable laptops and technical services and reimburses Internet service costs. Telecommuters are required to come into the office once a week but can live anywhere in the country (Gross 2007).

Snowbird Programs. Snowbird programs allow employees to shuttle between two locations seasonally. The programs are especially appealing to older workers who seek warmer climates in the winter months and cooler climates in the summer, as well as some college students and parents with preschool-age children. Companies with active snowbird programs

include Home Depot, Carondelet Health Network, Borders, and CVS Pharmacies. (See box 7 for more information about the CVS program.)

Snowbird programs are economically viable for organizations in such sectors as retailing and health care services in which the customer base also migrates from north to south in the winter months. The programs would likely not work in other sectors, such as manufacturing or software development, in which it would be costly to maintain multiple production facilities and office buildings that stay idle for much of the year. But snowbird programs are an innovative solution for firms with regionally shifting employment needs during the year, allowing them to meet their staffing needs while accommodating the preferences of many older workers who no longer wish to remain in a single location for the entire year.

Box 7. Example of Snowbird Programs

CVS Pharmacies is a major innovator in developing snowbird programs. CVS employs many older workers in their northern retail outlets in the summer and their southern stores in the winter. About 300 older workers participate in the snowbird program each year. Between the early 1990s, when CVS initiated the program, and 2005, the share of its workforce older than age 50 increased from 7 to 17 percent (Gardner 2006).

B. Phased Retirement Plans

Many older workers would like to continue working past traditional retirement ages. But workers in DB pension plans have strong economic incentives to retire from their current employer and may face lesser employment opportunities at other firms. Employers often face significant legal barriers to offering their employees pension benefits while still working or opportunities to participate in phased retirement plans. This section reviews some options for phased retirement and barriers to their use and provides examples of several firms with phased retirement plans.

Older workers may have only limited opportunities to phase into retirement gradually with their current employers, in part because benefit plans generally inhibit these arrangements. Employers, however, are continuing to switch from DB to DC retirement pension plans, which can more easily distribute retirement payments to employees still on the job. Many employers are also learning how to design phased retirement arrangements, either formal or informal, that can survive legal challenges. These trends will provide more opportunities for employees to take phased retirement in the future.

Greater use of phased retirement arrangements will not necessarily increase older workers' total labor hours, but it will lead some people to extend their working lives instead of leaving work completely. This may encourage some people to move from full-time to part-time work sooner than they otherwise would have. Nonetheless, more opportunities to use phased retirement arrangements will enable workers and employers to satisfy their preferences better and will remove one barrier to longer careers.

Many employees are interested in phased retirement, but very few employers have formal phased retirement plans. A recent AARP survey found that 38 percent of workers expressed interest in phased retirement and 78 percent of those interested said these programs would encourage them to stay in the labor force longer (AARP 2005). But according to one survey, only about 30 percent of employers offer formal phased retirement programs (Hutchens and Grace-Martin 2006). Other surveys suggest that these types of formal programs are even less common. For example, only 16 percent of employers in a Watson Wyatt Worldwide survey and 23 percent of employers in a William H. Mercer survey reported any kind of flexible employment arrangements for older workers (Graig and Pagnelli 2000; Rappaport 2001).

Employers are often willing to work out phased retirement, but only as an informal arrangement (Hutchens and Grace-Martin 2006). As a result, unionized firms and establishments that are part of larger organizations are less likely to permit phased retirement because both unions and large bureaucracies generally oppose informal arrangements, preferring arrangements agreed on through collectively bargaining or imposed as part of overall personnel rules. Firms that have flexible work practices in general (flextime, employment of part-time workers, job sharing) are more likely to allow phased retirement (Hutchens and Grace-Martin 2006).[5]

Employees who switch from full-time to part-time work often change employers instead of phasing into retirement with the same employer (Hutchens 2007). Just under 10 percent of workers age 62 to 64 surveyed in the Health and Retirement Study transitioned from full-time to part-time work over a two-year period, and about half of those who made the transition changed employers (Even and Macpherson 2004). Skilled white-collar workers are more likely to take phased retirement than nonphased retirement, and blacks are more likely to take nonphased retirement (Chen and Scott 2006). Those who take phased retirement have higher levels of education, household income, and wealth than those who do not take phased retirement.

The federal government has an older workforce than most employers, with about 60 percent of workers eligible for retirement in the next 10 years. While the federal government is a leader in developing flexible workplace practices, it does not do much to facilitate gradual transitions from work to retirement. It offers a very generous DB pension plan that encourages early retirement, especially for workers hired before 1984 under the old Civil Service Retirement System (CSRS), but also, though to a lesser degree, for those participating in the post-1984 Federal Employee Retirement System. However, OPM has recently proposed legislation allowing federal agencies to bring back retired employees on up to a half-time basis, while continuing to pay full retirement benefits (Barr 2007). Employees would not earn additional retirement credits from their work. OPM has also proposed revising the CSRS formula so employees could continue to work part time at the end of their careers without incurring the current penalty against their retirement calculation.

A number of business practices facilitate phased retirement. These include age-neutral pension plans, pension arrangements under traditional DB plans that enable employees to continue working without losing pension benefits, formal plans by companies to transition their older employees to part-time work, and use of former employees as contractors.

[5] Surprisingly, Hutchens and Grace-Martin find that having a DB plan itself does not appear to contribute negatively to the probability of allowing phased retirement, after controlling for firm size and unionization status.

Age-Neutral Pensions. Traditional DB plans can encourage workers to retire once they become eligible for full benefits because working longer reduces the present value of pension benefits over their lifetime. In contrast, DC plans are age neutral; wealth in the employee's account accrues at the market rate of return without regard to age or previous years of service.

Cash-balance DB pension plans are also age neutral. Wealth in a cash balance plan is based on past contributions and a deemed rate of return. As with traditional DB benefits, employers bear the risk of variations in yields on assets but, as in a DC plan, the employee's wealth depends only on past contributions and the rate of return, not on a formula based on the highest years of earnings and number of years of service. Beginning in the late 1990s, a number of large employers converted their DB plans to cash balance plans, but age discrimination claims created uncertainty about the legality of these conversions, halting new conversions for several years. While it now appears that the courts will uphold the legality of cash balance conversions, more employers seem to be terminating or freezing DB plans completely and replacing them with DC plans (Munnell et al. 2006).

The share of private-sector workers participating in traditional employer-sponsored DB plans has been declining steadily for the past quarter-century, dropping from 39 percent in 1980 to 20 percent in 2006 (Bureau of Labor Statistics 2006b; Pension and Welfare Benefits Administration 2001–02). Over the same period, the share of private-sector workers participating in any type of retirement plan (traditional DB, other, or both) has increased from 47 to 51 percent. The shift away from DB plans has been accelerating in recent years (VanDerhei 2006).

Deferred Retirement Option Plans (DROPs). Many state and local governments have recently instituted deferred retirement option plans (DROPs) as a way of getting around the work disincentive effects of DB plan formulas. DROPs have been established at many public schools facing teacher shortages. Under a DROP, a worker who reaches retirement age can continue working and receive contributions to a retirement fund equal to the pension benefit he or she would have received if retired. The worker does not receive a cash pension benefit, but the amount contributed to the DROP account accrues interest until he or she actually retires. Upon retirement, the employee starts receiving the same annual pension benefit he or she would have received if terminating employment at the retirement age, and he or she can withdraw the funds in the DROP account either as a lump sum or as an actuarially equivalent retirement annuity. In effect, the addition of a DROP makes the DB plan age neutral because the present value of the employee's lifetime retirement benefit does not depend on the retirement date. At the same time, the employee is not receiving any cash pension benefits until retirement.

Under some plan designs, DROPs can be used to force out employees, especially if the plan is available only between the earliest retirement age specified in the plan and the normal retirement age (Calhoun and Tepfer 1998). Further, private-sector employers considering DROPs must deal with a host of complex legal issues under the tax law and ERISA relating to rules against back-loading pension benefits and against discrimination favoring highly compensated employees. These legal complications have limited the use of DROPs in the private sector. For additional information on DROPs available in state and local governments, see box 8.

Box 8. Examples of Deferred Retirement Option Plans (DROPs)

According to the U.S. General Accounting Office, several states with DROPs for teachers include ***Arkansas***, ***California***, ***Louisiana***, and ***Ohio***. In Arkansas, teachers who continue working in "critical need" areas such as math, science, foreign languages, and special education receive more benefits than teachers in noncritical subjects who remain at work. California offers bonuses to teachers who stay on the job once they qualify for retirement. Ohio now uses the DROP program to recruit 10 percent of its teachers from its retirees (U.S. General Accounting Office 2001).

The City of Philadelphia, among many other local governments, offers a DROP to its employees. The city's DROP allows employees with 10 years of credited pension service who have reached their normal retirement age to accumulate their monthly service retirement benefit in an interest-bearing account for up to four years and to remain employed by the city (City of Philadelphia Personnel Department 2007).

Transition to Part-Time Employment for Older Workers. Before enactment of the Pension Protection Act of 2006 (PPA), IRS regulations did not allow firms to pay retirement benefits from DB plans before termination of employment (except in a limited way). PPA allows payment of benefits to in-service workers who are age 62 or older, although new regulations under PPA are still pending. Even before this change, some firms have been able to institute programs that allow older workers to reduce their hours gradually, either in their current job or a new job, while still receiving some pension and health benefits. Other employers are able to meet regulatory requirements and pay retirement benefits to older workers by terminating the employees and rehiring them part time. (See box 9 for examples of companies that offer to pay

Box 9. Employers That Pay Pension Benefits to Partially Retired Workers

Bon Secours Richmond Health System has a policy allowing employees who are age 65 and older to work up to 24 hours a week and receive the same benefits they would get if fully retired (Malone 2007).

First Horizon National Corporation, a financial services company based in Memphis, Tennessee, permits individuals to reduce their hours to 20 to 32 hours a week while still receiving health and other employment-related benefits. ***Mitretek*** also allows employees to work part time and collect partial benefits on a case-by-case basis (AARP 2007).

The Aerospace Corporation allows employees to work part time or take a leave of absence before retirement and rehires retirees on a temporary basis. In addition, retirees are able to return to work part-time (less than 1,000 hours a year) as "casual employees." These options allow retirees to collect full benefits while working (Aerospace Corporation 2007).

Massachusetts Institute of Technology allows employees who wish to phase into retirement to reduce scheduled hours in their current jobs and then apply for part-time positions as they become available (Jackson 2004).

pensions to partially retired employees.) The law is unclear about what constitutes termination of employment, so it would seem that some interval would need to pass between terminating and rehiring before the former employee could be counted as a new hire.

Hiring Former Employees as Independent Contractors. As an alternative to paying pension benefits to active employees, the firm could terminate employment and then rehire the former employee as a consultant or independent contractor. Independent contractors do not receive employee benefits (health benefits, annual leave, sick leave, or contributions to retirement plans), but independent contractor status does enable former employees to receive full retirement benefits while working for their previous employer, such as Hoffmann-LaRoche Inc. (see box 10).

Box 10. Examples of Companies' Use of Independent Contractors

Some companies have developed plans that avoid legal issues associated with paying pensions to employees who are still employees by rehiring former employees as contractors. For example, ***Hoffmann-La Roche Inc.*** allows retirees to work for the company through an employment agency or via private contracts that allow the retiree to collect pension benefits while working. Other companies that recruit retirees to return to work as independent contractors include ***Principal Financial Group***, ***SC Johnson***, and ***Busch Entertainment Corporation*** (AARP 2007).

While there are no restrictions on paying DB benefits to former employees who are independent contractors, issues arise in determining whether the provider of labor services is really an independent contractor. Because independent contractor status can be used to evade taxes and avoid labor laws, the tax law has a complex 20-part test of what constitutes an independent contractor. One important component of that test is whether individuals set work conditions—the how, when, and where. Independent contractor status may not be ideal in cases in which the employer wishes to access worker's labor services regularly and predictably for tasks the employer defines and manages. Instead, contracting arrangements are more suitable for short-term projects or for temporary time periods.

Other Arrangements to Retain the Services of Retirees. Companies have developed a number of other creative ways to continue to employ older or retired workers on an intermittent or part-time basis. Some companies, for example, recruit retirees to help on short-term projects. Others have programs to shift workers into a mentoring role. The MITRE Corporation, as discussed with other examples in box 11, has a "ready reserve" program under which retirees can be recalled for up to 1,000 hours of work a year on projects that require their expertise.

Box 11. Other Ways of Retaining Older Workers

Busch Entertainment Corporation has developed a program called "Legends Ambassadors" where a team of workers age 55 and older are stationed at every park to ensure quality employment and job satisfaction for older workers. Ambassadors are selected annually to work with older employees by helping them navigate the company, mentoring them, and serving as a conduit to human resources. Ambassadors also participate in recruiting efforts such as job fairs for older workers (AARP 2007).

Another example of an innovative phased retirement plan is the Ready Reserve Plan introduced by the ***MITRE Corporation***. Retirees from MITRE volunteer for the program, under which they can be recalled for up to 1,000 hours of work a year on projects that require their expertise. Volunteers in the program receive full retirement benefits and are compensated as employees (Interview with Bill Albright, MITRE, May 21, 2007).

Reverse mentoring is another way to keep older workers engaged and in the workplace. Companies such as ***Proctor & Gamble***, ***Siemens***, and ***General Electric*** have reverse mentoring programs where younger employees teach managers and executives, who tend to be mid-career or older workers, about new technologies (Dychtwald et al. 2006).

IV. Other Strategies to Improve Employment Opportunities for Older Workers

With the boomers reaching retirement age and some observers forecasting labor shortages, government and other service providers—such as employment agencies, nonprofit organizations, and community colleges—are beginning to tailor their programming and services to individuals age 50 and older. These organizations are creating or expanding services to help older workers find or retain employment through older worker–focused employment centers, online job search and advice web sites, job clubs and networking opportunities, partnerships with employers, and other activities.

This section describes government and other efforts to help older workers prepare for and find new employment opportunities. It also provides examples of public-sector strategies to recruit and train older workers and create employer partnerships.

A. Helping Older Workers Find Employment

As discussed earlier, older people search for jobs for many reasons. Full-time workers may prefer employment that allows them to reduce their work hours. Retirees may want a flexible part-time job to occupy their time, provide meaningful work opportunities, or provide additional income. Some older workers may have been laid off and need help finding or training for a new job. Others may lack the needed skills or education to qualify for an available job in their region. Regardless of the reason for their search, many older job seekers need help connecting with employers, and both the public and private sectors are responding to these needs.

Sources of job search assistance for older workers are proliferating rapidly in the private sector. Tools geared specifically to older workers include job web sites, job fairs, books and articles, job centers, recruiters, and career counseling services. This growing cottage industry has defined its client base as older workers and is reaching out to workers age 55 and older, and sometimes workers as young as age 40.

The public sector is also developing targeted services and often implementing them with the help of private providers. It employs many strategies and tools used in the private sector to help older workers find employment opportunities, but it often targets those with limited skills or employment experience by providing additional assistance. The U.S. Department of Labor (DOL) administers two public-sector programs that provide job search and readiness assistance for older workers. The first, authorized by the Workforce Investment Act of 1998 (WIA), is the WIA adult and dislocated worker programs. One-Stop Career Centers, funded by WIA, provide employment and training services to workers in the community. Although these centers serve workers of all ages, some states and local areas are beginning to view older workers as important users of WIA-funded programs and services. The second publicly funded program is the Senior Community Service Employment Program (SCSEP), the federal government's only older worker-focused employment and training program. It gives grants to states, territories, and national nonprofit organizations to serve low-income seniors and provide them with the work experience they need to secure gainful employment. State and local governments sometimes combine federal funding from these two programs to offer more comprehensive services to older workers.

As job services to older workers become available through both the public and private sector, navigating the myriad of service options may be the next challenge for older workers to find the assistance they need. The following section describes these various services and access points for older workers and provides some examples.

Job and Career Centers. Older workers can typically find job search assistance at government-funded job and career centers—One-Stop Career Centers and SCSEP sites. One-Stops provide job search assistance (among other employment and training services) to all workers regardless of income, while SCSEP sites restrict employment and training services to low-income individuals age 55 and older. DOL has developed a curriculum for One-Stops to train older worker specialists, so these specialists can better understand the employment barriers that many older adults face (DOL 2000). Some states, such as Maine and Wisconsin, are developing materials and resources in their One-Stop Career Centers especially for older customers. These materials may include lists of employers who are considered receptive to older workers and job openings, as well as one-on-one assistance with job search activities. The SCSEP sites often use One-Stop job search services for their low-income enrollees.

Some local workforce programs are taking additional steps to provide older people with job search and readiness assistance through alternatives to traditional One-Stop or SCSEP offices. In Ohio, the Mature Services program operates four employment centers geared specifically for seniors. These centers use SCSEP grants and WIA adult and dislocated worker funds to finance employment services and intensive "job clubs" for seniors. Mature Services also offers virtual services online. (See box 12 for more information.) Other examples of local One-Stop Career Centers specifically for seniors include Maryland's Pasadena Freetown Village Center (Anne Arundel Workforce Development Corporation 2007) and the Career Encores Satellite Center in Los Angeles' WorkSource system (*Los Angeles Times* 2007). Both programs staff resource centers, operate job clubs, and provide additional access points to workforce development services.

National career centers also assist older people seeking employment. These centers, which typically feature both physical offices and online services, usually focus on recruiting workers in particular industries. The National Older Worker Career Center (NOWCC), funded by the Senior Environmental Employment (SEE) Program of the U.S. Environmental Protection Agency and the Agricultural Conservation Enrollees/Seniors (ACES) of the U.S. Department of Agriculture, helps retired and unemployed workers age 40 and older find jobs in various environmental, conservation, and natural resource programs.[6] The center, located in Arlington, Virginia, provides job leads in government agencies for older workers in clerical, technical, and professional positions, thus offering opportunities to individuals with a wide range of skill levels and experience. NOWCC lists job openings across the country, and workers who cannot visit the center in person may apply online (NOWCC 2007).

[6] See http://www.epa.gov/ohr/see/brochure for more information on the SEE program and http://www.nrcs.usda.gov/news/releases/2005/aces.html for more information on the ACES program.

Box 12. Mature Services—Ohio Senior Employment Centers

Mature Services (www.matureservices.org) in Ohio has developed four senior employment centers in Akron, Euclid, Cincinnati, and Columbus. Using a combination of WIA and SCSEP funding from local government, these centers offer comprehensive employment assistance to older workers and serve as an access point to One-Stop Career Centers in the area. Mature Services staff and trained SCSEP participants sometimes work out of local One-Stops and provide orientation workshops. Mature Services also work with One-Stop Career Center staff, and both refer older workers to each other to fill service gaps.

In addition to traditional WIA and SCSEP services, Mature Services uses intensive job clubs to provide job search and preparedness workshops and networking opportunities to older workers. Mature Services' facilitators lead the 10 to 15 participants in each job club and hold in-person sessions on job search techniques, resumes and interviews, computer use, and other topics, tailored to the needs of the job club participants. The facilitators counsel job club participants and work one-on-one to develop an employment plan. Because job club members work together for months on their job search, they often end up helping each other with job leads and contacts through facilitator-guided discussions. In addition, Mature Services organizes job clubs by videoconference for older workers in such areas as Youngstown, where no senior employment center exists.

Mature Services also has created a service for employers called Mature Staffing Systems. For a small fee, employers are able to list jobs with Mature Staffing and obtain help finding qualified older workers. The service usually targets retirees for temporary or part-time work.

Sources: Mature Services (2007); interview with Paul Magnus, Mature Services, July 25, 2007.

Employment Web Sites. Although older people can use general online job search tools such as Monster.com or work with traditional recruiters and headhunters, a growing industry of online job assistance services is being tailored specifically to older workers. Internet job sites and job banks that target older workers are becoming increasingly popular, and they are beginning to court workers and job seekers age 40 and older, not just the 55-and-older age group (Olsen 2007). Many of these web sites provide guidance to older adults about how to find jobs best suited to their needs, including tips on finding employers that value their expertise and offer work environments that are welcoming to older people. AARP is leading an effort to help older adults find new employment opportunities by listing job sites, providing advice on job searches, and vetting employers who are older-worker "friendly." It also provides information on careers, self-employment, workplace flexibility, and dealing with job loss, all available on a comprehensive web site. (See box 13 for more examples.)

Some web sites are industry-specific, listing job openings in such fields as engineering and health care targeted to older workers or retirees with skills in high demand. One site, YourEncore.com, recruits engineers, scientists, and product developers. Featured employers are

Box 13. Employment Web Sites Specifically for Older Workers

Your Encore www.yourencore.com
Seniors4Hire www.seniors4hire.org
Retired Brains www.retiredbrains.com
Senior Job Bank www.seniorjobbank.org
SEE Program www.seeprogram.org
Corporate Gray www.corporate-gray.com
Network for Retired Government Employees www.enrge.us
Dinosaur Exchange http://dinosaur-exchange.com
Jobs 4.0 www.jobs4point0.com

often in the pharmaceutical, medical device, consumer products, aerospace and defense, and chemical industries.

Several states have online job banks and portals for their older residents and work directly with employers to obtain job listings. While these sites typically provide only links to national older worker job sites or state job banks, they offer one more access point for older workers in need of job search assistance. For example, the Tennessee Department of Labor and Workforce Development has a job site called Boomer Careers that provides a portal to job banks for state and national job openings (Tennessee Department of Labor and Workforce Development 2007).

Job Fairs. State and local aging and workforce agencies, local One-Stop Career Centers, and nonprofit service providers are organizing job fairs geared to older workers. Often with both economic development and workforce needs in mind, they recruit employers interested in finding skilled and experienced older workers. For example, Operation A.B.L.E. of Greater Boston hosts Mature Worker Career Fairs to help match employers with job seekers age 45 and older. The two career fairs it held in 2006 attracted 850 attendees and 40 companies (Operation A.B.L.E. of Greater Boston 2007). Also, the Tennessee Department of Labor and Workforce Development holds job fairs called "Maturity Matters" at the state fairgrounds for workers over age 40. The 11th annual fair in May 2007 hosted more than 40 Nashville employers and offered resume and interview workshops and networking opportunities (Tennessee Department of Labor and Workforce Development 2007).

Job Counseling. At One-Stop Career Centers, staff and older worker specialists provide job counseling to older workers seeking new employment. These staffers can identify high-growth industries, companies with job openings, and the skills needed to obtain these jobs. Staffers counsel older workers on how to pursue job openings, interview with employers, and deal with various age-specific issues.

Other counseling services help older workers find temporary or part-time work, full-time careers, or business opportunities. Senior Employment Resources, a private nonprofit organization, provides targeted job search activities and job counseling to adults age 50 and older

(Senior Employment Resources 2007). Its volunteer staff is made up of retired professionals who counsel older job seekers on career directions, resumes and interviews, and networking. SCORE, a national nonprofit association funded by the U.S. Small Business Administration, offers counseling to budding entrepreneurs. Volunteer counselors are working or retired executives that can offer advice and guide individuals as they try to start a business. SCORE has 389 chapters across the country where an older worker (or any individual) can meet with a counselor or access one online (SCORE 2007).

An ever-expanding number of web sites also offer advice to older job seekers. These sites feature articles and tip sheets about how to defuse negative perceptions employers may have of older workers, find and negotiate flexible arrangements, and present oneself in resumes and interviews. Examples include AARP.com, Monster.com, and Quintscareer.com.

B. Training Older Workers to Meet Employer Needs

Some older workers may have difficulty obtaining the training they need to move into new jobs or receive promotions (Frazis et al. 1998) as employers, which provide most job training in this country, are more likely to offer training opportunities to mid-level workers. However, some community colleges and publicly funded employment and training programs are targeting older adults for training and creating educational tracks that meet their employment needs.

Publicly funded training programs have been serving older workers for decades. Although previous legislation authorized special funding blocks for older workers, WIA combined employment and training monies under one funding stream for all adults, in an effort to provide universal access to these services. This legislation does, however, allow states and local areas to give priority to special populations, such as older workers, when deciding how to allocate training funds. Some states have recently begun to focus on older workers' training needs and to tailor some services and funding to serve older workers. In addition to WIA funding, DOL funds SCSEP sites through 74 grants to state governments and national nonprofit organizations to train workers age 55 and older (DOL 2007a).

Community Colleges Offering Training. Some community colleges are leading efforts to develop job training opportunities for older workers to meet local labor market needs. These colleges are recruiting workers age 45 and older, creating educational and vocational training programs tailored to older peoples' learning styles, and offering student advisor and supportive services for older students. They often collaborate with local and state workforce agencies and workforce investment boards for funding, labor market information, and mutual referrals. One such college, Portland Community College, is leading a regional initiative to understand better the workforce and training needs of older workers so more effective training programs can be developed. (See box 14 for more information.) Central Florida Community College and Grand Rapids Community College in Michigan have also developed special programming for older residents to engage them in the community and the local workforce. (See box 15 and box 16.)

Box 14. Portland Community College Supports Older Workers

Portland Community College (PCC), Oregon's largest community college system, recognized early on the need to engage older workers. Administrators saw that 1 in 6 students in credit courses and 6 in 10 students in community education courses (or about 10,000 to 15,000 students enrolled per term) were age 40 and older. To address the needs of this burgeoning older student population, PCC created its college-wide Taskforce on Aging to develop three studies: a survey of Oregon employers, the impact of the aging population on the Oregon workforce, and a survey of PCC students age 40 and older. These studies helped PCC develop strategies to help its older students and older workers in the community participate in the workforce and meet employer needs (U.S. Congress 2007). These strategies include the following:

Older Worker Transitioning. PCC developed a partnership called Life by Design NW with local employers and nonprofit organizations to help older workers plan for retirement. The strategy consisted of three components: Discover, Design, and Engage. In the Discover component, PCC helps older individuals explore interests in career and volunteer opportunities and understand their financial and health status to prepare better for the future. The Design component gives individuals a chance to develop a plan to pursue their interests and secure their future. During the Engagement component, PCC staff actively work with the individual to connect to education, community organizations, and employers to achieve their plan (U.S. Congress 2007).

Short-Term Skills Training. PCC also developed a new program called Career Pathways for older workers. The program offers training in 17 professional and technical courses especially tailored to workers who may be unable to work in physically demanding jobs but need training to move into new employment. The course offerings are usually provided in a compressed schedule to help participants become employed as soon as possible. Most workers who participate in this program receive WIA funding (PCC 2007).

Support for Older Workers Seeking Employment. As the area One-Stop operator, PCC provides job readiness and job training programs to area seniors, including classes on basic skills (General Equivalency Diploma, English as a second language, and general professional and office skills) and vocational skills (such as welding, construction trades, manufacturing, computers, and accounting) (U.S. Congress 2007).

Box 15. Central Florida Community College's "Program for 55 and Better"

Central Florida Community College (CFCC) has taken an active role in creating opportunities for seniors in the region to participate in their community and in the workforce through its initiative, "Program for 55 and Better." With seniors making up more than one-quarter of the population in the three-county area, CFCC wanted to engage older residents in civic and workforce activities. In creating its programming, CFCC studied major senior issues in the area and held focus groups with local seniors. A key research focus was workforce issues and the recruitment of seniors to fill current and future labor shortages. Part of its new program, "Pathways to Living, Learning, and Serving," includes a workforce development component that provides job search assistance, training, and work experience. Seniors are able to participate in a number of activities to maintain their current employment, embark on second or third careers, find temporary or part-time work, or become an entrepreneur. Services include a re-career seminar, job search assistance, skills assessments, job counseling, job clubs, job fairs, resume workshops, and computer classes. Seniors are also able to take courses at the community college to upgrade or learn new skills to improve employability. Additionally, CFCC partners with area employers to encourage the hiring of older workers. It also actively recruits seniors to become adjunct faculty, because the college is facing its own labor shortage as faculty and staff retire (CFCC 2007).

Box 16. Grand Rapids Community College Older Learner Center

Grand Rapid Community College (GRCC) has also created an older worker-focused program, Project Mature Worker, in partnership with the Michigan Technical Education Center. With funding from the Grand Rapids Community Foundation, Project Mature Worker offers older workers specialized employment and training services. These services are tailored to the needs of "mature" workers, but are also designed to meet employer skill needs in the area. Project staff work with local service providers to make existing assistance and training programs friendlier to older workers and offer employment and training services to older workers who are unemployed or underemployed (GRCC 2007)

Publicly Funded Training Opportunities for Older Workers. WIA, the federally funded employment and training program, provides skills upgrades to workers, regardless of age. State and local dislocated worker programs funded through WIA serve a growing number of older workers. Of the dislocated workers that participated in WIA-funded training activities in program year 2005, 40 percent were age 45 and older and 11 percent were age 55 and older (DOL 2007c). Additionally, over 19 percent of those completing the WIA adult program training activities were age 45 and older and nearly 5 percent were age 55 and older (DOL 2007b). The use of WIA-funded training by older workers will likely continue to grow as the population ages.

SCSEP, the dedicated employment and training program for lower-income seniors age 55 and older, offers job search assistance, training, and work experience. (See box 17 for more information on SCSEP.) These efforts are highlighted every year in September during National Employ Older Workers Week, when SCSEP programs across the country participate in press

Box 17. Senior Community Service Employment Program

The ***Senior Community Service Employment Program (SCSEP)***, administered by the U.S. Department of Labor, provides community service and other job training to help workers age 55 and older with incomes below 125 percent of the federal poverty level. As authorized by the Older Americans Act of 1965 and reauthorized in 2006, DOL awards SCSEP grants to 74 state and territorial governments (usually state offices of the aging) and national nonprofit organizations to operate these programs. SCSEP helps older adults gain job skills by offering training (such as computer classes), placing participants in subsidized, part-time community services assignments, and providing other supportive services. Participants are often placed in community service assignments as nutrition workers, day care aides, teacher aides, receptionists, nurse aides, and older worker specialists at One-Stop Career Centers (DOL 2004). In recent years, the program has served nearly 100,000 older adults annually, the majority of whom are women living in poverty (DOL 2007a). SCSEP best practices, as detailed in a report by the National Council on the Aging (n.d.) to DOL, range from building relationships with local employers and the community to considering all the participant's needs, not just job placement, when developing and implementing an individual employment plan (DOL 2007a).

events, job fairs, career days, and meetings to raise awareness and focus on developing innovative strategies to improve employment opportunities for older workers. More information on these events and the strategies highlighted during National Employ Older Workers Week can be found on the DOL web site (http://www.doleta.gov/Seniors/html_docs/NatEmplOldWkr.cfm).

C. Building Relationships with Employers to Increase Employment Opportunities

A main objective of federal, state, and local government workforce development agencies has been to foster the development of partnerships among key stakeholders. These stakeholders include employers, industry and economic development groups, secondary and postsecondary educational institutions, service providers, and other nonprofit community organizations. At the state and local level, relationships are often developed through the Workforce Investment Boards, half of whose membership must be selected from the employer community. In addition, states and local areas are developing special initiatives to bring together these partners, especially employers and industry groups, to promote the skilled workforce that employers need. Employer involvement is crucial to the success of these efforts.

Given the competing time demands on employers and industry group representatives, getting them to participate in a partnership or initiative can be difficult. Their involvement depends on their perception that they will benefit from investing time and resources in a partnership. Also, information to educate employers on hiring and retaining older workers needs to be presented in a quick and useful format. Some strategies to engage employers are discussed below.

Partnerships to Create Employment Opportunities. State and nonprofit SCSEP grantees have developed ongoing partnerships with regional and local employers and industry

associations. For example, Experience Works, Inc., a national nonprofit organization that receives SCSEP and U.S. Small Business Administration grants, works with small businesses to develop employment opportunities for older workers. Experience Works educates small businesses on the benefits of hiring older workers and helps place qualified SCSEP participants in subsidized jobs (Experience Works 2007). Other SCSEP grantees develop similar partnerships with employers to develop subsidized employment for low-income workers age 55 and older.

AARP, through its National Employer Team, has reached out to many companies to improve employment opportunities for older workers. Qualifying companies, which must meet certain criteria on work environment, benefits, and hiring practices, enter into agreements with AARP indicating their desire to recruit and hire older workers. The National Employer Team helps advertise job openings to older adults, and provides information about applying for jobs on the AARP web site (2007). The Customized Employment Initiative, a DOL-led program, also works closely with employers to modify jobs to tailor job descriptions to particular job seekers or current employees who may have some physical limitations. (See box 18 for more information.)

Educating Employers on the Value of Older Workers. Many states, local workforce agencies, community colleges, and advocates for older adults have begun campaigns to educate employers and industry associations about the benefits of hiring and retaining older workers. For

Box 18. Customized Employment—"Practical Solutions to Employment Success"

DOL, through its Office of Disability Employment Policy (ODEP), created the ***Customized Employment Initiative*** in 2001 to help all workers, but especially those with disabilities, work with their employers or potential employers to customize job functions and responsibilities. These job customizations are intended to be "win-win" situations for both job seekers/employees and employers by ensuring that workers can perform their job successfully and meet employer needs. Several strategies used to customize jobs for workers include task reassignment, job modification, job sharing, and self-employment. Customized employment job seekers are also encouraged to use resources accessed at one-stop career centers. This approach opens up new job opportunities to older workers, who may have some physical limitations or wish to work a reduced schedule but want to continue working or try new career paths. Personal representatives help workers and employers negotiate the customization process. These representatives build relationships with employers to get to know them and their staffing needs. Once workers are hired or obtain newly customized positions, some may need various special supports, such as benefits counseling, personal assistance, transportation coordination, and adaptive equipment (DOL, ODEP 2007).

example, they have organized conferences, job fairs, and other events and prepared materials and presentations to dispel the misconceptions that persist in the employer community about older workers. Many employers believe, for instance, that older workers are generally costly to employ, lack necessary, up-to-date skills, and may be less productive than younger workers.

States working to educate employers about the value of older workers and develop partnerships to improve employment opportunities include Arizona, Arkansas (see box 19), and Iowa. Arizona's Governor Janet Napolitano has developed the Mature Workforce Initiative,

which is creating a “seal of approval” to identify businesses that are friendly to older workers. The state is also developing a pilot program to connect businesses with older workers through all One-Stop Career Centers in the state. Former Iowa Governor Tom Vilsack developed the Task Force on Mature Workers, which has held statewide and regional conferences to educate employers on strategies to recruit, retain, and train older workers. It has also partnered with AARP to conduct a media campaign to promote older workers in various industry sectors (National Governors Association 2006).

Box 19. Arkansas Mature Worker Initiative

In 2006, then-Governor Mike Huckabee announced the Arkansas Mature Worker Initiative, a pilot program of the AARP, as top priority of the Arkansas Workforce Investment Board. This senior-focused workforce development program aims to engage employers and increase awareness of older workers as an untapped labor group. Regional meetings were held with employers to educate them about the initiative and about the value of hiring and retaining older workers, as well as to hear from employers about their needs to enable them to hire older workers. Employers in Arkansas and on the AARP’s Featured Employers Program were specially recruited to participate in the initiative’s activities and work with other employers in the state (Arkansas Department of Workforce Services 2007).

V. Summary and Future Prospects

Employers, government, nonprofit organizations, and community colleges are beginning to develop strategies to attract and retain older workers. As the older population increases—particularly with the aging of the baby boomers—and the growth in the middle-aged population slows, older adults are becoming an increasingly important labor source. They typically bring maturity, dependability, and years of relevant experience to the workplace. With more people remaining in good health at older ages and fewer jobs involving physical demands now than in the past, more older adults are able to work than ever before. Yet older men's employment rates remain below the levels that prevailed for most of the 20th century. Employers' ability to tap into this underused resource in the coming years could be the key to avoiding labor shortages and maintaining economic growth.

For employers, the challenge is to develop workforce policies that appeal to older workers without sacrificing productivity. Unlike most younger adults, who must work full time to maintain their living standards, many older people have accumulated substantial savings or gained access to regular retirement incomes and thus can afford to work part time or stop working completely. They can be especially selective in their job search and turn down offers that do not suit them. The wage may not be the most important element of the employment package for many older Americans. Instead, they may assign more significance to how well employment opportunities allow them to combine work with other priorities, such as leisure activities and family care responsibilities.

Many older workers prefer workplace flexibility over more traditional work schedules, and increasing numbers of employers are offering flexible arrangements, including part-time work, flexible work schedules, job sharing, and telework. There is some uncertainty, however, about how many employers will promote flexibility in the workplace. Flexibility may be less suited to certain industries and occupations that require everyone to work at the same time, such as manufacturing. Many occupations cannot be performed at home, such as those that require face-to-face interactions with customers or other employees and those that involve cumbersome or costly equipment. Some employers may worry about a diminished ability to monitor employee performance. Only large employers with locations around the country can offer snowbird programs. On the other side, some employees may also be reluctant to pursue flexible work arrangements because they fear it may harm their careers, although this concern may be less prevalent among older workers transitioning into retirement.

Phased retirement arrangements are another option for employers trying to attract older workers, although formal programs remain rare. Phased retirement plans that allow experienced workers to reduce their work schedules at their career employers can benefit both the older worker and the employer. Firm-specific skills built up by workers over their careers are lost when older workers are forced to change employers in order to reduce work hours. Although IRS regulations before the Pension Protection Act of 2006 limited the payment of pension benefits to workers still on the payroll (and these payments will remain limited for workers under 62), several employers have devised ways to allow older workers to reduce their work hours and receive some pension and health benefits. Some terminate employees and then rehire them part time, sometimes as independent contractors. Independent contractor arrangements may be

appropriate only in some occupations, however, because the law stipulates that only workers who set their own work conditions can be classified as independent contractors.

After falling for decades, employment rates among older men are now rising. Employment rates among older women are also rising, reflecting increased workforce participation of younger cohorts of women and the proportion of older men and women willing to work will likely continue to increase. Steady declines in the physical demands of work are likely to persist (Johnson et al. forthcoming). Combined with the better health of older adults today than in the past—despite some recent evidence that the health improvements at midlife may be ending (Soldo et al. 2006)—this trend suggests that more older adults will be physically able to work in the future. The continued erosion in traditional DB pension plans and employer-sponsored retiree health benefits eliminates some powerful retirement incentives that kept many older Americans out of the labor force in previous years. The growing sense of financial insecurity at older ages, arising partly from cutbacks in employer benefits and the increase in Social Security's normal retirement age, will likely cause many baby boomers to delay retirement (Mermin et al. 2007; Munnell, Webb, and Golub-Sass 2007). Other Social Security reforms, including the elimination of the earnings test after the normal retirement age and the increase in the delayed retirement credit, increase the returns to work at older ages. The decline in DB plan participation will also reduce the number of older part-time workers unable to collect pension benefits on the current job, even if lawmakers do not provide any regulatory relief, and thus will shrink the number unable to phase into retirement with their current employer.

Other economic trends and technological advancements may also promote employment for older adults. Continued growth in industries in which telework is common, such as financial services and the high-tech sector, will likely increase the use of these flexible work arrangements, as will continued improvements in communications. As older adults become more familiar with the Internet over time, they will likely make better use of online job search tools, improving their employment prospects.

A key issue for future employment prospects is how the business community will respond to the increased availability of older workers. Relatively few employers have actively begun to recruit older workers, primarily because they do not yet foresee worker shortages. The industries that have most vigorously recruited older workers, such as health care and energy, already face imminent labor shortages. As the population ages and worker shortages develop, more employers may adapt workplace polices that appeal to older people. However, some observers who believe that globalization will enable people working oversees to meet the U.S. economy's employment needs dispute claims that labor shortages are inevitable in the United States and that the demand for older workers will soar (Freeman 2006).

Current practices by some employers raise additional concerns about how older workers might fare in the future. Many Americans claim that older people face discrimination in the labor market (AARP 2002; Reynolds et al. 2005), and several studies have found that employers favor younger workers over older workers (Lahey 2005; Rosen and Jerdee 1977, 1995). Unless changing demographics or public awareness campaigns lead employers to change their attitudes, many older workers may encounter problems finding meaningful employment. Initiatives and partnerships developed by states and advocacy groups such as AARP and the National Council

on Aging to educate employers about the benefits of hiring older workers may help older job applicants overcome employment barriers.

Future employment prospects may be least promising for older workers with limited skills. The steady deterioration over the past quarter-century in the earnings capacity of workers with limited education does not bode well for the employment prospects of low-skilled workers at any age, but older workers with few skills may be especially vulnerable. Because they work disproportionately in physically demanding jobs and experience more health problems than those with more education, low-skilled older adults may be less physically able to work than other older people. Employer surveys indicate that managers are less likely to embrace older rank-and-file workers than older professionals (Munnell, Sass, and Soto 2006).

Employment and training programs funded by WIA and SCSEP may be critical to safeguarding financial security for people struggling in the labor market, particularly those with low skill levels. As the population ages, more older workers are likely to demand these services, especially intensive counseling and training that require more staffing and other resources than basic job search assistance. Without additional funding, rising demand by older workers will strain these employment and training programs. In recent years, however, funding levels have not even kept pace with inflation.

Efforts by nonprofit organizations and community colleges may help to bridge some service gaps for older workers. Although these organizations and institutions often rely on public funding, they can turn to other funding sources (such as fee and tuition payments, donations, and private grants) to help serve older workers. From this funding base, some nonprofits and community colleges have been able to develop innovative strategies to not only address older workers' employment and training needs but also work closely with employers.

The work of the federal Taskforce on the Aging of the American Workforce may create new strategies to promote employment at older ages. The taskforce has identified ways to promote self-employment opportunities, provide technical assistance to programs serving older workers, improve retirement and financial literacy among older people, and increase awareness of the advantages that older people can offer employers. These efforts may raise employment rates among older adults and help meet the challenges of an aging workforce.

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Solving the Construction Industry Work Force Crisis

IDEAS FOR ACTION

Executive Summary

Today's construction industry is facing an alarming shortage of workers - in craft, technical and management positions. This situation requires immediate action on the part of all industry employers.

Construction has a tremendous impact on the U.S. economy, contributing 8% to the Gross Domestic Product (GDP), second only to the healthcare industry. However, current gaps in today's work force pool as well as an expected dearth of trained and skilled employees filling the pipeline threaten the industry's growth and economic viability.

Engineering News-Record magazine and McGraw-Hill Construction, its parent organization, recently brought together leaders from across all industry sectors to propose specific actions that could be taken by both public and private sector entities to come up with solutions to this crisis. The group reached a consensus about key areas deemed most in need of attention, both immediately and longer term.

Key areas that emerged as most important for short-term action:

- Invest in education and training
- Reform immigration policies
- Ensure better pay and improved working conditions
- Improve productivity
- Improve construction's image through full industry engagement

Key areas that need to be addressed to find long-term solutions:

- Expand government programs and support
- Better outreach to schools and educational programs
- Use offshoring effectively
- Create employee retention strategies

In moving forward, focusing activities within the above areas will maximize resources and generate the most effective changes for the industry. This paper outlines the problem in more detail and offer specific recommendations within each key area.

McGraw Hill CONSTRUCTION ENR

The McGraw·Hill Companies

The Problem: A Work Force Crisis Like Never Before

The construction industry faces a talent crunch that is anticipated to become even more severe, based on demographic and educational trends. Left untouched, this problem could affect industry growth, profitability and success in coming decades and escalate into a significant threat to our nation's economy.

Trends Prompting Action

Trends such as high levels of employee turnover, low numbers of graduating engineers, decreasing number of skilled craft workers and lack of public support to channel students into the construction-related career paths have made it clear that industry leaders must understand the need for immediate action to forestall an impending crisis. Finding solutions and turning them into reality is a challenge that will require broad levels of industry collaboration, advocacy and financial support.

Laying a Foundation for Moving Forward

In recognition of the need for immediate action, more than 200 industry leaders came together on September 26, 2006 in Washington, D.C. at the ENR Top Firm Leaders Forum for a panel discussion and brainstorming sessions aimed at laying the foundation to move forward on work force shortage solutions.

Throughout the day, industry experts identified and discussed nearly a dozen potential solution areas, ultimately condensing ideas into priority groups through a consensus voting process. These groups addressed areas in which the participants believe industry action would have the greatest impact on work force shortages most immediately.

Priority areas included:

- Education and training
- Immigration reform
- Better pay and working conditions
- Productivity increases
- Improved industry image through full industry engagement

Long-term solutions will require additional actions, such as government support, educational outreach, effective offshoring and employee retention programs.

Research and Statistics Illustrate Gravity of Work Force Crisis

According to the U.S. Bureau of Labor Statistics, the construction industry will need 1 million new workers in the next six years, and 2.4 million by 2014. This will place construction among the economy's top ten largest sources of employment growth.

Filling these new jobs will be particularly problematic due to the gap between industry needs and education trends:

- 65% of construction industry jobs require an Associates degree or advanced training...
- But only about 32% of high school freshmen plan to attain that level of education.[1]

The prospect of a dwindling labor force could dramatically impact the construction work environment, causing

- Missed schedules
- Lower productivity and diminished quality
- More accidents
- Higher overtime costs
- Higher bids and budgets

The crisis is further exacerbated by external factors, such as increased pressure on the industry generated by the impact of recent natural disasters. For example, 69% of industrial construction contractors reported increased hiring since the hurricanes in 2005.[2]

[1] "Work force 2020: Work and Workers in the 21st Century," National Center for Construction Education and Research.
[2] March 2006 survey of industrial construction contractors for the Associated Builders and Contractors, 29% response rate of which 82.1% say they work in the hurricane-affected areas and 60.7% say they are engaged in reconstruction.

ACTION AREA: Education and Training

Who Needs to Act

It will take comprehensive efforts to insure that the most successful programs are implemented and perpetuated.

- **Construction firms** should mandate appropriate training programs.
- **Owners** can require their contractors to have and use training programs.
- **Government agencies** can encourage and fund programs, while also serving as a clearinghouse for program information.
- **Trade associations** can work together to unite the industry and avoid duplicative efforts.
- **Schools and training facilities** can integrate programs into curricula.

Why This Area Is Critical

In an industry that requires a broad range of specialized skills, education and training programs are required to recruit and develop a stronger work force. Unfortunately, only 70% of high school students are graduating.[3] Of those, many do not enter training and educational programs required for construction industry jobs.

Recommendations

In order to establish an educated, prepared work force, the industry leaders proposed six actions:

- **Create and fund technical training programs affiliated with universities**. A consortium of companies, associations, government agencies and others could fund technical training programs or centers that can be linked to a university.

- **Identify best practices and expand them**. There are a number of local programs within the U.S. and internationally that are experiencing success. These need to be catalogued into a clearinghouse and replicated or modified for national impact.

- **Establish and publicize a clear track for students coming into the industry**. Intervention is needed early in the educational process. The greatest impact can be made by introducing construction industry jobs (within crafts and professions) at the middle school level or earlier. Industry members should communicate the benefits of construction careers with pride.

- **Retrain workers already in the industry, as well as those originating in other sectors, in new skill areas**. Workers in industries that are downsizing, such as automobile manufacturing, and military veterans can be retrained through educational programs such as "Helmets to Hardhats." This effort, sponsored by the AFL-CIO's Building and Construction Trades Dept. and its member unions, helps military personnel prepare for new construction careers. More programs such as this can help match unemployed workers with jobs suited to their skill sets.

- **Identify and secure funding from sources such as government, contractors, owners and trade associations**. The passing of the "Carl D. Perkins Career [formerly 'Vocational'] and Technical Education Improvement Act of 2006" was a step in the right direction. Additional funding and support (both public and private) is needed to help insure the success and sustainability of career and technical training programs.

  Some suggestions:
  - U.S. Departments of Labor and Education can effectively spend dollars on training programs.
  - Contractors should fund programs to produce specific skills.
  - Trade associations can support program development and implementation through member contributions.
  - Union training programs, such as apprenticeship efforts in high schools, can expand and be connected to other efforts.

- **Eliminate the disincentives that keep workers from attending training programs**. It is critical, for example, that supplemental income be provided during retraining. Another example would be to provide housing for workers to relocate to where the greatest job opportunities exist, such as along the Gulf Coast.

[3] Pinkus, L., "Who's Counted? Who's Counting? Understanding High School Graduation Rates," Alliance for Excellent Education, <www.all4ed.org/publications/WhosCounting/WhosCounting.pdf>, June 2006.

ACTION AREA: Immigration Reform

Who Needs to Act

- **Firms in architecture, engineering and construction**, and the **owners** they work for, must encourage legislators to reform immigration policies. They must also help create solutions that do not compromise national security.
- **Government** must be willing to work cooperatively to create better policies.

Why This Area Is Critical

Increasingly, immigrants, mostly from predominantly Spanish-speaking nations, have been needed to fill the demand for construction workers. The industry has now become the leading employment source for new Americans, with 17.1% finding jobs there, compared with only 7.7% among all U.S. citizens[4]. With immigration policy again set to be in the forefront of national politics as well as in border states, the construction industry has an opportunity to secure, with more certainty, additional workers for positions that are difficult to fill by using U.S. citizens alone.

Recommendations

Actions that may have a positive impact:

- **Modify work visa programs** for craft workers to more rapidly approve applications that are sponsored by a construction firm.
- **Provide incentives** to firms that are training their employees by giving them priority clearance for guest workers.
- **Allow for temporary permits** as immigrants transition to securing green cards, in order to fill construction labor shortages in geographic regions where they are most acute.

[4] "How the newest Americans compare with all of the U.S. Population," *USA Today*, December 4, 2006.

ACTION AREA: Better Pay and Working Conditions

Who Needs to Act

The burden is on the entire construction industry to act.

- **Construction firms** are responsible for insuring proper working conditions.
- **Owners** can help influence contractor behavior through contracting language.
- **Trade associations** can promote wage and benefit packages more broadly.

Why This Area Is Critical

As the construction labor crunch worsens, working conditions in the industry are also declining. This is driving potential workers away from entering the construction work force at a very critical time. Therefore, enhanced salaries and improved workplaces become crucial in order to boost worker morale and improve the industry's image.

Recommendations

In order to attract more workers, construction firms need to create attractive compensation and workplace packages.

Industry leaders recommended the following actions:

- **Change methods of work by increasing use of modularization**. By adopting pre-fabrication processes, construction work will include more technologically advanced techniques. For employers, this will translate to higher jobsite productivity and reduced project costs.
- **Develop alternative procurement strategies to avoid bidding on cost alone**. Such approaches could allow firms to raise wage rates and invest in better training because they will be less pressured to provide low bids.
- **Change the image of construction workers by emphasizing and promoting their training and skill level**. The construction industry's image needs to be enhanced, with more focus on workmanship and less on labor. Media campaigns can help sway public opinion, while hands-on education can change individual perception. Thus, it is important to reach students at early ages.
- **Shift perception toward career opportunities rather than job openings**. The industry will retain more workers if it emphasizes job training and career development. Industry employers could offer incentive packages to boost retention.
- **Work with managers and owners to encourage quality and productivity**. Incentives, financial and other, should be offered as a reward for high quality work. These would create a performance culture versus one based solely on output.

ACTION AREA: Improved Productivity

Who Needs to Act

Industry and government alike can help influence productivity improvements.

- **Construction firms** have lead responsibility to change how work is done.
- **Owners** can influence change by working closely with engineers and contractors prior to project start.
- **Government** can provide incentives rewarding innovation and productivity.

Why This Area Is Critical

There is an increased demand for construction, but the work force shortage has made it more difficult for the industry to meet it. Productivity improvements can help alleviate the severity of the problem and lead to improved working conditions and new efficiencies.

Recommendations

The session's industry leaders suggested the following methods to improve productivity:

- **Focus on worker incentives**. These might include monetary rewards for early project or training completion. These kinds of programs are essential to deter turnover and lost productivity.
- **Enhance automation and robotics**. Automation can lead to a more profitable industry, eliminating repetitive and boring work tasks that often cause high turnover and reducing the total number of workers needed.
- **Avoid the negative effects of excessive overtime**. This has been shown to lead to reduced productivity and increased project costs. A robust and efficient work force can be created using "smart" work procedures and incorporating innovation and new production processes.
- **Create better contracts through communication**. Encourage the industry to collaborate in the contracting process, with better communication among architects, engineers, contractors and owners. Such collaboration will create more efficiently designed and constructed projects.
- **Control access to construction sites by outside vendors**. By having appropriate food and other types of vendors on-site, firms can enhance work environments that meet employee needs and insure productivity. Uncontrolled access often disrupts scheduled activities.

Other Action Areas

Industry leaders identified other areas that may help alleviate work force pressures faced by the construction industry. These also need to be addressed to sustain a robust employee base.

Government Programs

Government agencies can support and initiate programs that can contribute to filling work force shortages, particularly in the long-term.

Suggested actions:

- Provide **tax breaks** for companies that have training programs.
- Create and support **public-private partnerships**.
- Fund existing and pilot programs with **grants** rather than loans.
- Create **online information sources** and **career centers**.

Offshoring

To alleviate immediate work force shortages in the U.S., offshoring can be a short-term solution for certain types of work. For example, with improvements in information technology and the drive to reduce engineering costs on projects, there is a recent trend toward increased offshoring of engineering, architecture and construction management services[5].

Employee Retention Programs

Retaining construction industry talent is also a major challenge ahead. Because the workforce is aging, with large numbers of baby boomers moving toward retirement, the industry must work to maintain its most experienced employees as long as possible, even while attracting new talent. New programs and incentives should be created to retain the industry's best and to foster more mentoring between industry veterans and newcomers.

[5] John I. Messner, Ph.D., "Offshoring of Engineering Services in the Construction Industry," Pennsylvania State University, 2006.

ACTION AREA: Improved Industry Image through Full Industry Engagement

Who Needs to Act

The responsibility for changing the industry's image rests within both the public and private sectors.

Collaboration is a key element to success in changing public opinion.

- **Construction industry firms** will need to work together, a daunting task in an industry so heavily fragmented. Nearly 98% of firms have 50 employees or less[6].
- **Trade** and **professional associations** and **unions** can help unify action.
- **Government** education and labor agencies at the federal, state and local level can play an effective role in helping these industry efforts reach an appropriate audience and serve as a funding source.

[6] *Key Trends in the Construction Industry - 2006*, McGraw-Hill Construction.

Why This Area Is Critical

A fundamental challenge facing construction today is a general lack of public support for educating and encouraging students about the opportunities and advantages of industry careers. Funding has been cut for technical and vocational curricula, counselors hesitate to encourage construction-related coursework and career choices and parents and students view industry jobs as low-paying and manually difficult.

Recommendations

To attract more workers, construction industry firms and associations must join forces to develop an enhanced industry image and identify methods to relay it.

- **Encourage college credit programs**. There have been a number of successful programs that allow students to use technical and job training programs, both within high schools and extracurricular, to count toward college credits. Such programs enable craft workers to gain business training or new technical skills.

- **Encourage apprenticeship programs to be certified as degree-granting institutions**, such as the effort now underway by the International Union of Painters and Allied Trades (IUPAT).

- **Advocate to the U.S. Dept. of Education and to local school boards for more secondary school training**. Past successes in fostering technical training have waned due to secondary schools' predominant focus on college-oriented curricula. Some industry leaders attribute high drop-out rates to this shift. By reinvesting in technical training, students - particularly those not interested in college - will have more options.

- **Improve the image of construction in academia by funding grants and research and development programs**. Engineering and construction management programs within U.S. colleges and universities could benefit greatly with increased resources to improve facilities and equipment and attract enough well-qualified faculty members needed to meet student and industry demand.

- **Develop metrics for evaluation of existing education programs**. Educational funding must be spent wisely and efficiently. Standard performance metrics will enable the best programs to rise to the top, reduce competition for resources and offer more long-term funding potential.

- **Invest in youth-friendly messages and new tools to encourage more math and science training**. Young people today are more sophisticated in their use of online and other high-tech sources of information. Construction proponents should use multi-media tools to convey the needed preparation for a successful industry career.

- **Keep information current and fresh**. Projects such as *InDemand* magazine, a U.S. Dept. of Labor publication produced by McGraw-Hill Construction, as well as Montgomery County, Md.'s high school sustainability program, provide the latest information about innovation in construction, engineering and technology. These kinds of programs help get students excited about construction careers.

Educational Outreach

Outreach to schools will help sustain training programs and promotional activities outlined above for immediate action.

Proposed action areas:

- Establish and provide **bi-lingual communications**.
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Solving the Construction Industry Work Force Crisis

IDEAS FOR ACTION

Executive Summary

Today's construction industry is facing an alarming shortage of workers - in craft, technical and management positions. This situation requires immediate action on the part of all industry employers.

Construction has a tremendous impact on the U.S. economy, contributing 8% to the Gross Domestic Product (GDP), second only to the healthcare industry. However, current gaps in today's work force pool as well as an expected dearth of trained and skilled employees filling the pipeline threaten the industry's growth and economic viability.

Engineering News-Record magazine and McGraw-Hill Construction, its parent organization, recently brought together leaders from across all industry sectors to propose specific actions that could be taken by both public and private sector entities to come up with solutions to this crisis. The group reached a consensus about key areas deemed most in need of attention, both immediately and longer term.

Key areas that emerged as most important for short-term action:

- Invest in education and training
- Reform immigration policies
- Ensure better pay and improved working conditions
- Improve productivity
- Improve construction's image through full industry engagement

Key areas that need to be addressed to find long-term solutions:

- Expand government programs and support
- Better outreach to schools and educational programs
- Use offshoring effectively
- Create employee retention strategies

In moving forward, focusing activities within the above areas will maximize resources and generate the most effective changes for the industry. This paper outlines the problem in more detail and offer specific recommendations within each key area.

McGraw Hill CONSTRUCTION ENR

The McGraw·Hill Companies

The Problem: A Work Force Crisis Like Never Before

The construction industry faces a talent crunch that is anticipated to become even more severe, based on demographic and educational trends. Left untouched, this problem could affect industry growth, profitability and success in coming decades and escalate into a significant threat to our nation's economy.

Trends Prompting Action

Trends such as high levels of employee turnover, low numbers of graduating engineers, decreasing number of skilled craft workers and lack of public support to channel students into the construction-related career paths have made it clear that industry leaders must understand the need for immediate action to forestall an impending crisis. Finding solutions and turning them into reality is a challenge that will require broad levels of industry collaboration, advocacy and financial support.

Laying a Foundation for Moving Forward

In recognition of the need for immediate action, more than 200 industry leaders came together on September 26, 2006 in Washington, D.C. at the ENR Top Firm Leaders Forum for a panel discussion and brainstorming sessions aimed at laying the foundation to move forward on work force shortage solutions.

Throughout the day, industry experts identified and discussed nearly a dozen potential solution areas, ultimately condensing ideas into priority groups through a consensus voting process. These groups addressed areas in which the participants believe industry action would have the greatest impact on work force shortages most immediately.

Priority areas included:

- Education and training
- Immigration reform
- Better pay and working conditions
- Productivity increases
- Improved industry image through full industry engagement

Long-term solutions will require additional actions, such as government support, educational outreach, effective offshoring and employee retention programs.

Research and Statistics Illustrate Gravity of Work Force Crisis

According to the U.S. Bureau of Labor Statistics, the construction industry will need 1 million new workers in the next six years, and 2.4 million by 2014. This will place construction among the economy's top ten largest sources of employment growth.

Filling these new jobs will be particularly problematic due to the gap between industry needs and education trends:

- 65% of construction industry jobs require an Associates degree or advanced training...
- But only about 32% of high school freshmen plan to attain that level of education.[1]

The prospect of a dwindling labor force could dramatically impact the construction work environment, causing

- Missed schedules
- Lower productivity and diminished quality
- More accidents
- Higher overtime costs
- Higher bids and budgets

The crisis is further exacerbated by external factors, such as increased pressure on the industry generated by the impact of recent natural disasters. For example, 69% of industrial construction contractors reported increased hiring since the hurricanes in 2005.[2]

[1] "Work force 2020: Work and Workers in the 21st Century," National Center for Construction Education and Research.
[2] March 2006 survey of industrial construction contractors for the Associated Builders and Contractors, 29% response rate of which 82.1% say they work in the hurricane-affected areas and 60.7% say they are engaged in reconstruction.

ACTION AREA: Education and Training

Who Needs to Act

It will take comprehensive efforts to insure that the most successful programs are implemented and perpetuated.

- **Construction firms** should mandate appropriate training programs.
- **Owners** can require their contractors to have and use training programs.
- **Government agencies** can encourage and fund programs, while also serving as a clearinghouse for program information.
- **Trade associations** can work together to unite the industry and avoid duplicative efforts.
- **Schools and training facilities** can integrate programs into curricula.

Why This Area Is Critical

In an industry that requires a broad range of specialized skills, education and training programs are required to recruit and develop a stronger work force. Unfortunately, only 70% of high school students are graduating.[3] Of those, many do not enter training and educational programs required for construction industry jobs.

Recommendations

In order to establish an educated, prepared work force, the industry leaders proposed six actions:

- **Create and fund technical training programs affiliated with universities**. A consortium of companies, associations, government agencies and others could fund technical training programs or centers that can be linked to a university.

- **Identify best practices and expand them**. There are a number of local programs within the U.S. and internationally that are experiencing success. These need to be catalogued into a clearinghouse and replicated or modified for national impact.

- **Establish and publicize a clear track for students coming into the industry**. Intervention is needed early in the educational process. The greatest impact can be made by introducing construction industry jobs (within crafts and professions) at the middle school level or earlier. Industry members should communicate the benefits of construction careers with pride.

- **Retrain workers already in the industry, as well as those originating in other sectors, in new skill areas**. Workers in industries that are downsizing, such as automobile manufacturing, and military veterans can be retrained through educational programs such as "Helmets to Hardhats." This effort, sponsored by the AFL-CIO's Building and Construction Trades Dept. and its member unions, helps military personnel prepare for new construction careers. More programs such as this can help match unemployed workers with jobs suited to their skill sets.

- **Identify and secure funding from sources such as government, contractors, owners and trade associations**. The passing of the "Carl D. Perkins Career [formerly 'Vocational'] and Technical Education Improvement Act of 2006" was a step in the right direction. Additional funding and support (both public and private) is needed to help insure the success and sustainability of career and technical training programs.

  Some suggestions:
  - U.S. Departments of Labor and Education can effectively spend dollars on training programs.
  - Contractors should fund programs to produce specific skills.
  - Trade associations can support program development and implementation through member contributions.
  - Union training programs, such as apprenticeship efforts in high schools, can expand and be connected to other efforts.

- **Eliminate the disincentives that keep workers from attending training programs**. It is critical, for example, that supplemental income be provided during retraining. Another example would be to provide housing for workers to relocate to where the greatest job opportunities exist, such as along the Gulf Coast.

[3] Pinkus, L., "Who's Counted? Who's Counting? Understanding High School Graduation Rates," Alliance for Excellent Education, <www.all4ed.org/publications/WhosCounting/WhosCounting.pdf>, June 2006.

ACTION AREA: Immigration Reform

Who Needs to Act

- **Firms in architecture, engineering and construction**, and the **owners** they work for, must encourage legislators to reform immigration policies. They must also help create solutions that do not compromise national security.
- **Government** must be willing to work cooperatively to create better policies.

Why This Area Is Critical

Increasingly, immigrants, mostly from predominantly Spanish-speaking nations, have been needed to fill the demand for construction workers. The industry has now become the leading employment source for new Americans, with 17.1% finding jobs there, compared with only 7.7% among all U.S. citizens[4]. With immigration policy again set to be in the forefront of national politics as well as in border states, the construction industry has an opportunity to secure, with more certainty, additional workers for positions that are difficult to fill by using U.S. citizens alone.

Recommendations

Actions that may have a positive impact:

- **Modify work visa programs** for craft workers to more rapidly approve applications that are sponsored by a construction firm.
- **Provide incentives** to firms that are training their employees by giving them priority clearance for guest workers.
- **Allow for temporary permits** as immigrants transition to securing green cards, in order to fill construction labor shortages in geographic regions where they are most acute.

[4] "How the newest Americans compare with all of the U.S. Population," *USA Today*, December 4, 2006.

ACTION AREA: Better Pay and Working Conditions

Who Needs to Act

The burden is on the entire construction industry to act.

- **Construction firms** are responsible for insuring proper working conditions.
- **Owners** can help influence contractor behavior through contracting language.
- **Trade associations** can promote wage and benefit packages more broadly.

Why This Area Is Critical

As the construction labor crunch worsens, working conditions in the industry are also declining. This is driving potential workers away from entering the construction work force at a very critical time. Therefore, enhanced salaries and improved workplaces become crucial in order to boost worker morale and improve the industry's image.

Recommendations

In order to attract more workers, construction firms need to create attractive compensation and workplace packages.

Industry leaders recommended the following actions:

- **Change methods of work by increasing use of modularization**. By adopting pre-fabrication processes, construction work will include more technologically advanced techniques. For employers, this will translate to higher jobsite productivity and reduced project costs.
- **Develop alternative procurement strategies to avoid bidding on cost alone**. Such approaches could allow firms to raise wage rates and invest in better training because they will be less pressured to provide low bids.
- **Change the image of construction workers by emphasizing and promoting their training and skill level**. The construction industry's image needs to be enhanced, with more focus on workmanship and less on labor. Media campaigns can help sway public opinion, while hands-on education can change individual perception. Thus, it is important to reach students at early ages.
- **Shift perception toward career opportunities rather than job openings**. The industry will retain more workers if it emphasizes job training and career development. Industry employers could offer incentive packages to boost retention.
- **Work with managers and owners to encourage quality and productivity**. Incentives, financial and other, should be offered as a reward for high quality work. These would create a performance culture versus one based solely on output.

ACTION AREA: Improved Productivity

Who Needs to Act

Industry and government alike can help influence productivity improvements.

- **Construction firms** have lead responsibility to change how work is done.
- **Owners** can influence change by working closely with engineers and contractors prior to project start.
- **Government** can provide incentives rewarding innovation and productivity.

Why This Area Is Critical

There is an increased demand for construction, but the work force shortage has made it more difficult for the industry to meet it. Productivity improvements can help alleviate the severity of the problem and lead to improved working conditions and new efficiencies.

Recommendations

The session's industry leaders suggested the following methods to improve productivity:

- **Focus on worker incentives**. These might include monetary rewards for early project or training completion. These kinds of programs are essential to deter turnover and lost productivity.
- **Enhance automation and robotics**. Automation can lead to a more profitable industry, eliminating repetitive and boring work tasks that often cause high turnover and reducing the total number of workers needed.
- **Avoid the negative effects of excessive overtime**. This has been shown to lead to reduced productivity and increased project costs. A robust and efficient work force can be created using "smart" work procedures and incorporating innovation and new production processes.
- **Create better contracts through communication**. Encourage the industry to collaborate in the contracting process, with better communication among architects, engineers, contractors and owners. Such collaboration will create more efficiently designed and constructed projects.
- **Control access to construction sites by outside vendors**. By having appropriate food and other types of vendors on-site, firms can enhance work environments that meet employee needs and insure productivity. Uncontrolled access often disrupts scheduled activities.

Other Action Areas

Industry leaders identified other areas that may help alleviate work force pressures faced by the construction industry. These also need to be addressed to sustain a robust employee base.

Government Programs

Government agencies can support and initiate programs that can contribute to filling work force shortages, particularly in the long-term.

Suggested actions:

- Provide **tax breaks** for companies that have training programs.
- Create and support **public-private partnerships**.
- Fund existing and pilot programs with **grants** rather than loans.
- Create **online information sources** and **career centers**.

Offshoring

To alleviate immediate work force shortages in the U.S., offshoring can be a short-term solution for certain types of work. For example, with improvements in information technology and the drive to reduce engineering costs on projects, there is a recent trend toward increased offshoring of engineering, architecture and construction management services[5].

Employee Retention Programs

Retaining construction industry talent is also a major challenge ahead. Because the workforce is aging, with large numbers of baby boomers moving toward retirement, the industry must work to maintain its most experienced employees as long as possible, even while attracting new talent. New programs and incentives should be created to retain the industry's best and to foster more mentoring between industry veterans and newcomers.

[5] John I. Messner, Ph.D., "Offshoring of Engineering Services in the Construction Industry," Pennsylvania State University, 2006.

ACTION AREA: Improved Industry Image through Full Industry Engagement

Who Needs to Act

The responsibility for changing the industry's image rests within both the public and private sectors.

Collaboration is a key element to success in changing public opinion.

- **Construction industry firms** will need to work together, a daunting task in an industry so heavily fragmented. Nearly 98% of firms have 50 employees or less[6].
- **Trade** and **professional associations** and **unions** can help unify action.
- **Government** education and labor agencies at the federal, state and local level can play an effective role in helping these industry efforts reach an appropriate audience and serve as a funding source.

[6] *Key Trends in the Construction Industry - 2006*, McGraw-Hill Construction.

Why This Area Is Critical

A fundamental challenge facing construction today is a general lack of public support for educating and encouraging students about the opportunities and advantages of industry careers. Funding has been cut for technical and vocational curricula, counselors hesitate to encourage construction-related coursework and career choices and parents and students view industry jobs as low-paying and manually difficult.

Recommendations

To attract more workers, construction industry firms and associations must join forces to develop an enhanced industry image and identify methods to relay it.

- **Encourage college credit programs**. There have been a number of successful programs that allow students to use technical and job training programs, both within high schools and extracurricular, to count toward college credits. Such programs enable craft workers to gain business training or new technical skills.

- **Encourage apprenticeship programs to be certified as degree-granting institutions**, such as the effort now underway by the International Union of Painters and Allied Trades (IUPAT).

- **Advocate to the U.S. Dept. of Education and to local school boards for more secondary school training**. Past successes in fostering technical training have waned due to secondary schools' predominant focus on college-oriented curricula. Some industry leaders attribute high drop-out rates to this shift. By reinvesting in technical training, students - particularly those not interested in college - will have more options.

- **Improve the image of construction in academia by funding grants and research and development programs**. Engineering and construction management programs within U.S. colleges and universities could benefit greatly with increased resources to improve facilities and equipment and attract enough well-qualified faculty members needed to meet student and industry demand.

- **Develop metrics for evaluation of existing education programs**. Educational funding must be spent wisely and efficiently. Standard performance metrics will enable the best programs to rise to the top, reduce competition for resources and offer more long-term funding potential.

- **Invest in youth-friendly messages and new tools to encourage more math and science training**. Young people today are more sophisticated in their use of online and other high-tech sources of information. Construction proponents should use multi-media tools to convey the needed preparation for a successful industry career.

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(This is the second in a two-part series on deregulation.)

April 2005 *IBEW Journal*

A hurricane hits the mid-Atlantic, pounding the coastlines of North Carolina and Virginia. Homes and property are destroyed but the biggest problem is the massive power outage that has isolated tens of thousands of residents. The local utilities, already short-staffed, put out an urgent call for manpower to neighboring electric companies. But nobody comes. The lights stay out. There's no one left to spare.

This disaster scenario is not as unlikely as it sounds. Years of relentless cost cutting by the utility industry have wiped out worker training programs and gutted the ranks of experienced linemen. Since deregulation came to the electric industry more than 10 years ago, utilities have reduced their line staff by 25 or 30 percent. Today, the average lineman is 48 and overworked thanks to the widespread practice of forced overtime.

The good news is anecdotal evidence suggests that the industry is aware of the problem. The bad news is not much is being done to address it.

"Everything is keyed on dollars and cents profit," said IBEW Utility Director Jim Hunter. "Storm outages are longer, and utilities are asking for more and more help from other utilities. The problem is that other companies are in the same boat. And they are still not hiring."

Thanks to bare-bones management under deregulation, worker training programs are all but relics from the past, victims of a highly competitive deregulated environment. The aging work force is dominated by baby boomers nearing retirement. Industry observers are predicting a slow-motion catastrophe over the low number of linemen qualified to shepherd the nation's power grid into the future.

"We have this impending demographic crisis on our hands here," said Madison, Wisconsin, Local 2304 Business Manager Dave Poklinkoski. "At the same time, the utility industry has not come to grips with the need to hire and train that gap. But some utility companies are increasingly recognizing the problem."

Demographic Time Bomb

By 2010, as many as 60 percent of today's experienced utility workers will retire. A survey conducted last fall by the Carnegie Mellon University Electricity Industry Center found that utility human resources executives overwhelmingly listed the aging work force as their number one concern. Eighty percent of those surveyed placed the aging work force as their biggest worry, far above the other listed concerns, which included cost of benefits and a

skilled work force. The managers represented more than 200,000 workers from utilities across the country.

Those executives have done the math and the numbers do not work out in their favor. Climbing poles and repairing wires in extreme outdoor conditions is hard physical work. By the age of 55 or 60, most journeymen linemen are ready for retirement after a career spent in the elements.

"We are facing a huge depletion of highly trained people," Hunter said. "Some workers who have been in the industry for 30 years are not being replaced, and more than that, are not being given an opportunity to transfer their knowledge to the new work force because there isn't one."

The industry is running out of time.

"If the industry continues to ignore this problem, all of society will be paying the price," said IBEW International President Edwin D. Hill. "A modern, technologically dependent economy must have a professional work force to maintain its vital infrastructure or it will no longer be the reliable system we have come to take for granted."

A Life on the Lines

The job of utility linemen is varied and complex. It takes five years to train a lineman to a journeyman level, and most in the industry acknowledge that it takes 10 years to become a well-rounded lineman. There is much to learn, said Utility Department International Representative Don Hartley, who came out of the Virginia Power training program. It takes years to gain the skills to construct and maintain the full spectrum of the utility infrastructure.

"There is no short-term learning curve for working safely in an environment that has the ever-present potential for injury or death," Hartley said. Years of one-on-one, hands-on training is necessary to learn the mechanics of dealing with the vast assortment of wire sizes and tensions, understand complex equipment capabilities and develop effective trouble-shooting skills, not to mention getting comfortable with climbing 55-foot poles and 200-foot transmission towers and the art of maneuvering large utility trucks through alleys and congested city streets.

Richmond, Virginia, Local 50 member Dave Barham said when he joined Virginia Power 26 years ago, his service area shared nearly 50 helpers, or "groundmen," that assisted linemen on crews. Now the Virginia Beach service area he works in has been doubled, but there are only seven groundmen. Barham said the utility preaches safety on the job, but the worker shortage itself is a safety issue. "They want us to have a safety culture but don't want to admit that it's an older work force and that there's not enough people on the jobsites," Barham said.

Despite the evidence of a shortage, the computer modeling increasingly in use as a

management tool indicates just the opposite. "Man-hour reports keep telling our supervisors we have too many people on the job for the work that we do," Barham said.

The work is also getting more technical, with utility companies increasing employing computers to track workers in the field and monitor job assignments, Hunter said. "But no matter how advanced technology is, when a line is lying down in the road, it takes a body and a bucket truck to put that line back up," he said. "There is no technology that we have that can do that."

Virginia Power is relying more and more on calling in workers for repairs, but to keep the number of those calls down, they are using the first response crews to make temporary fixes instead of using call-outs for proper repairs by repair crews.

'Band-Aid Fixes'

It is only in extreme cases that regulators have entered the fray on staffing levels in the electricity industry. Two years ago, the New Jersey Public Service Commission chided FirstEnergy, parent company of Jersey Central Power and Light (JCP&L), for what it considered unacceptably long response times for power outages. The utility was ordered to hire 300 workers. But the unusual mandate has not solved the staff shortage problem at JCP&L. Five New Jersey IBEW locals representing 1,350 JCP&L workers went on strike last December after rejecting a contract offer requiring workers to remain on call 24 hours a day—essentially forced overtime.

"These are just Band-Aid fixes," Hunter said. "Eventually that person is not going to continue to work 1,000 hours of overtime a year. They are just trying to prolong the inevitable. We are not going to have enough trained, qualified people to do the work."

Not only are the utilities failing to reconstitute dismantled training programs and neglecting to replace those who have retired, some—like Pepco in Washington, D.C., and Maryland and Connectiv in Delaware, New Jersey, Maryland and Virginia—continue to offer their workers early retirements. As the utility work force dwindles, companies are using more and more nonunion contractors, further depleting the ranks of highly trained IBEW members.

The lack of knowledge transfer and loss of institutional understanding are a particular concern of IBEW members who have spent years honing their skills in a challenging and dangerous field. The specialized niche of utility construction has been severely cut due to the lack of new investment in transmission and distribution. Deregulation and its attendant uncertainties have eliminated any inclination on the part of utilities to spend money on capital improvements and even more importantly, even less on the maintenance necessary for sustaining reliable infrastructure.

"Every time that person with 30 years of experience walks out the door, the problem gets worse," Hunter said.

California Scheming

Work force staffing has long been an issue that Vacaville, California, Local 1245 has monitored with its main utility employer, Pacific Gas & Electric. The number of workers at PG&E declined dramatically for three years following the passage of the federal electricity deregulation law in 1992, said Local 1245 Communications Director Eric Wolfe. But public outrage for poor response times during a 1995 storm forced them to increase their work force for a couple of years; as a result the frequency and duration of outages declined. Ever since, their staffing levels have been declining, and service and reliability have suffered. "We are still concerned their work force levels are below historic norms and below what we think is required to deliver service as reliable as customers expect and want," Wolfe said.

The local is currently negotiating with the company over staffing levels. California was ground zero in 2000 and 2001 when the state's deregulation law went into effect. Prices sky-rocketed and rolling blackouts plagued the state until the government put the brakes on deregulation. Gov. Arnold Schwarzenegger is today trying to reintroduce deregulation, a prospect that has outraged Local 1245 and the other IBEW utility locals. (See "Electricity Deregulation: Reliving the Nightmare," IBEW Journal, March 2005)

As for work force levels, they mean a great deal more than a few hundred jobs. It is a matter of the threatened loss of what has become a universal right to reliable electricity.

"What they tried to take away from the people of California was something fundamental," said Wolfe. "Lives were endangered and the economy suffered, all because deregulation zealots opened the door to con artists and charlatans to exploit a system that was never intended to be a free market showcase. That's extremely dangerous. Whether or not Americans recognize the danger in time to head it off is a real question mark."

The Nuclear Example

Due to the need for absolute safety in producing nuclear energy, the U.S. government closely oversees that segment of the industry. As such, the nuclear side of the industry is a bellwether for the rest. Not surprisingly, it has been plagued by a worker shortage and officials have been solving it in the same haphazard way the rest of the industry has: making current workers work more.

But the Nuclear Regulatory Commission, concerned about fatigue and other side effects of the worker shortage that have the potential to harm the public and plant safety, has signaled its intent to require plant operators to hire more workers. A draft rule limiting the use of forced overtime is expected this summer, said IBEW Utility Department International Representative Todd Newkirk.

The industry itself has been following work force levels for the past several years. The Nuclear Energy Institute's 2003 survey tracking work force challenges said the industry "may be unprepared for the amount of attrition in the next three to five years." The study, the most recent publicly available, warns future retirements are likely to have been

underestimated by as much as 50 percent.

Planning for the Future

Madison Local 2304 has joined Milwaukee Local 2150, Eau Claire Local 953 and Madison Local 965 to form the Utility Workers Coalition, which represents 10,000 members in the state of Wisconsin. The group is actively working with the state Public Service Commission to require utilities to formulate succession plans, building upon previous legislative and regulatory successes that resulted in the state establishing comprehensive maintenance and service standards for electric generation, distribution and transmission. Last summer, Poklinkoski urged the Public Service Commission to require utility companies in their seven-year business plans to identify how they will replace retiring workers.

"The Utility Workers Coalition is taking a three-pronged strategy—pressing the succession issue at our utilities, at our regulatory bodies and in the public until the utilities do the right thing," Poklinkoski said. "We have to take this issue outside the business-as-usual approach, in which we sit down with management and hope they will listen to us. The lower level management, for the most part, understands the problem but senior management listens less to them than they do to us."

The growing labor shortage in the utility industry cuts across all occupations. Impending retirements and advancing technology prompted American Electric Power to announce the establishment of a fund last year for a power plant worker training program at West Virginia State University. Some locals and a number of major utilities have joined the Energy Provider Coalition for Education, devoted to providing online training for a number of occupations in the utility industry.

Hunter said the worker shortage will be addressed in the IBEW Utility Conference in May.

President Hill said this issue is a high priority for the IBEW. "We will continue to work with our utility employers and state regulators if necessary to set a clear orderly path for establishing the work force of the future. But we cannot do it alone. If we have to drag the industry, company by company, into facing this challenge, we will if we must."

IAFF LEGISLATIVE FACT SHEET

HEALTH INSURANCE FOR EARLY RETIREES

The IAFF supports legislation that provides more health insurance options for early retirees.

BACKGROUND

According to current estimates, 46 million - or one in six Americans - lack health insurance. The emerging health insurance crisis in this country endangers the health of the uninsured and increases health care costs for all Americans. One of the largest groups of uninsured Americans is early retirees - those who leave the workforce before becoming eligible for Medicare coverage. A staggering four million uninsured Americans are early retirees.

Early retiree access to health insurance is especially important to professional fire fighters because they retire earlier than other occupations. Not only do fire fighters often lose their health insurance when they retire, but they also find it more difficult than other Americans to purchase affordable health insurance because of health ailments unique to the fire service caused by long-term occupational exposure to toxins, smoke, stress and extreme physical exertion.

Fire fighters are particularly impacted by the large number of uninsured Americans because fire departments are the nation's primary provider of pre-hospital medical care and emergency transport.

The uninsured are far more likely to use emergency care services for their health care needs than those with insurance, imposing greater demands upon fire departments already overwhelmed by rescue and homeland security duties. The International Association of Fire Fighters has long supported expanding access to health insurance for all Americans, and has been particularly engaged in providing more health insurance options for early retirees.

CURRENT LEGISLATION

Several legislative proposals have been advanced in recent years to give early retirees more health insurance options. One such proposal in the last Congress, the Medicare Early Access Act, would give people ages 55 to 64 the option to buy Medicare coverage. The bill would:

• give four million uninsured early retirees over age 54 the option to enroll in Medicare;
• give early retirees a refundable tax credit to offset a portion of their Medicare premiums; and
• allow early retirees who have employer-provided retiree health coverage to enroll in Medicare whereby their employer coverage would "wrap around" Medicare or, in other words, pay for a percentage of the monthly premium and cover medical services not paid for by Medicare.

CONGRESSIONAL ACTION

The House of Representatives and the Senate are expected to consider legislation addressing health insurance for early retirees in the 110th Congress.

INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS
HAROLD A. SCHAITBERGER VINCENT J. BOLLON

General President General Secretary Treasurer

February 23, 2007

Dear Member of Congress:
On behalf of the more than 280,000 men and women of the International Association of Fire Fighters, I am pleased to provide you with a copy of our 2007 Issues Book. The first session of the 110th Congress is expected to address many issues of concern to the nation's first responders, and this briefing book is intended to provide you with a better understanding of the IAFF's positions on the vital issues before you.

On March 11-14, more than 1,000 fire fighters and emergency medical personnel from across the nation will come to Washington, DC to attend the IAFF annual Legislative Conference and meet with their elected representatives. I hope you will have the opportunity to meet with your fire fighter-constituents to discuss the issues described on these pages, and that you will continue to seek the perspective of our nation's frontline domestic defenders on legislative matters in the months ahead.

I thank you in advance for your consideration of these issues and our positions. The IAFF Department of Governmental Affairs stands ready to assist you and your staff throughout the year. Please do not hesitate to call on us. We look forward to a cooperative and productive legislative session.

Sincerely,

Harold A. Schaitberger
General President
1750 New York Avenue, N.W., Washington, D.C. 20006-5395

KEY POINTS
HEALTH INSURANCE FOR EARLY RETIREES

• Retired fire fighters often face significant and unique health care needs as a result of a career spent responding to emergencies in hazardous and stressful environments. These health conditions often result in increased premiums, placing an even greater financial burden on retired fire fighters and their dependents.
• Fire fighters retire earlier than most professions. Because of the physical demands of their jobs, fire departments use mandatory retirement ages or structure their pension systems to encourage early retirement.
• Even in jurisdictions that offer retirees the option to remain in the employer-provided health plan, retirees are often required to pay all or most of the premiums. Whether the retirees retain their employer-provided insurance or seek another insurance carrier, it is not uncommon for retired fire fighters to spend 80 percent of their modest pension benefit on health insurance.
• Allowing early retirees to buy into Medicare would make health care more affordable for fire fighters and other Americans who lose access to employer-provided insurance when they need it most - during retirement.
• Proposals that expand access to health insurance save federal dollars in the long run by reducing costs associated with providing health care for the uninsured. Reducing the number of uninsured also alleviates strain on the nation's over-

burdened emergency response and care systems.

• The Medicare Early Access Act would not affect the Medicare Trust Fund because it would require those who buy into Medicare to pay the full cost of the premiums, without the federal government subsidy provided to those over 65.

• The legislation allows early retirees who already have employer-provided retiree health coverage to enroll in Medicare whereby their employer coverage would pay for a percentage of the monthly premium and cover medical services not paid for by Medicare.

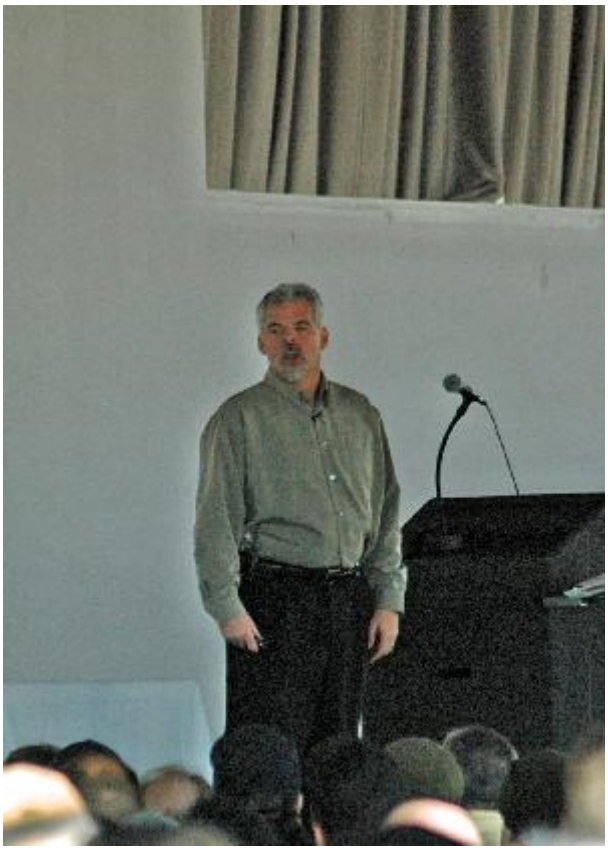
• The Medicare Early Access Act also creates a refundable tax credit for a portion of the Medicare premiums to make Medicare more affordable for early retirees, many of whom live on fixed incomes and cannot afford the full cost of the premiums.

INDUSTRY NEWS

SMACNA and SMWIA Local 66
present

Mark Breslin

600 plus SMACNA and SMWIA Local 66 employees came together on January 22nd forthe first ever joint membership meeting. Mark Breslin of Breslin Strategies spoke of the importance of adapting to changes in the sheet metal HVAC/R industries. He emphasized every employer and employees responsibility to step up and make a difference.



Mark Breslin

JATC Coordinator, helps Zac Laycock of Mariner High School at a job fair in Marysville.

Published: Saturday, May 3, 2008

Fair will tout construction trade careers

By Michelle Dunlop
Herald Writer

EVERETT -- Construction activity has dropped in the area, but local officials don't want to shortchange the industry's future.

About 300 Snohomish County high school students will take part Wednesday in the second annual construction carnival at Sno-Isle TECH Skills Center. It's part of the county's effort to introduce youth to skilled work career opportunities.

Snohomish County. "For a lot of students, earning a high wage while getting skilled up in a competitive field is a very appealing option, one they don't often hear about from their high school counselors."

Teams of journeymen will be available to answer questions and offer high school students the opportunity to try their hands at a number of tasks while learning about careers in the construction trades. Students will get the chance to ride a boom lift, lay brick and, perhaps, find a career.

Hosted by the Workforce Development Council's Construction Careers Partnership skill panel, participating exhibitors at next week's event include the Western Washington Sheet Metal Joint Apprenticeship Training Committee, which will offer students the chance to build a sheet-metal tool tray, and Master Builder's Career Connection, which will provide a hands-on building experience that teaches students how to build a house from the ground up.

While it's aimed to attract students to the construction industry, the event also provides an opportunity for journeymen to show off their trades.

"The carnival is an exciting event for the trades," said Eric Peterson with the Western Washington Sheet Metal apprentice committee. "It gets us off the job site to meet tomorrow's work force. We get to talk to teens about the work we love and get them pumped about signing up for an apprenticeship."

Event sponsors include the Snohomish County Construction Careers Partnership, The Painters and Allied Trades, Edmonds Community College and its Construction Training Program, Habitat for Humanity, Brightwater Treatment Facility and Star Rentals.

More information about the event can be found at www.wdcsc.org.

Good pay, steady work, few takers as young people spurn the trades
By AMY ROLPH
P-I REPORTER

The average construction worker is well into his 40s, and unless something changes to make

the fresh-from-prom set take a sudden interest in framing and drywall, that work force is just going to keep getting older.

In an industry where retirement tends to come early and knowledge is passed down on the job, that trend presents a potentially paralyzing problem -- especially as demand for workers continues to rise.

Crews will be at a loss for skilled workers. Buildings might not go up so quickly. So-called "green initiatives" could falter.

And the young people who passed up those opportunities? Unless they managed to land that desk job at Microsoft, they might have missed out on a chance to make a comfortably upper-middle-class living, some industry experts say.

The shortage isn't confined to carpenters -- it extends to plumbers, stonemasons, electricians, cabinetmakers, welders and a list of other trades that were once sought after.

What has some educators and employers puzzled is that many of those professions offer the chance to make upward of $50,000 right away. But they say a negative perception of the trades coupled with a mounting push for college education has dealt the professions a hard blow in the United States.

Nettie Dokes, manager of Seattle City Light's apprenticeship program, calls apprenticeships "the other four-year degree." (An apprenticeship, often regulated by unions, is a period of on-the-job training that typically lasts one to five years. After that, workers graduate to higher journeyman-level wages.)

Dokes worries how her quickly expanding crews of linemen will be able to retool technologically without new blood coming in.
Years ago, she would hire 20 apprentices every year. Now she has spots for almost 60, and can't guarantee those will be filled.

"Historically here, from even a biblical time, a parent sent their child to apprentice with a skilled trade individual," Dokes, said. "Here for us, after World War II, we made a shift where all of the focus and energy was based around a four-year credentialed program."

The state's community and technical colleges have thousands of students in trade programs.

Enrollment in work force training at the technical and community colleges, which includes some apprenticeships, reached nearly 60,000 five years ago, but has slowly fallen since then. However, the Department of Labor and Industries reports that more than 17,000 workers were in apprenticeships at the end of last year, and that they have been steadily growing through the years.

Still, industry officials say the community colleges and apprenticeships aren't keeping up with demand. And those programs often attract older students, who will end up having shorter

working lives.

In Washington, apprentices for state projects can start out earning more than $30 an hour, according to Labor and Industries figures.

"It's not like the college system where you go to college and sit in class -- these folks are out there working in the field," said Halene Sigmund, who oversees apprenticeships for the Bellevue-based Construction Industry Training Council. "They're all making family living wages."

The 'misfits'

At Seattle Central Community College's wood construction program, boatbuilding instructor Gordon Sanstad tallied the construction industry's woes as he led a tour through the Central District facility. Cabinetmaking, boatbuilding and carpentry -- the program's three emphases -- are fields dominated by "what we call the gray-hair set," he said.

And they're industries where local demand is high.

Even his students are older than you might expect, he said. The average age of those enrolled in the wood construction program is 34.

Sanstad led the way through sawdust-covered workrooms where students labored over projects such as half-scale models of stairs and the naked ribs of what will one day evolve into boats.

Tours, he said, are starting to be a bigger part of his job. At least once a week he leads a group of high school students through the facility, hoping they'll find appealing the prospect of steady work that can't be easily outsourced.

Nicole Lundheim paused from working on a half-finished small racing boat to talk about how these days people "don't want to get dirty." The 32-year-old grew up watching her grandfather and father work on houses -- construction is in her blood.

That's not the case with everyone, she said.

"We're in a technological era," Lundheim said. "People aren't exposed to it. I was exposed to it, but I was unique."

Sanstad and other instructors back that theory up. Forty years ago, the program didn't need to have introductory classes for students to learn the basics of construction -- how to operate tools and keep all their fingers at the same time. Now, the course is mandatory.

Frank Worsham, a 52-year- old student, came late to boatbuilding after a career at Boeing -- so he's all too familiar with the aging tendency of the trades.

"I've thought that if I ever did it over, I would do this when I was younger," he said as he bent

over a half-finished dinghy. "I don't understand why young people aren't doing these things."

The federal Bureau of Labor Statistics estimates there will be an 18 percent increase in the need for plumbers and pipe fitters from 2004 to 2014. During that same time, demand for carpenters and painters will increase 13 percent, and the need for electricians will go up 14 percent.

Demand for heating, ventilation and air conditioning mechanics and installers will swell 27 percent during that time, according to the bureau's data.

Some economists speculate that "green initiatives" championed by government and corporations will create millions of jobs over the next 10 years, some of which would be technician positions or renovation work.

Image problem

Problems related to aging work forces haven't gone undetected. Late last year, Gov. Chris Gregoire announced "Running Start for the Trades" grants for 14 school districts, hoping to promote pre-apprenticeship training for students.

That was part of the latest push to mobilize young people toward the trades -- a drive that might be working. In the last two years, the state has seen a 62 percent increase in registered apprentices, said Elizabeth Smith, apprenticeship program manager for the state's Department of Labor and Industries.

But the average ages in apprenticeships still tend to border 30 -- evidence of what Smith and others call "the 10-year drift." After graduating high school, young people apparently work elsewhere before finding their way to the trades.

"I don't know why it is -- I just know that we see it, and we're working on changing it as well as we can," Smith said.

Some educators think schools are at least partly to blame for the diminishing interest young people have in the trades. They complain that WASL (Washington Assessment of Student Learning) scores have taken top priority over elective classes -- music and art along with the trades -- and students don't get to see their career options in the same way they used to.

"We live in tech-central," said Cal Pygott, who leads Bothell High School's construction program. "Every parent thinks their student needs to go to a four-year school. But not every student needs to, wants to, or has the grades or ability to go to a four-year school."

Pygott heads the school's "Construction Academy," which allows high school seniors to complete the first year of construction apprenticeship before graduation. After watching the drop-off in trades-related training years ago, Pygott says he's slowly seeing programs like his re-emerge.

But beyond lack of support from high schools, Pygott said the trades face another problem that

can't be remedied by lobbying the Legislature: The industry has an image problem.

Until parents and students stop thinking of construction workers as "some big guy with a beard" who "swears a lot and drinks beer," he said that industry is likely to have a hard time recruiting.

But Pygott thinks parents, students and school districts are missing the big picture: job security.

"We import all or most of our clothing, all or most of our consumer electronics, more and more of our food -- our automobiles are either made overseas or owned by overseas companies," he said.

"But we cannot import our highways. We cannot import our bridges. We cannot import our skyscrapers or our infrastructure."

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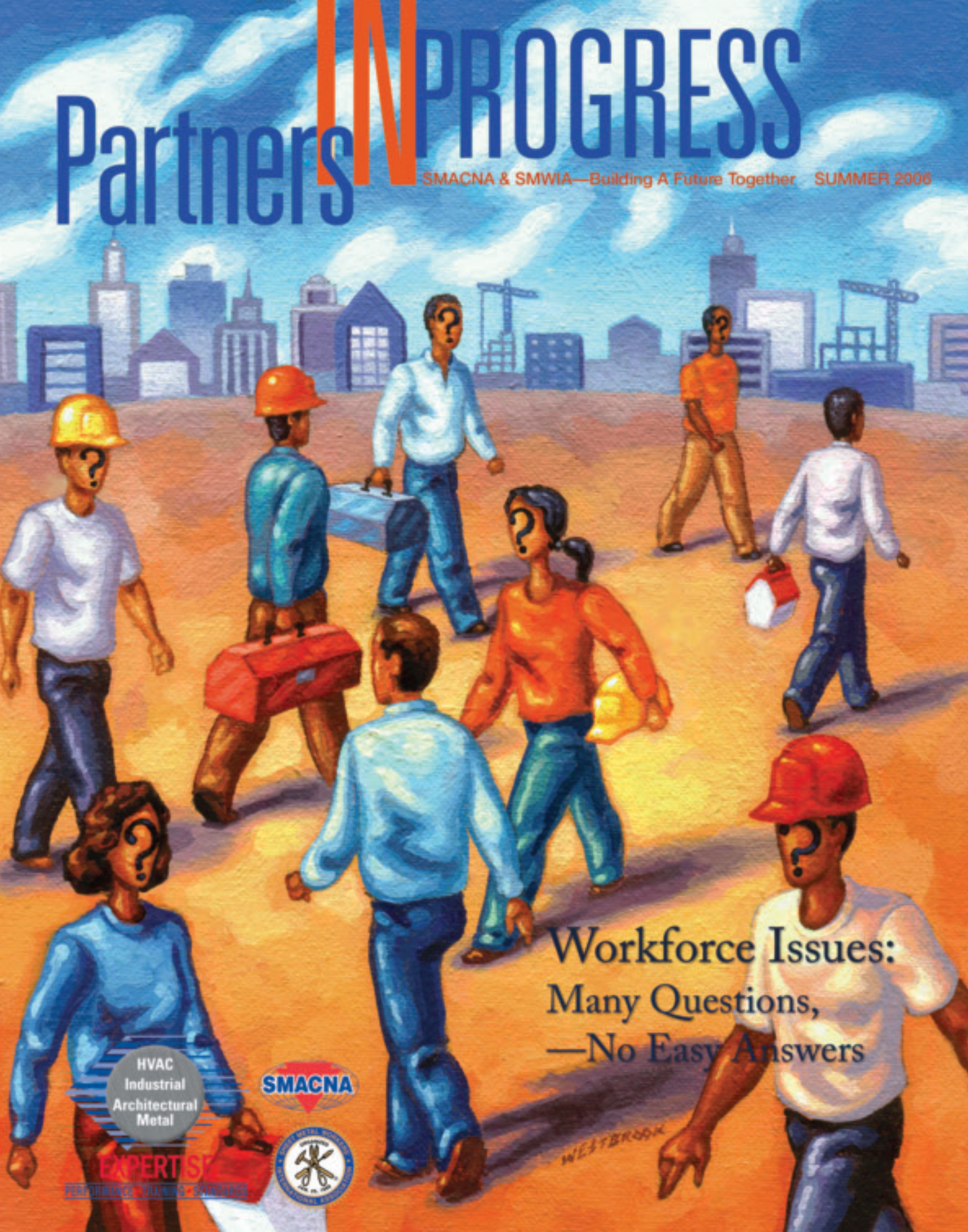

Workforce Issues:
Many Questions,
—No Easy Answers

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CONTENTS

News and Shorts 2

Workforce Issues: Lots Of Questions, No Easy Answers 3

People: An Industry-Wide Problem 6

A Funny Thing Happened En Route To A Contract . . .8

An Industry & Its People: What The Data Say 9

Partners Zero In On Marketing Targets 12

SMWIA and Mergers: Studying the Possibilities 14

Crossword Puzzle 15

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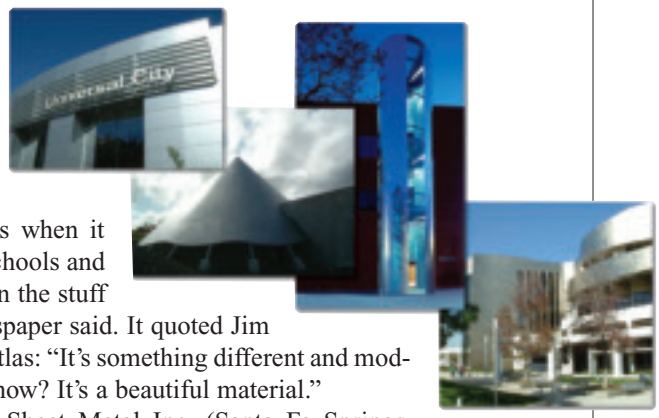
NEWS AND SHORTS

Sheet Metal Shines In Los Angeles

"Sheet Metal Is Starting To Shine" read the headline on a March 20 article in the *Los Angeles Times*. The piece touted the beauty of architectural sheet metal—and quoted several members of SMACNA:



Atlas Sheet Metal (Irvine) "will create yet more shiny baubles when it clads or roofs 10 schools and 40 custom homes in the stuff this year," the newspaper said. It quoted Jim Odlum, owner of Atlas: "It's something different and modern-looking, you know? It's a beautiful material."

Cimco AC & Sheet Metal Inc. (Santa Fe Springs, Calif.) "has seen a 10% to 20% increase in business the last five years."

Dave Duclett, co-owner of CMF Inc. (Orange, Calif.), said his company's projects averaged $100,000 or less in the year 2000. Today, "its current roster of present and future jobs includes 15 projects of at least $1 million and several that easily top that figure," the newspaper reported.

Wayne Chambers of Coastal Sheet Metal (Costa Mesa, Calif.) "estimated his raw materials costs have jumped by a third this year, in larger part because of increases in the price of copper."

Weiss Sheet Metal (Gardena, Calif.) "has noticed an uptick in the call for architectural sheet metal," the *Times* said. Weiss sees potential for growth of as much as 15% this year. "The pluses of building with metal play a role, too," Andre Sarai, company president, told the newspaper.

"Metals tend to last longer, and there's less maintenance. And aesthetically, they are very pleasing."

Focus On Gulf Coast Market

"Hazardous and toxic conditions are just sone of the challenges facing SMACNA and SMWIA's Gulf Coast Assistance Task Force," said former SMACNA president Mark Watson at the Partners In Progress Conference.

Other challenges outlined included local wage rates, licensing, and simply finding housing. The task force is seeking ways to penetrate the Gulf Coast market and gain a greater share of the work.

Toward this end, SMWIA is developing a letter addressing available work opportunities, mobility of manpower, and incentives for contractors to bid work in the Gulf area. SMACNA staff is preparing information packets for contractors interested in bidding the work. ■

NO PEEKING...YET

See Page 15

Workforce Issues:
Many Questions, No Easy Answers

Assuming the Sun doesn't explode soon,
there will be a tomorrow.
Who will do sheet metal & HVAC work?
Tentative answer: No one really knows!

For an index of how concerned the SMWIA-SMACNA team has become over the future sheet metal industry/HVAC workforce, consider this: The joint National Labor-Management Cooperation Committee has commissioned just one research project in its history (since 2001)…and that's on the future workforce.

Many questions about the future workforce are being discussed by SMACNA, SMWIA, and many other unions and contractor groups. There are many more questions than answers. These include:

How can the industry indenture and train enough future workers to replace those who will retire and provide for industry growth needs…when times are tough in some areas of the country?

Will tomorrow's workforce (consisting of younger people, a higher concentration of women, and more Hispanics than in the past) be welcomed into the sheet metal/HVAC industry?

Can the construction industry as a whole solve its retirement and recruitment problems?

Enhanced worker retention could prevent the dramatic need for new recruits. Is that possible in the construction industry generally, and in the sheet metal world specifically?

If the non-union element does little or no training, and organized construction's apprenticeship effort is stagnant (or, in places, de-emphasized)…***is the construction industry overall headed for a skilled worker shortage crisis***—of significant impact and extended duration?

Many challenges

Prof. William F. Maloney of the University of Kentucky, who teaches undergraduate and graduate courses in construction engineering and management, is running the SMWIA-SMACNA research project. He provided insights to attendees at the Partners In Progress conference in late March/early April in Las Vegas.

continued on page 4

Dr. Maloney

continued from page 3

Maloney offered many good points, but perhaps he stunned his audience with some data from the *Jobs Rated Almanac* (priced recently on Amazon.com at $9.72)…The publication rates 250 jobs. Here are the best/worst:

#1, 2, 3 = biologist, actuary, financial planner.

#248, 249, 250 = cowboy, fisherman, lumberjack.

And the *piece de resistance* from Maloney was this: The profession of sheet metal worker was ranked…#227. Most construction jobs were rated in the 200s; ironworker, for example, came in at #247.

With construction generally a "less desired" pursuit, and the sheet metal trade specifically ranked behind more than 90% of other occupations, retention and recruiting are critical now, and will be more so in the future, Maloney said.

To download a 77-page PDF (one slide to a page) of Maloney's general-session presentation to the Partners In Progress Conference—*Recruiting Your Most Important Asset*—go here: www.pinp.org/files/smiw/MALONEY_dc.pdf.

Avoiding the dregs

Maloney also spoke at a break-out session on the Thursday before the Partners conference, *Tools for Recruiting the Future Workforce*.

In this reporter's attempt to cover the entire event, he ended up wandering from room to room. However, for a short period in Maloney's session, there was at least one particularly impressive point made—not always heard—by the professor on the construction industry's apprenticeship problems:

"Construction, for many people right now, is a career of last resort. We can't work that way."—*Joe Salimando*

Efforts Of Three Local JATCs

Here's just a bit of what the JATCs in Baton Rouge, La., Evansville, Ind., and Minneapolis-St. Paul, Minn., are doing these days about recruitment, retention, and more:

Apprentices help in recruiting: According to Michael Patrick, apprenticeship coordinator for Indiana, using apprentices to help at "career fairs" really works for SMWIA Local Union 20 in Indiana.

"They seem to speak the same lingo as the people we're targeting," said Patrick, who became coordinator in February (after 16 years as an SMWIA agent). "We probably do 60 or 70 of these career fairs in Indiana in a given year, and we use apprentices for at least 25% or 30% of them."

What's the benefit? "Our apprentices are walking, talking, living proof that—yes!—the program exists. And—yes!—we take in apprentices, and yes, they succeed, and yes, they become journeymen."

Assistance from a state grant: Not every place gets shellacked by hurricanes, but when a disaster happens, government assistance can materialize. So says Greg Toney of SMWIA Local 21, the training coordinator in Baton Rouge.

"Before the hurricanes, we had applied for a welding grant," he explains. "That got pushed to the back burner, with a lot of other things, afterward."

However, government money was made available to Louisiana Technical College. An LTC person called Local 21, asking if it was still interested in moving forward on that welding training.

Result: The LTC produced radio advertising promoting welding training via the Baton Rouge JATC. You can hear the ads by going to these two locations on the Partners In Progress Web site:

- www.pinp.org/files/audio/baton_rouge_1.wma
- www.pinp.org/files/audio/baton_rouge_2.wma

What's happened as a result of these ads? "I'm kind of shocked at the response we've had," says Toney. In addition to some calls that were off-base, Local 21 is providing welding training to more than 60 non-union workers. They may become SMWIA members.

"It's created a new problem for us, and for our contractors," Toney says—happily. "Now, we need to put 60 more people to work."

Journey-level classes: While the new modular training format will lead to an increase in journeyman training, the Metro JATC in Minneapolis-St. Paul has been offering such classes for more than six years.

"It was a priority of our JATC when I took this job," says Buck Paulsruud, training coordinator for 6.5 years.

A visit to the SMWIA Local 10 Web site (www.smw10.com/2005ckasses.htm) shows off the journey-level class offerings. Printed out landscape format, the class list filled 14 pieces of paper.

"Our members are out there getting the training they need," says Paulsruud. "This is a competitive advantage. The pipefitters aren't doing what we're doing."

While classes are offered primarily in the evening, there are Saturday classes. Paulsruud asked to throw in a tribute: "We are blessed here with talented instructors. We have 23 part-time instructors and three full-time. You can't offer the number and breadth of classes we have here without this kind of people."

And they've been busy. In 2005, instructors taught 965 classroom hours. There were 538 students (out of roughly 2,500 SMWIA members in the metro area). According to Paulsruud, there were 12,542 student class-hours last year. ■

It's Not Just Construction That Faces A Crisis

Issued by the National Association of Manufacturing, the 32-page 2005 Skills Gap Report, issued late last year, paints a scary picture of a skilled workforce shortage.

But it's in manufacturing, not construction. "More than 80% of respondents indicated that they are [in '05] experiencing a shortage of qualified workers overall," the report claimed. Further, 38% of those responding to the NAM survey "also indicated a moderate to severe shortage of qualified unskilled production employees."

Problems for manufacturers sound just like those in construction. "Research has shown a direct relationship between manufacturing's negative image—which is tied to the old stereotype of the assembly line—and the decreasing number of young people pursuing careers in the industry."

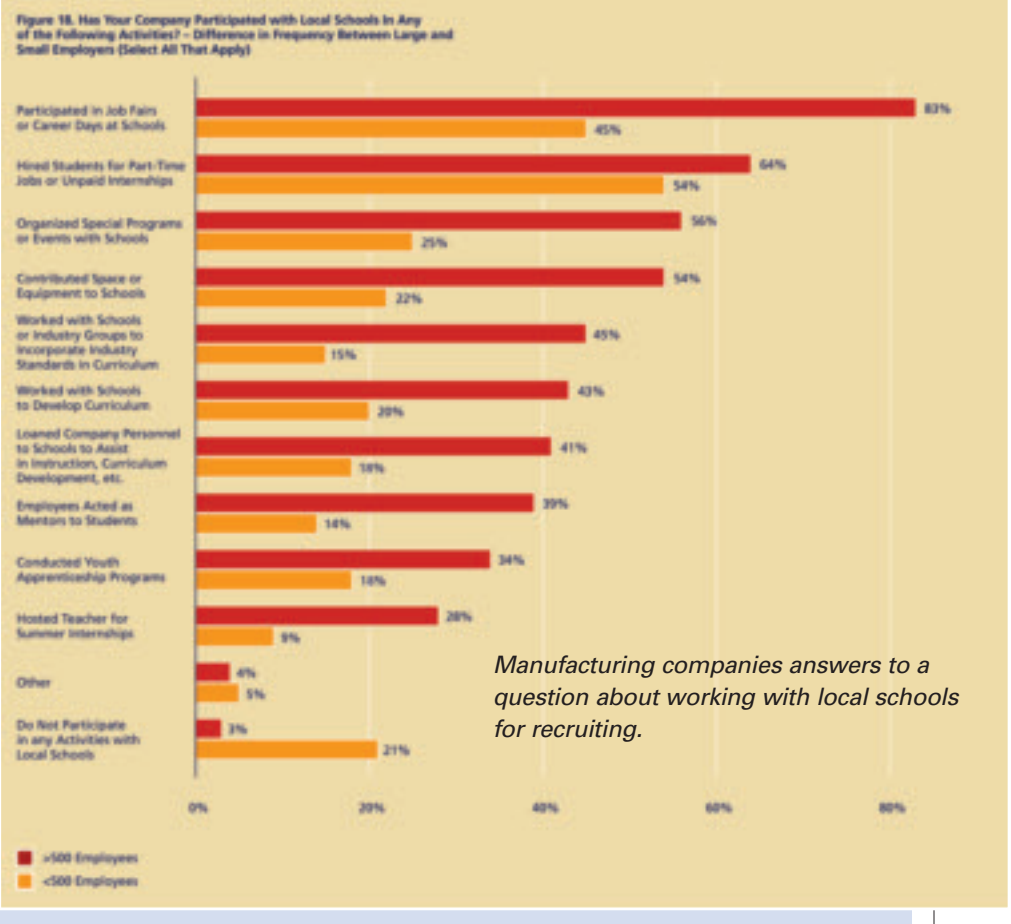
Among other items in the report:

- 84% of respondents said K-12 schools were not doing a good job of preparing students for the workplace. The figure in a similar 2001 survey was 78%.
- 83% of companies with 500 employees or more participate in job fairs or career days at schools. Only 45% of the manufacturers with fewer than 500 employees did that.
- 61% of the respondents would like to see federal tax benefits given to companies that provide worker training.

One conclusion from the report: "Employers must implement new and non-traditional approaches to dealing with skills retention challenges. This includes efforts to reduce turnover, participate in efforts to change attitudes about manufacturing jobs and tap under-utilized talent pools among older, female, immigrant, and non-traditional workers."

Download the full NAM report here:

http://tinyurl.com/e5uww. ■



Manufacturing companies answers to a question about working with local schools for recruiting.

More On Workforce Issues

Workforce-related information elsewhere in this issue includes:

- Sheet metal worker age status vs. other trades (page 6);
- State-by-state projections for sheet metal workers in 2012, with baseline numbers for each state for 2002 (page 11);
- How the new SMWIA-SMACNA "core-and-modules" approach fits perfectly into the new era (page 7);
- What some local sheet metal JATCs are doing in recruiting, using outside assistance, and providing journey-level training (page 5);
- Facts on non-union apprenticeships, from the Building and Construction Trades Department, AFL-CIO (page 7);
- U.S. population make-up, focusing on Hispanics, through 2050 (page 9);
- Make-up of the civilian labor force from 1984 actual to projected figures for 2014 (page 10);
- There's a manufacturing skilled worker crisis, too (page 4).

People:

An Industry-Wide Problem

Is the construction industry preparing for the future? Well—no. And: There are good reasons to believe things might not change soon.

When it comes to people, the construction industry seems headed for a train wreck.

One wing of the industry—the unionized sector—is very good at recruiting quality people and turning them into skilled professionals. Unfortunately, the organized segment has a small (and said to be declining) market share.

What's more, in many areas, union members and contractors serving on local JATC committees have a hard time justifying the indenture of significant numbers of apprentices. They look at current conditions and see many journeymen "on the bench." Checking out the future, they look out to a horizon that might not include a significant amount of unionized work.

Result: In many cases, the local committee (no matter the trade) chooses to sit on its hands, and indenture relatively few apprentices.

It's a damned-if-you-do, ruined-if-you-don't situation. Apprentices not indentured in 2006 won't be journeymen in 2011. Those who are indentured must have work; if union contractors don't provide it, they face the horrid notion that the highly trained people—whose training they paid for—will go to work for their competitors.

On the other hand, there is the non-union sector. These people claim to have 80% of the work in construction, but they don't appear to be training proportionally.

A huge problem

Elsewhere in this issue, you'll find specific numbers—Bureau of Labor Statistics assessments—of how many new sheet metal workers and HVAC technicians will be needed in the period to 2014.

It's important to focus on the problem's scope. There's much more involved here than the sheet metal trade: The entire construction industry faces a "people" crisis, one that promises to worsen as we get closer to 2010.

According to a Construction Labor Research Council report (available online), "population shifts affect all industries, not just construction. There will be competition between construction and all other industries to attract the qualified new entrants needed to replace existing older workers."

CLRC's report says that 8.8% of sheet metal workers are age 55+, and 13.4% are 50 or older. See Table One for how this compares to other trades. It may be small solace, but the sheet metal trade seems to be in "better shape" than others.

Salient points

CLRC's report makes several key points:

- "With the working life of construction workers less than [that of] many other occupations, the demographic trends are impacting construction earlier than other industries."
- "Training requires time… today's actions will impact labor availability many years into the future…training

Core + Modules Approach—Perfect For This Era?

The nearby main article seems fairly gloomy. Is there an alternative?

Interestingly, the International Training Institute's core-plus-modules approach to training, now being implemented at sheet metal JATCs across the nation, seems a perfect fit for the future described in the article.

One can credit great foresight or simple luck. SMWIA and SMACNA began talking about the modular approach to training in 1997.

What advantages does it offer?

- With a two-year "core" curriculum, apprentices are quickly brought up to speed. They will more quickly become productive at basic sheet metal tasks.
- The "modular" approach provides the sheet metal industry with the chance to turn out apprentices with different skill specialties. This enables a faster response to the market.
- Additionally, specific modules can be used to provide skill upgrade training to journeymen. When a specific worker's skills need updating or changing, he or she can enroll in a course or courses on (for example) architectural sheet metal, detailing, and much more.

While this analysis might seem biased toward "the home team," if it's correct one can forecast one more thing: A shift by one or more of the other construction trades toward the SMACNA-SMWIA approach.

Table One

Percentage Of Older Workers, By Trade

	Age 50 & Up
Boilermakers	27.7%
Bricklayers	19.5%
Carpenters	15.9%
Cement Masons	13.6%
Equipment Operators	20.7%
Electricians	17.1%
Ironworkers	15.5%
Laborers	15.4%
Millwrights	12.4%
Painters	15.6%
Pipefitters/Plumbers	21.6%
Sheet Metal Workers	13.4%

Source: Craft Supply Outlook, 2005-2015, a report by the Construction Labor Research Council (2005).

is important, but available data indicates training numbers are flat and dependent upon the union sector."

- "BLS estimates of replacement needs appear conservative and may, therefore, underestimate the number of required new estimates."
- "Replacement needs will be higher than in past years, because of the aging of the construction labor force. The upswing in older workers in the [construction] industry will lead to greater numbers of retirements throughout the 2005 to 2015 period."

Dilemmas abound

Essentially, the construction industry could be in quite difficult straits as the 2000s become the 2010s. Here's the potential nightmare:

a. Restrained by its reduced market share, the organized sector does not ramp up apprentice indentures and training.

b. Retirements accelerate, as the workforce ages.

While Table One holds open the possibility of a smaller surge in sheet metal worker retirements compared with others, our operations still must interface with the construction industry as a whole. Reduced numbers of skilled workers (be they union or non-union) available to other trades have the potential to turn each construction project into an individual quagmire.—*Joe Salimando*

Facts About Non-Union Training

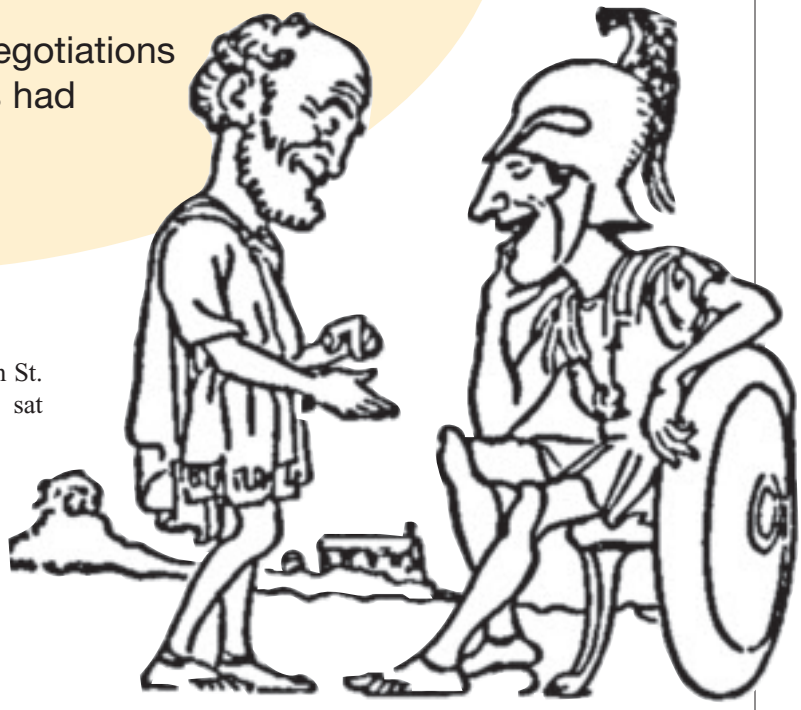
With its own resources as well as using data from a Government Accountability Office report, the AFL-CIO's Building and Construction Trades Department has provided eye-opening details on non-union apprenticeship training in the construction industry. Note: GAO is the research arm of Congress.

Facts from the BCTD and GAO reports include:

- Only six of the 80 local chapters of the Associated Builders and Contractors "sponsored an apprenticeship program that graduated over half of its apprentices."
- 25 of the ABC chapters had graduation rates below 25%.
- 20 ABC chapters "either failed to sponsor a program or failed to enroll apprentices in the program it did sponsor."
- ABC-sponsored programs in 49 states (Hawaii is excluded) registered 24,663 apprentices between 1995 and 1999. Only 7,154 graduated (29%).
- GAO found that "nonunion apprenticeship programs graduated only 30% of their apprentices in the period under study, significantly less than union programs."
- Union apprentices "were paid 24% more than non-union apprentices when they began their apprenticeship, and they will earn 36% more when they finish their program," according to GAO.

A Funny Thing Happened En Route To A Contract

In St. Louis, the recent contract negotiations were 'unlike anything' participants had previously experienced. Why?



Something weird and unforeseen happened recently in St. Louis, when SMACNA and SMWIA negotiators sat down to hammer out a new contract.

"It was a negotiation unlike anything any of us had ever experienced," explains Jack Goldkamp of contractor Frank Fischer Inc. "I've been involved in four or five of these now. This was definitely unusual."

Were outstanding issues settled by playing pinochle?

Talking & Listening

SMWIA Local 36 and SMACNA meet four times a year to discuss contract issues and more. "I've seen instances in the past where negotiations didn't go well," says David Zimmermann, business manager for Local 36. "I didn't want to play games this time, to get involved in each side showing a lack of respect for the other."

To build on the regular meetings and prepare for the contract talks, labor and management created a Long-Range Planning meeting, held in early December. With invitees included from the national organizations, the two-day session was dedicated to brainstorming ways the SMWIA-SMACNA team could gain market share.

"Of the 13 issues raised [see accompanying list] in the December meeting, five were specifically addressed in the negotiations," says Goldkamp. "We addressed them from what is usually called a 'mutual gains bargaining' perspective."

Also contributing to the nature of the negotiations was the national Partnership Conference, held March 30-April 1 in Las Vegas. Attendees from St. Louis included two of the contractors on the negotiating team, Zimmermann, some SMWIA members, and people from the local JATC.

"We attended all of the large-group meeting together, as a group," remembers Goldkamp. "We sat together. We listened to the speeches together. We ate together."

Thanks to years of meetings featuring open discussion, the December planning event, and the Las Vegas sessions, SMACNA and SMWIA had achieved the impossible—everyone was on the same page before contract talks started.

At some point early in the negotiations, the participants came to realize and acknowledge this most unusual development.

"We realized that, in these negotiations, everyone in the room was on the same side," Goldkamp says. "It was most effective. We came to an agreement that's fair for everyone."

Help For Contractors

One feature of the contract talks was the inclusion of specific items to help signatory contractors get more business.

"We did some additional things to help the contractors to be more aggressive, and to think outside the box," says Zimmermann. "There are specifics that should energize the contractors to broaden the scope of work they go after and win."

A major accomplishment for both sides—which has been in the making for years—was to upgrade pay rates for apprentices. "In the last contract, we entered some target percentages, where we wanted to have the apprentices in the next contract," explains Goldkamp.

continued on page 16

Our Industry & Its People: What The Data Say

Here's a look at data on the sheet metal and HVAC industries—and the nation as a whole—and what it tells us about the future.

By Joe Salimando

What will the future be like? The ancient Greeks had their Oracle at Delphi; they asked, and the high priestess babbled.

These days, we have a better handle on how things should shape up. Consider Table One, which shows the changing composition of the U.S. population through 2050, as projected by the U.S. Census Bureau.

Table One shows how our country is changing—with a focus on how the "white alone" component of the population recedes. It's projected to move from seven out of every 10 people just a few years ago to five out of every 10 by 2050.

Workforce Entrants

See Table Two for insight on workforce composition. It shows that the workforce in 2014, as projected by the Bureau of Labor Statistics, will be different from the one many remember (as of 1984):

- There will be more women;
- There will be many more people of Hispanic origin;
- There will be a significant jump in the number of workers age 55+.

More importantly, as employees retire and HVAC and sheet metal contractors hire to replace them—and to cope with workload growth—they'll be hiring from a crop of workforce entrants that looks a lot different from those now in the industry. See Table Three for more on that.

More than one out of every five workforce entrants in the period 2004-14 will be of Hispanic origin. If these projections are correct, more than one out of every six workers in the total workforce will be of Hispanic origin when 2014 ends.

Our Industry's Task

Every two years, the Bureau of Labor Statistics updated its workforce projections. The most recent update, released in winter 2006, provided detailed information for the 10-year period ending in 2014.

Partners In Progress assembled data on our industry and presents it here in graphic form on two worker categories, HVAC/refrigeration mechanics & installers, and sheet metal workers.

continued on page 10

Table One

Projected Population of the United States—In Percentages

	2000	2010	2020	2030	2040	2050
Population (in millions)	*282.1*	*308.9*	*33.58*	*383.6*	*391.9*	*419.9*
White alone, not Hispanic	69.4%	65.1%	61.3%	57.5%	53.7%	50.1%
Hispanic (of any race)	12.6%	15.5%	17.8%	20.1%	22.3%	24.4%
White alone	81.0%	79.3%	77.6%	75.8%	73.9%	72.1%
African American alone	12.7%	13.1%	13.5%	13.9%	14.3%	14.6%
Asian Alone	3.8%	4.6%	5.4%	6.2%	7.1%	8.0%
All other races*	2.5%	3.0%	3.5%	4.1%	4.7%	5.3%

Source: U.S. Census Bureau

* All other races includes American Indian and American Native alone, Native Hawaiian and Other Pacific Islander alone, and Two or More Races.

continued from page 9

Here are quick summaries of what the data say:

HVAC/R—our nation will have 321,000 of these workers in 2014, if the BLS is correct. Of those, fully 90,000 (28%) will be new workforce entrants, hired either to replace those leaving the field or to fill newly created jobs.

Sheet metal workers—there will be 222,000 jobs in 2014. Of these, 70,000 (31.5%) will not have been working with us in 2004; they'll have been hired to replace those leaving or to fill new slots.

Add it up, and U.S. contractors (union or non-union) who do HVAC/refrigeration and sheet metal work will have to hire and train 160,000 new workers in the 10-year period 2004-14, according to the Bureau of Labor Statistics.

Table Four

See page 11 for a long table, which provides 2012 projections for sheet metal workers by state. These figures aggregate to a higher number, as BLS two years ago projected a higher figure for 2012 for our industry (224,000 total).

State-by-state data are available for a variety of occupations at www.projectionscentral.com. However, the latest data available is for 2012; and there are glaring omissions for that year in many occupations (including HVAC/R mechanics and installers). ■

SALIMANDO (ECDOTCOM@GMAIL.COM) IS EDITOR OF PARTNERS IN PROGRESS.

Table Two

Civilian Labor Force—1984, 1994, 2004 and 2014 Projections (totals in millions)

	Men	Women	White Non-Hispanic	Hispanic Origin	Age 25 to 54	Age 55 + Older
1984	63.83	49.71	91.30	7.45	74.56	14.89
1994	70.82	60.24	100.46	11.98	93.90	15.55
2004	78.98	68.42	103.20	19.27	102.12	23.01
2014	86.19	75.91	106.37	25.76	105.63	34.31
Percentages						
1984	*56.2%*	*43.8%*	*80.4%*	*6.6%*	*65.8%*	*13.1%*
2014	*53.2%*	*46.8%*	*65.6%*	*15.9%*	*65.2%*	*21.2%*

Source: *Monthly Labor Review*, Department of Labor—November 2005

Table Three

Civilian Labor Force—1984, 1994, 2004 and 2014 Projections (totals in millions)

	Total (millions)	Men	Women	Race				Origin	
				White	African American	Asian	All Other	Hispanic	All Other
Workforce Entrants	39.05	53.3%	46.7%	74.8%	14.8%	6.9%	3.5%	21.5%	78.5%
Leaving The Workforce	34.35	55.9%	44.1%	83.5%	12.3%	2.7%	1.4%	7.8%	92.2%
"Stayers"	123.05	53.1%	46.8%	81.9%	11.1%	4.6%	2.5%	14.1%	15.9%
Total In 2014	***182.10***	***53.2%***	***46.8%***	***80.2%***	***12.0%***	***5.1%***	***2.7%***	***15.9%***	***84.1%***

Source: *Monthly Labor Review*, Department of Labor—November 2005

Table Four

Long-Term State Projections—Sheet Metal Workers—to 2012

State	SMW Employment 2002	SMW Employment 2012	Change in 10 Years Number	Change in 10 Years Percent
Alabama	3,540	4,380	840	24%
Alaska	500	560	60	13%
Arizona	4,120	5,070	950	23%
Arkansas	1,340	1,620	280	21%
California	20,500	26,100	5,600	27%
Colorado	3,780	4,300	530	14%
Connecticut	2,730	2,680	-50	- 2%
D.C.	310	380	70	22%
Delaware	540	630	90	16%
Florida	10,790	13,600	2,820	26%
Georgia	7,260	8,750	1,490	21%
Hawaii	590	730	140	24%
Idaho	710	1,110	400	57%
Illinois	6,680	7,930	1,240	19%
Indiana	5,180	5,630	450	9%
Iowa	1,910	2,310	400	21%
Kentucky	2,660	3,180	520	20%
Louisiana	2,240	2,630	390	18%
Maine	1,070	1,040	- 30	- 2%
Maryland	5,400	6,710	1,310	24%
Michigan	6,180	7,250	1,070	17%
Minnesota	4,460	5,330	870	19%
Mississippi	1,870	2,280	410	22%
Missouri	4,940	5,690	750	15%
Montana	430	620	190	44%
Nebraska	1,310	1,480	170	13%
Nevada	2,180	3,050	870	40%
New Hampshire	810	990	180	23%
New Jersey	4,500	5,100	600	14%
New Mexico	670	760	90	13%
New York	6,600	7,940	1,340	20%
N. Carolina	7,080	8,700	1,620	29%
N. Dakota	540	600	60	10%
Ohio	8,520	9,720	1,200	14%
Oklahoma	3,330	3,700	370	11%
Oregon	3,230	3,530	300	9%
Pennsylvania	7,150	7,600	450	6%
Rhode Island	600	750	150	25%
S. Carolina	510	650	140	27%
S. Dakota	420	510	90	20%
Tennessee	4,630	5,650	1,020	22%
Texas	15,000	17,850	2,850	19%
Utah	2,050	2,620	570	28%
Vermont	410	440	30	7%
Virginia	5,920	7,250	1,330	22%
Washington	4,720	5,340	620	13%
W. Virginia	1,200	1,280	80	7%
Wisconsin	5,560	6,840	1,280	23%
Wyoming	260	350	100	37%
U.S. Total	204,280	244,890	40,510	20%

Note: Data obtained from www.projectionscentral.com. All data from that site are presented here; Kansas and Massachusetts data were not on site.

Note: Projections here are based on the Bureau of Labor Statistics' 2002-12 projections, which is why the 2012 total (244,890) is higher than the figure projected for 2014 (222,000).

IN PUGET SOUND AREA:

Partners Zero In On Marketing Targets

Working methodically, SMACNA-Western Washington and SMWIA Local 66 have embarked on a five-year marketing program. Elements include educational sessions for customers, print advertisements, direct mail, and adoption of the HVAC Expertise logo.

Plans for the program include regular evaluations (at Year 3 and Year 5) and adjustments. Initial efforts include evaluation of market-share data and surveys of customers; these are likely to be updated.

"We've adopted the HVAC Expertise brand," said Tonia Sorrell-Neal, assistant chapter manager. "We're sticking the logo on everything."

Displayed nearby are advertisements used by the Puget Sound partners. Several of these were adapted from national ads now in use for the SMWIA-SMACNA marketing effort.

Educational Effort

Perhaps the most successful single effort thus far was an educational event held for area architects, building owners, and others. Seats at the educational sessions were oversubscribed; not all who requested seats could be accommodated. In all, there were 165 attendees, of which 83 were architects.

"One reason [for the educational session demand] is that we gave away a SMACNA manual to each attendee, at the end of the session," Sorrell-Neal said. "We got a number of calls. One caller told us that his architectural firm had 400 people, and they had just one manual, for example.

"But we had an afternoon educational session as well, with no SMACNA manual giveaway—and we had great attendance at that one, too." Two members of SMACNA national's Technical Resources Department were the stars of the sessions.

According to Sorrell-Neal, the partners spent roughly 30% of their 2006 marketing budget on the event. The funds went to mailers to promote the event, purchase of the SMACNA manuals, and breakfast for attendees.

With the dramatic success, something similar is planned for next year.

A Neat Idea

Helping contractors to "stick the logo on everything" is part of the plan, too. At the SMACNA chapter's local trade show, the chapter plans to help signatory contractors—right there, on-site—register to use the HVAC Expertise logo.

All of the paperwork will be on hand to expedite the process. Contractors will be able to complete their application in minutes. ■

Experience. It makes even the toughest jobs seem routine.
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Look for the logo, your assurance that the company behind it features top managers and supervisors with experienced technicians backed by the nation's finest training program. Visit www.smacnaww.org or www.smwia66.com for more Information.

The SMWIA/SMACNA Partnership is more than 75 years old and is based on the mutual goal of delivering quality sheet metal applications and heating ventilating and air conditioning systems using skilled, trained, craft workers.
Are We in Your future?
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With sky-rocketing energy costs, you can't afford NOT to make us a part of your future.
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Here
Ensuring that a building has a healthy environment is a complex, challenging task. But not for a SMACNA Contractor. SMACNA Contractors are experts in environmental issues such as indoor air quality, energy conservation and heat recovery.
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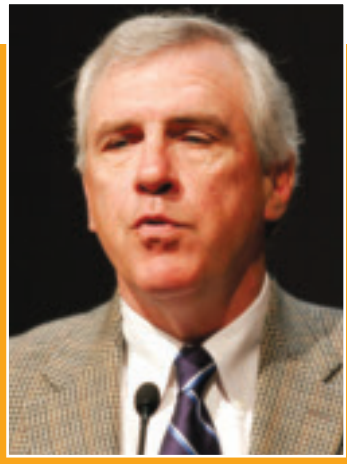
We understand that good air quality is crucial not only to the health of a building's occupants, but to the financial health of its owners, as well.
For top-quality HVAC installation, visit:
www.smacnaww.org or www.smwia66.com

SMWIA & Mergers:
Studying The Possibilities

As the organized sheet metal industry's research arm, the New Horizons Foundation is funded by contributions from SMACNA-member contractors and others (including Lennox Industries).

So perhaps it's a surprise that a recent NHF publication is titled: *The Impacts of a Merger or Consolidation for the Sheet Metal Workers International Association*. Highlights from the report's Executive Summary include:

1. There will be mergers among building trades unions.
2. The logical merger for SMWIA, which is now "a union with substantial strength," would be with the United Association (UA).
3. Assuming a merger with UA can't happen, another possibility is for SMWIA to merge with the Iron Workers.
4. "The future of SMACNA, and its unionized contractor members, will be affected by the merger (or lack of a merger) of the SMWIA with another trade."



Ronald Seeber of Cornell University spoke on mergers at the late-winter Partners In Progress Conference.

Research Project Details

Ronald L. Seeber of Cornell University—who spoke on mergers (in a session with SMWIA General President Michael Sullivan) at the late-winter Partners In Progress Conference—conducted the study.

[For Sullivan's comments, see page 7 of the Spring *Partners In Progress*—www.pinp.org/resources/PIP/2006spring.pdf]

NHF researchers spoke with more than one dozen SMWIA officials, including President Sullivan. SMACNA officials at the national and local level were also interviewed—as were the presidents of other unions.

A SMACNA initiative, the New Horizons Foundation is a non-profit organization. For more, see www.newhorizons-foundation.org.

Recommendations

Recommendation #2 (of 4) on page 19 of the 20-page report includes this:

"If the only concern of the SMWIA was to try to assist unionized sheet metal and mechanical contractors to compete with non-union contractors, the SMWIA should merge with the UA."

However, Seeber was creating a real-world document. Recommendation #3 reads: "Given the reservations about a merger with the UA, the SMWIA should seek to merge with another similarly sized union. The best fit candidate is the Iron Workers."

Rationale for this move? "The Iron Workers are in roughly the same position as the SMWIA in size. There is little overlapping jurisdiction, and thus the merger does not face the internal resistance such as the merger with the UA.

"This merger would allow the SMWIA to maintain its historic identity and name. At the same time, this merger would enable the SMWIA and the Iron Workers to become a large enough union to maintain their position relative to the larger mechanical trades, and the emerging powers in the basic trades."

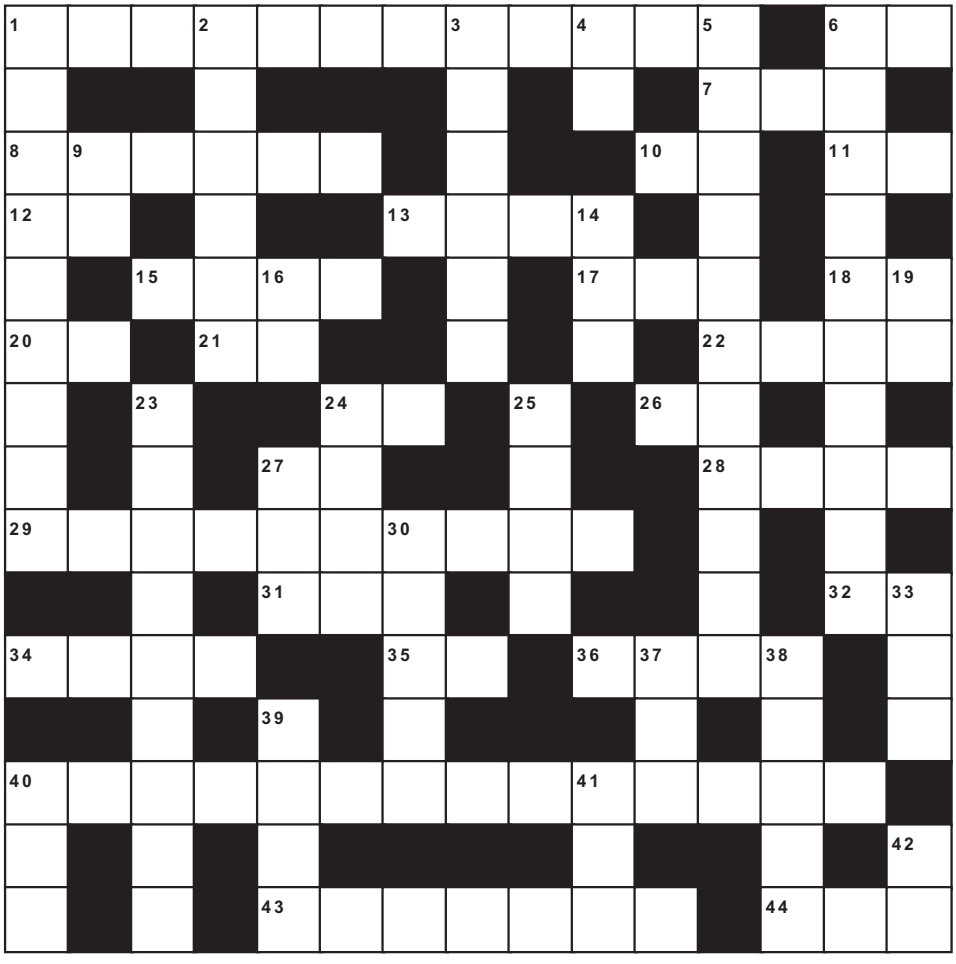
A Role For SMACNA?

What should SMACNA-member contractors do about the future of SMWIA? In truth, the organization and its members "have only limited influence" over the choices SMWIA makes. The NHF document recommends that the association "prepare for each of three contingencies:"

- SMWIA remains independent;
- SMWIA merges with UA; or
- SMWIA merges with the Iron Workers.

"In addition," Seeber concludes, "SMACNA and its members should strengthen the already existing alliances with the Mechanical Contractors and National Electrical Contractors Association in anticipation of the merger of the SMWIA with another trade union." ■

SHEET METAL/HVAC CROSSWORD PUZZLE



ACROSS

1. Used to make a U or a V when folding sheet metal
6. Heat exchanger, abbr.
7. Has affected almost all new construction, abbr.
8. Type of tab
10. Makeup, abbr.
11. Temp. differential, abbr.
12. Same as 9 down
13. Accidental dimple
15. May be temperature or pressure
17. Factor in system failure and retirement
18. Pumps are measured this way, abbr.
20. Center measurement, abbr.
21. Abbr. for round duct
22. This organization records weather data
24. Abbreviation for durable metal
26. Same as 10 across
27. Back-pressure, abbr.
28. Where metal ore comes from
29. Most efficient type of heat pump
31. Pressure, center, energy, abbr.
32. Type of heating gas
34. Stretchout _____
35. Lightweight metal, abbr.
36. Most common gas mixes
40. Modified version of 6 down
43. Prevents a coating from contacting metal
44. Type of weld joint

DOWN

1. The final steps of installing HVAC systems
2. Removes a parts from a die
3. Type of safety valve
4. Inner diameter, abbr.
5. Americans measure thickness in this
6. Complex reinforcement shape made by brake forming
9. Most common abbreviation in our trade
14. Air is this
16. Abbr. for round pipe
19. Deaerator, abbr.
23. Bent roof ventilator
24. Short for specification
25. Makes molecules move faster
27. Boiler performance measurement
30. What chemicals do
33. Pumped return for condensate, abbr.
37. Charged particle
38. Most common duct metal
39. We use this to level things
40. These systems are more likely to fail
41. Air, normally, not, abbreviations
42. Same as 32 across

Answers on page 2.

continued from page 8

"We talked about this in the Long-Range Planning meeting. Our apprenticeship program is second to none. So we re-examined what we were doing, and tweaked it, and adjusted the percentages. We looked together at the JATC financials, the budget projections, and we increased the money for apprentices."

Adds Zimmermann: "If you look back, our apprenticeship rates were substandard years ago. With this contract, we've corrected that. We've increased their pay to where it is up with the other mechanical crafts, or maybe just a bit better. This should help us with recruiting."

Change Over Time

SMACNA's St. Louis Chapter and SMWIA Local 36 were not always on the same page. There were regular arguments between the two. Further, jurisdictional problems with other trades often wrecked things for everyone. "We didn't have jurisdictional disputes here, it was more like a war," Zimmermann recalls.

Things began to change in 1999, when SMWIA members elected Zimmermann as business manager. His emphasis has been building bridges—with other trades, and with the SMACNA contractors. "We're in this together, and there should at bottom be a mutual respect that we shave for each other," he says.

"I look at the recent contract negotiations as a step ahead. This is what big corporations do—tackle the serious issues, and resolve them."

Adds Goldkamp: "Butch Welsch is the chairman of [SMACNA's] Labor Committee. He has probably negotiated 10 contracts. If you go back, probably the first four negotiations in which he was involved were more like a war.

"My company competes with his, but I admire Butch—because he was able to completely reinvent himself to deal with this new world that we're in.

"You know, when you're a contractor and you're trying to run your business, and these meetings come up, it can be a pain. But it's like any other pain—it pays off.

"If Butch has a lot of experience, in contrast this was David's second negotiation. But together, David and Butch created the atmosphere in which we were working together, and not fighting each other.

"They did an outstanding job, and the result was a negotiation in which, in just about every meeting, we moved the ball up the field."—*Joe Salimando*

Brainstorming & Market Share

Thirteen themes emerged from the first day of the Long-Range Planning conference in St. Louis. The list that follows is not in any particular order.

- Modify the referral/hiring hall process.
- Crew composition.
- Contingency compensation.
- Advertise.
- Beef up political/legislative activities.
- Contractors bidding out of the comfort zone.
- Modify the JATC.
- Contractors bidding as general contractors.
- Flex hours.
- Face-to-face marketing.
- Monitor technology.
- Fix the bad apples.
- Recruit minorities.

In addition to discussing these and other topics, the meeting crystallized the need for better market-share measurement. "We're doing it ourselves," says contractor Jack Goldkamp. "We're taking findings from different vendors and licensing agencies."

According to notes from the Planning conference, the market share measurement idea was not even put to a vote—it was "a given." The idea is for labor and management to regularly monitor market share in all aspects of the industry, including specialties—and strive to improve it.

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1995-2005

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STRUCTURE AND DYNAMICS OF THE U.S. FEDERAL PROFESSIONAL SERVICES INDUSTRIAL BASE

1995-2005

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Contents

List of Figures iv

List of Tables vii

Acknowledgments viii

Executive Summary ix

List of Acronyms xi

1. What Is the Professional Services Industrial Base? 1

2. Federal Professional Services Industry Today 5

3. Evolution of the Federal Professional Services Industry, 1995–2005 9

4. Policy Implications 29

5. Information and Communications Technology Services 33

6. Professional, Administrative, and Management Support Services 41

7. Research and Development Services 49

8. Equipment-Related Services 57

9. Facilities-Related Services 65

Appendix A. FPDS Services Categories 73

Appendix B. Merger and Acquisition Activity 74

About the Authors 87

About DIIG 89

List of Figures

2.1 Top 10 Customers in the Federal Professional Services Market, 2004 and 2005 6

2.2 Federal Professional Services Markets, Department of Defense Compared with Civilian, 2004 and 2005 7

3.1 Growth of the Federal Professional Services Market, 1995–2006 10

3.2 Growth Trends in the Federal Professional Services Market, by Service Category, 1995–2006 11

3.3 Types of Federal Professional Services Contract Actions, by Percentage of Dollar Value of Contract Actions, 1995–2005 12

3.4 Types of Federal Professional Services Contract Actions, by Percentage of Number of Contract Actions, 1995–2005 13

3.5 Average Value of Federal Professional Services Contracts, 1995–2005 16

3.6 Average and Median Values of Federal Professional Services Contract Actions, 1995–2006 17

3.7 Distribution of Contract Actions, 1995, 2000, 2004, and 2005 18

3.8 Number of Federal Professional Services Contractors, 1995–2005 19

3.9 Number of Small, Medium, and Large Firms in the Federal Services Industry, 1995, 1999, 2003, 2004, and 2005 21

3.10 Market Share of Small, Medium, and Large Firms Participating in the Federal Services Industry, by Value of Contract and by Number of Contract Actions, 1995, 1999, 2003, 2004, and 2005 22

3.11 DOD Prime Contract Dollars Awarded to Small, Medium, and Large Contractors, 1977–2005 23

5.1 Growth of the Federal ICT Services Market, 1995–2005 34

5.2 Federal ICT Services Market, by Customer, 2004 and 2005 35

5.3 Average and Median Values of Federal ICT Services Contract Actions, 1995–2005 35

5.4 Number of Federal ICT Services Contractors, 1995–2005 36

5.5 Distribution, by Value of Contracts, of Federal ICT Services Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005 37

5.6 Number of Small, Medium, and Large Firms in the Federal ICT Services Market, 2004–2005 37

6.1 Growth of the Federal PAMS Market, 1995–2005 42

6.2 Federal PAMS Market, by Customer, 2004 and 2005 43

6.3 Average and Median Values of Federal PAMS Contract Actions, 1995–2005 43

6.4 Number of Federal PAMS Contractors, 1995–2005 44

6.5 Distribution, by Value of Contracts, of Federal PAMS Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005 45

6.6 Number of Small, Medium, and Large Firms in the Federal PAMS Services Market, 2004 and 2005 45

7.1 Growth of the Federal R&D Services Market, 1995–2005 50

7.2 Federal R&D Services Market, by Customer, 2004 and 2005 51

7.3 Average and Median Values of Federal R&D Services Contract Actions, 1995–2005 51

7.4 Number of Federal R&D Services Contractors, 1995–2005 52

7.5 Distribution, by Value of Contracts, of Federal R&D Services Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005 53

7.6 Number of Small, Medium, and Large Firms in the Federal R&D Services Market, 2004 and 2005 53

8.1 Growth of the Federal ERS Market, 1995–2005 58

8.2 Federal ERS Market, by Customer, 2004 and 2005 59

8.3 Average and Median Values of Federal ERS Contract Actions, 1995–2005 59

8.4 Number of Federal ERS Contractors, 1995–2005 60

8.5 Distribution, by Value of Contracts, of Federal ERS Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005 61

8.6 Number of Small, Medium, and Large Firms in the Federal ERS Market, 2004–2005 61

9.1 Growth of the Federal FRS Market, 1995–2005 66

9.2 Federal FRS Market, by Customer, 2004 and 2005 67

9.3 Average and Median Values of Federal FRS Contract Actions, 1995–2005 67

9.4 Number of Federal FRS Contractors, 1995–2005 68

9.5 Distribution, by Value of Contracts, of Federal FRS Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005 69

9.6 Number of Small, Medium, and Large Firms in the Federal FRS Market, 2004 and 2005 69

Appendix B Merger and Acquisition Activity

BAE Systems North America 75

Boeing 76

CACI 77

Computer Sciences Corporation 78

Electronic Data Systems 79

General Dynamics 80

Booz Allen Hamilton 81

IBM 81

L-3 Communications 82

Lockheed Martin 83

Northrop Grumman 84

Raytheon 85

SAIC 86

List of Tables

2.1. Data for U.S. Professional Services Market, 2005 8

3.1. Distribution of Contractors in the Five Professional Services Categories, 1995 and 2005, percentage 24

3.2. Top 20 contractors, 1995 and 2005 25

3.3. Top 20 Contractors, by Activity Category, 1995 (dollars, thousands) 26

3.4. Top 20 Contractors, by Activity Category, 2005 (dollars, thousands) 27

5.1. Percentage of ICT Contractors Participating in Other Professional Services Categories, 1995 and 2005 38

5.2. Top 20 Federal ICT Services Contractors, 1995 and 2005 39

6.1. Percentage of PAMS Contractors Participating in Other Professional Services Categories, 1995 and 2005 46

6.2. Top 20 Federal PAMS Contractors, 1995 and 2005 47

7.1. Percentage of R&D Contractors Participating in Other Professional Services Categories, 1995 and 2004 54

7.2. Top 20 Federal R&D Services Contractors, 1995 and 2005 55

8.1. Percentage of ERS Contractors Participating in Other Professional Services Categories, 1995 and 2005 62

8.2. Top 20 Federal ERS Contractors, 1995 and 2005 63

9.1. Percentage of FRS Contractors Participating in Other Professional Services Categories, 1995 and 2005 70

9.2. Top 20 Federal FRS Contractors, 1995 and 2005 71

Acknowledgments

The authors wish to acknowledge the considerable support of the Professional Services Council to this project. The genesis of this project—now in its second year —was a simple question asked in 2005 by Stan Soloway, president of the Professional Services Council: "Has anyone ever analyzed the structure of the defense professional services industry? How different does it look relative to the defense hardware industry?" In May 2006 the first edition of this report, covering the years 1995–2004, was published. We would also like to thank in particular, Alan Chvotkin, senior vice president and counsel of the Professional Services Council, for his insights into the dynamics of the industry; and Guy Ben-Ari and Greg Sanders, both of the Center for Strategic and International Studies, for the considerable effort they put into this study.

Executive Summary

The macro trends driving the professional services industry over the past decade extended into 2005 and 2006. There is a continuing and growing reliance on the private sector for a wide range of professional and support services by the U.S. government. For a third year in a row, providing professional services to the federal government has represented a larger market than the selling of hardware to the government. What has changed in the past year is a growing awareness of the industry's magnitude and importance on the part of policymakers and the emergence of significant policy issues as the industry develops.

During the past 11 years, the industry has expanded at an average compound annual growth rate (CAGR) of 7 percent a year, with greater growth occurring in the last five years (11 percent a year in 2001–2006). The fastest-growing segments over the past decade were information and communications (ICT) services, which delivered a 13 percent CAGR; and professional, administrative, and management services (PAMS), which grew 11 percent a year during that same period (but 16 percent a year between 2001 and 2006). The cyclical nature of the research and development (R&D) segment revealed itself as the market peaked in 2004, declined in 2005, and was essentially flat in 2006. Meanwhile, expansion in the equipment-related services (ERS) segment continued into 2005, driven by the current conflicts in Iraq and Afghanistan.

The largest segments within the federal professional services industry are PAMS, which accounted for $58 billion worth of contracts in 2005; R&D, which accounted for $48 billion; and facilities-related services (FRS), which accounted for $45 billion. Given its large size and high growth rate, the PAMS segment should remain the largest part of the industry.

The Department of Defense remains the biggest consumer of professional services, accounting for approximately 60 percent of total contract actions by value in 2005. The Department of Defense, the Department of Energy, and the National Aeronautics and Space Administration made up more than three-quarters of the market in 2005. Preliminary 2006 data indicate that the Department of Homeland Security supplanted NASA as the third-largest contractor of services.

The trend of ever-increasing use of multiple-award, federal schedule contracts and simplified acquisition procedures decelerated in 2005. Although the use of these vehicles has increased significantly since the mid-1990s, the dollars contracted through these methods remained flat at around $32–33 billion in 2004 and 2005. The contracting mechanism with the largest increase in 2005 spending was "modifications to existing contracts," implying that market positions were more static. With the number of contract actions growing faster than the value of contracts awarded, the average value of contract actions has decreased from $385,000 in 1995 to $290,000 in 2005. The median contract action has also dropped, from $63,000 in 1995 to $19,000 in 2005. To be competitive, contractors need to win a position on these broader acquisition vehicles and then must scramble to win the contract actions. The declining contract action values imply that firms must compete harder just to sustain level revenues.

The number of firms in the professional services industrial base remained almost unchanged between 1995 and 2001 at 45,000 contractors. Between 2001 and 2005, however, the total number of contractors in the industry increased by 115 percent to 96,000 firms. A more detailed analysis of the contract base reveals that most of the growth has come from the entry of firms undertaking small (under $25,000) contracts. An analysis of the 2005 data indicates that, of the 96,000 professional services contractors, only a few thousand (2,000–4,000) have $8 million or more of federal professional services revenues, and a few hundred firms have $100 million or more of services revenues. Examining the data from this perspective implies that the vast majority of firms in the industry are small firms or medium-size firms that undertake relatively little federal professional services work relative to their overall corporate size.

The industry has also become more integrated during the past decade. Firms in all segments of the industry have increased their presence in the PAMS segment, ICT companies are increasingly participating in the FRS segment, and the FRS providers are increasing their presence in the ERS segment. Examined differently, the professional services industry and the defense hardware–defense platform industry have become more intertwined as the large platform primes have made significant acquisitions in the market. The other major shift in the structure of the industry has been the increase in the number of heavy engineering and construction firms in the ranks of the Top 20 contractors, a trend clearly driven by the reconstruction efforts in Iraq and Afghanistan.

Furthermore, critical mass has changed for the industry. In 1995, the 20th-largest contractor had $360 million in professional services contract awards, but in 2005 a firm needed $1.3 billion of services awards to be the 20th-largest contractor. It is interesting, though, that the market share for the Top 5 services contractors has remained relatively steady: in 1995 it was 19 percent (with $19 billion of service revenues), and in 2005 it was 19 percent (with $38 billion).

When the market shares held by the small, medium, and large companies in the industry are examined, it is clear that middle-tier companies have suffered an erosion of their relative share. In 1995, middle-tier companies captured 44 percent of the total value of federal professional services contracts. By 2005, the middle-tier companies were able to capture only 33 percent of that value. Small-business set-aside laws and other policies assisting small firms have clearly worked in the professional services industry. Small companies have sustained a 19–22 percent market share in the value of prime contracts, and their share of the market is larger if the value of subcontracts is included. The large companies in this industry have been particularly active via mergers and acquisitions and have been able to increase their market share to 46 percent of the total market. Thus, the middle tier has been squeezed from above by consolidation and from below by small businesses holding on to their share of the market. How to replenish the middle tier remains a key strategic and policy issue for the industry.

The information presented in this report raises other important policy issues regarding the management of the professional services industrial base. One question that will have to be addressed concerns the limits to the government's outsourcing of services; another concerns the issue of how much competition is beneficial to the government (and under what circumstances). The effects that the rapid increase in the volume of contracting activity is having on the federal government contract management workforce should be given some thought. More broadly, the structural sustainability of the professional services industrial base sustainable must be considered, including ways to avoid organizational conflicts of interest resulting from mergers and acquisitions activity among industry participants and the possible need for a fundamentally different set of acquisition regulations for professional services contracting.

List of Acronyms

ADP	automatic data processing
BOA	basic ordering agreement
BPO	blanket purchase agreement
CAGR	compound annual growth rate
DHS	Department of Homeland Security
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
DOEd	Department of Education
DOI	Department of the Interior
DOJ	Department of Justice
DOL	Department of Labor
DOS	Department of State
DOT	Department of Transportation
EPA	Environmental Protection Agency
ERS	equipment-related services
FAR	Federal Acquisition Regulation
FPDS	Federal Procurement Data System
FPDS–NG	Federal Procurement Data System–Next Generation
FRS	facilities-related services
FSC	federal supply classification
GAO	Government Accountability Office
GSA	General Services Administration
GWAC	government-wide acquisition contract
HHS	Department of Health and Human Services
HUD	Department of Housing and Urban Development
ICT	information and communications technology
IDC	indefinite delivery contract
IDIQ	indefinite delivery indefinite quantity
IRS	Internal Revenue Service
NASA	National Aeronautics and Space Administration
NIH	National Institutes of Health
PAMS	professional, administrative and management support
R&D	research and development
SETA	scientific engineering and technical assistance
USAID	U.S. Agency for International Development
VA	Department of Veterans Affairs

CHAPTER 1

What Is the Professional Services Industrial Base?

In this chapter:

- Definition of the federal professional services industrial base
- Methodology of this study
- Description of primary professional services categories
- Definition of small, medium, and large companies

For the purpose of this study, the U.S. federal professional services industry is defined as all companies and individuals providing contract services to U.S. federal government departments and agencies. Contract services include all types of services except those that are:

- Tied directly to the production of weapons and other hardware systems;
- Related to the construction of facilities or structures; and
- Designed for the delivery of patient-related medical care or health care services.

Methodology of the Study

Most of the data used for this study were derived from the Federal Procurement Data System (FPDS). This government database covers all federal contract actions that have been awarded during a particular year by approximately 70 executive branch agencies (the largest exceptions are the U.S. Postal Service and the Federal Aviation Administration). Initially created in 1979 by the Department of Defense (DOD), the FPDS has been managed by the General Services Administration (GSA) since 1980. In 2004, the database was significantly restructured and renamed FPDS–Next Generation (FPDS-NG). The CSIS study team was, in most cases, able to straightforwardly maintain the pre-2004 methodology when using the FPDS-NG data. The only exceptions are figures 3.3 and 3.4, for which new methods of analysis had to be developed owing to broader changes in the structure of the relevant data.

Any analysis based on the FPDS is naturally limited by the quality of the underlying data. Several Government Accountability Office (GAO) studies have highlighted the problems of FPDS (for example, the December 30, 2003, report, "Reliability of Federal Procurement Data," and the September 27, 2005, report, "Improvements Needed for the Federal Procurement Data System–Next Generation"). In addition, the FPDS data for past years are updated over time.

The data for 2004 used in this report were last modified on October 12, 2006 (which explains the discrepancies between the numbers for that year presented in this report and in our previous report); the 2005 data were last updated on October 13, 2006. Despite its flaws, FPDS is the only comprehensive data source of government contracting activity, and as long as any analysis is focused on trends and order-of-magnitude comparisons it is more than adequate.

Although there is no complete database for 2006, this version of the report includes some preliminary data for this year. These data are presented here solely for information purposes, and we recommend using these data with caution. The data may change significantly as additional updates are made during 2007.

The CSIS study team analyzed all federal contracts awarded between the years 1995 and 2005. Because the structure of the FPDS database has changed over time, it was necessary for the study team to build a new database for the 1995–2005 period and reconcile the differences in the data. The study team created a smaller "professional services" database comprising approximately 5 million contract actions by eliminating those contract actions that were awarded for equipment as well as those that were awarded for services that were considered to be outside the scope of this study (construction and patient-related medical or health care services).

To obtain a better degree of granularity when analyzing the data, the team chose five primary services categories to represent broad areas of professional services types. The categories were created with the federal supply classification (FSC) codes. All services—including research and development work—are assigned by the federal government a four-digit code, sometimes referred to as an "A–Z code," which identifies 24 main categories of services. The list of all 24 FPDS services categories can be found in appendix A.

The five primary categories created by the CSIS study team for this study are:

- Information and communications technology (ICT) services: Automatic data processing (ADP) services and telecommunications services. This category includes all contracts with FSC codes in category D (ADP and telecommunications).
- Professional, administrative, management support (PAMS): Studies and analyses that are not considered research and development (R&D); architect and engineering services; quality control, testing, and inspection; and technical representative services. This category includes all contracts with FSC codes in categories B (non-R&D studies and analyses), C (architect and engineering), H (quality control, testing, and inspection), L (technical representatives), and R (professional, administrative, and management support) as well as selected codes within category A (includes only codes in category A that end with the digit 6, which designate R&D management and support).
- Research and development (R&D): Basic and applied research, experimental and advanced development, engineering, and operational systems development. This category includes all contracts with FSC codes in category A (R&D), except those ending with the digit 6 (digit 6 represents R&D management and support services, which are included in the PAMS category).
- Equipment-related services (ERS): Installation, lease or rental, maintenance, repair, and rebuilding and modification of equipment. This category includes all contracts with FSC codes in categories J (maintenance, repair, and rebuilding of equipment), K (modification of equipment), N (installation of equipment), and W (lease or rental of equipment).

- Facilities-related services (FRS): Purchase, lease or rental, operation, and maintenance of facilities. This category includes all contracts with FSC codes in categories E (purchase of structures and facilities), M (operation of government-owned facility), S (utilities and housekeeping), X (lease or rental of facilities), and Z (maintenance, repair, or alteration of real property).

All contracts with other FPDS codes were included in the category of "other." These include services for natural resources management; social services; salvage services; photographic, mapping, printing, and publication services; education, training, and transport; and travel and relocation. However, they have been included in the calculations of total federal professional services.

Small, Medium, and Large Companies

To analyze the breakdown of competitors in the market into small, medium, and large companies, the CSIS team assigned each contractor in the database to one of these size categories. Any company designated as small by the FPDS database—according to the criteria established by the federal government—was categorized as such. Companies with annual revenue of more than $1 billion were classified as large. All companies not classified as either small or large were placed in the medium category. In its analysis of the companies in the federal professional services market, the study team made every effort to consolidate data related to subsidiary companies and merged companies into the parent company by year. For example, many of Boeing's subsidiaries and predecessor companies are listed separately in the FPDS, but they were combined into a single Boeing entry in the CSIS professional services database. This enabled the study team to analyze more accurately the professional services industrial base, the number of players in it, and their level of activity.

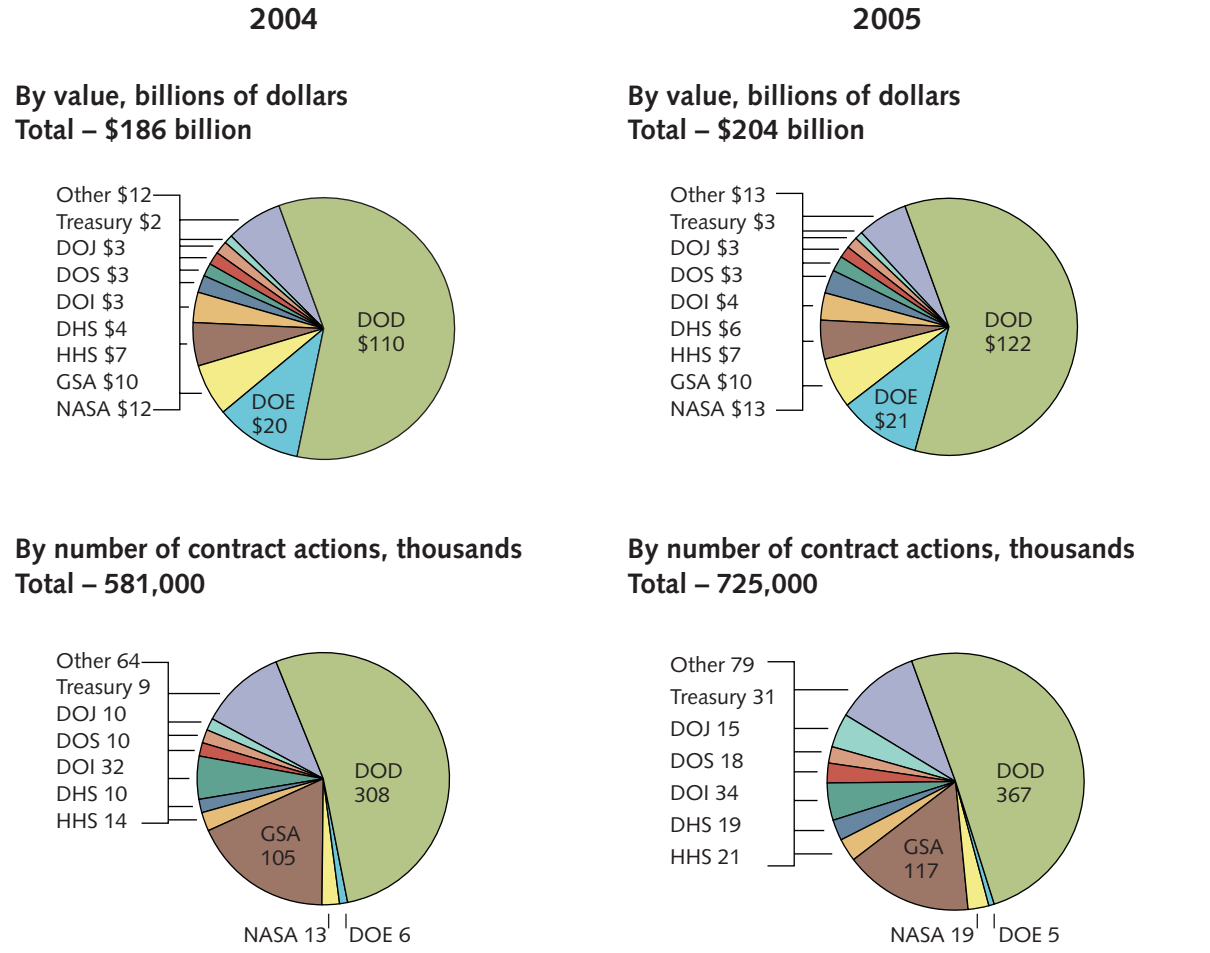
CHAPTER 2

Federal Professional Services Industry Today

In this chapter:

- Overall 2005 data for federal professional services contracting
- Top 10 customers by value and by number of contract actions
- Separation of defense from civilian federal professional services
- Value and number of contract actions for each of the main services

Figure 2.1. Top 10 Customers in the Federal Professional Services Market, 2004 and 2005



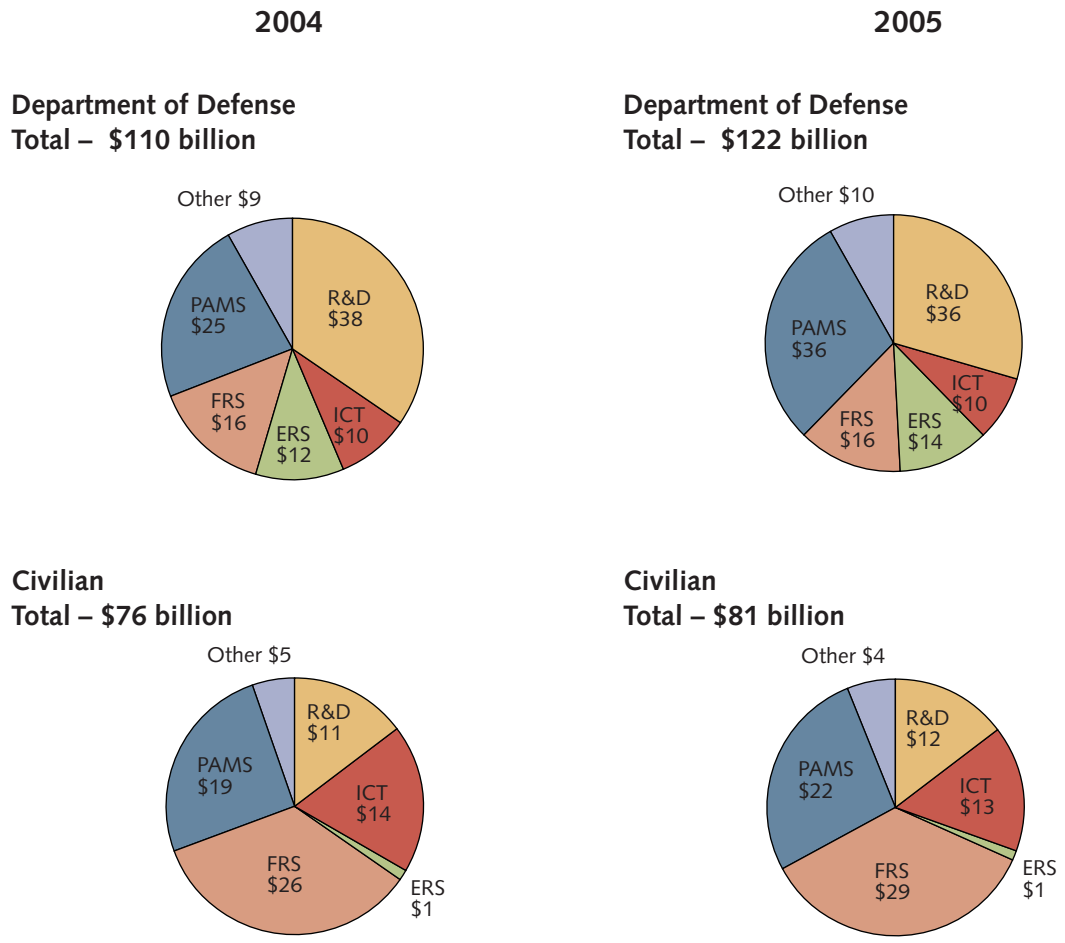
Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Professional Services Market in 2005 — Figure 2.1

The purchasing of services by the federal government represents a significant market today and makes up a substantial portion of annual U.S. federal expenditures. In 2005, the most recent full year for which FPDS data were available, the federal government awarded $204 billion worth of contracts for professional services. This amount was awarded via some 725,000 contract actions. In fact, today the federal government currently spends more money on purchasing services than on buying hardware and goods. Preliminary 2006 data indicate the market expanded to $211 billion, awarded via 887,000 contract actions.

DOD was the largest federal government consumer of services in 2005, with $122 billion worth of contracts or 60 percent of the total market. A distant second was the Department of Energy (DOE), with $21 billion or 10 percent of the market. NASA is the third-largest government customer and accounts for $13 billion or 6 percent of the market. By value, the top three customers make up 76 percent of the market. An examination of preliminary 2006 data indicates that DOD and DOE maintained their number one and number two positions; however,

Figure 2.2. Federal Professional Services Markets, Department of Defense Compared with Civilian, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

the Department of Homeland Security tied NASA as the third-largest contractor of professional services.

By number of contract actions, the largest three awarders of services contracts are the DOD with 367,000 contract actions let (51 percent of total contract actions awarded), the GSA with 117,000 (16 percent of total), and Department of the Interior with 34,000 (5 percent).

Defense and Civilian Contracting Compared — Figure 2.2

The two largest segments within the DOD in 2005 are research and development (R&D) and professional, administrative, and management support (PAMS), each accounting for 30 percent of the budget spent on professional services. A preliminary look at 2006 data indicates that DOD facilities-related services (FRS) are becoming a major segment. Civilian agencies were heavy users of FRS in 2005, which account for 36 percent of dollars spent. This is heavily skewed by the contracts for the management of DOE facilities. Civilian agencies are also large consumers of PAMS; these account for 27 percent of all professional services procured. It is

Table 2.1. Data for U.S. Professional Services Market, 2005

Service category	Value ($, billions)	Number of contract actions	Average amount of each contract action ($)	Median amount of contract actions ($)	Number of contractors[a]
ERS	15.23	86,181	179,540	11,854	16,835
FRS	45.37	223,191	207,742	14,496	30,553
ICT	23.23	71,646	335,595	29,409	7,745
PAMS	57.98	205,458	293,464	25,000	32,308
R&D	47.20	60,193	794,482	89,601	10,245
Other	14.74	78,390	198,311	11,114	20,807
Total	203.75	725,059	281,014	19,200	95,712

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

a. Some contractors are active in more than one service category.

interesting to note that civilian agencies are the largest consumers of information and communications technology (ICT) services.

Overview of Professional Services Market Segments — Table 2.1

Table 2.1 provides key data for 2005, both overall data and data for each of the five main services categories.

As noted, the largest segments in terms of value are PAMS, R&D, and FRS, with $58 billion, $47 billion and $45 billion worth of contract actions, respectively. The largest numbers of contract actions were awarded in the FRS and PAMS categories, two markets with large numbers of small tasks. It stands to reason that the sizes of the average contract actions in both the FRS and PAMS segments were at the lower end of the range, $207,742 and $293,464, respectively. The largest average contract actions were found in the R&D segment, at $794,482 per contract action. The largest numbers of competitors were also found in the PAMS and FRS segments, further highlighting the fragmented nature of those markets—many players pursuing large numbers of small contracts. The R&D sector represents the other end of the spectrum, relatively fewer players (fewer than 11,000) chasing relatively fewer but larger contract actions.

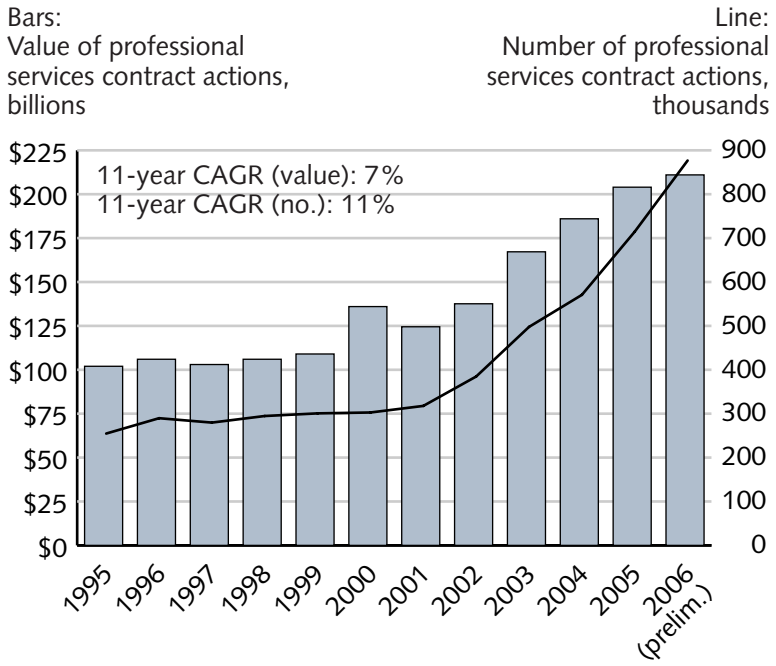
CHAPTER 3

Evolution of the Federal Professional Services Industry, 1995–2005

In this chapter:

- Data on the evolution of the federal professional services industry in general
- Market growth trends by service type
- Types of contract actions, by both value and number of contract actions
- Distribution of contract actions
- Trends in growth in the number of contractors by service type
- Distribution of contractors among categories
- Trends in distribution of market share to small, medium, and large firms
- Top 20 contractors

Figure 3.1. Growth of the Federal Professional Services Market, 1995–2006



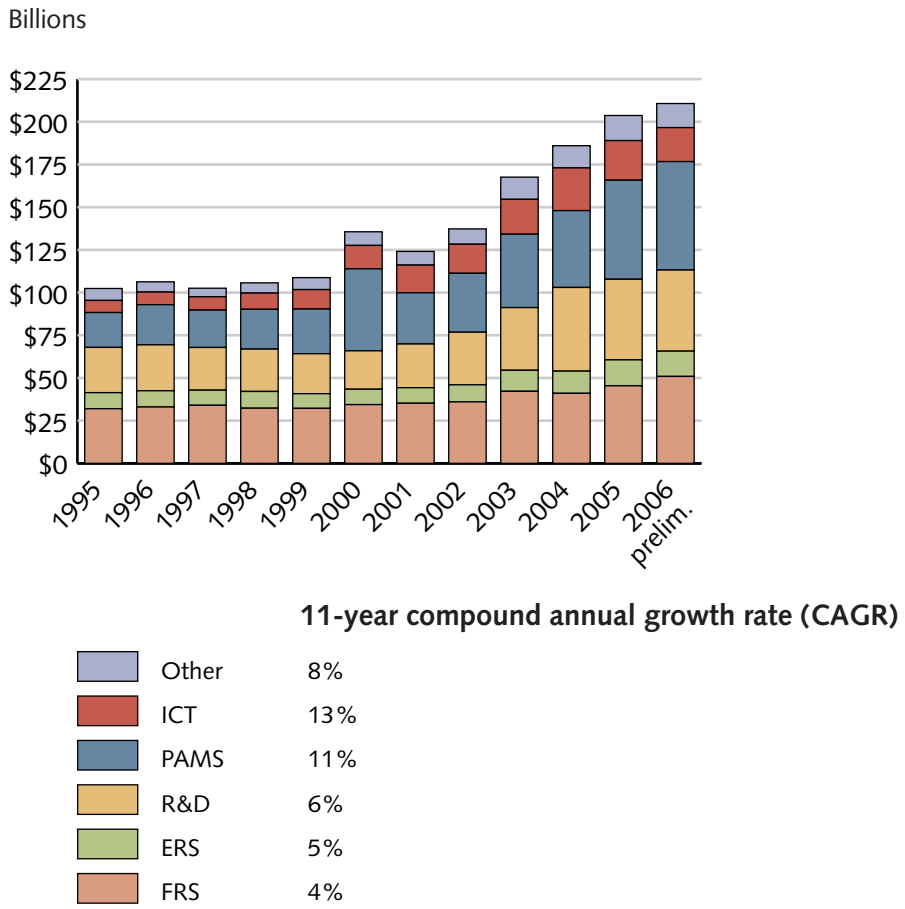
Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Growth in Federal Services Contracting — Figure 3.1

During the past decade, 1995–2005, the federal professional services market has seen a marked increase in both the total value and the total number of contract actions. Figure 3.1 shows that the total value of contract actions grew from $102 billion in 1995 to $204 billion in 2005, representing a compound annual growth rate (CAGR) for value of contract actions of 7 percent (although the CAGR was 11 percent for the years 2001–2006). The total number of contract actions more than doubled during this same time period, from 265,000, to 725,000 delivering a CAGR for number of contract actions of 11 percent.

Growth in the federal professional services market has been lumpy. A close examination of figure 3.1 shows that the market was essentially flat at around $100 billion until 2000, despite a decade of policy recommendations that the government should outsource more of its service functions in order to create more efficiencies. The first spike in demand was in 2000, as the government turned to outside contractors to help deal with the Y2K computer conversion problem. Contracts declined in value and number in 2001, until the events of September 11, 2001, and the wars in Afghanistan and Iraq again created the need to turn to outside providers for services. Preliminary 2006 data indicate that the federal professional services market was $211 billion.

Figure 3.2. Growth Trends in the Federal Professional Services Market, by Service Category, 1995–2006



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Growth by Market Segment — Figure 3.2

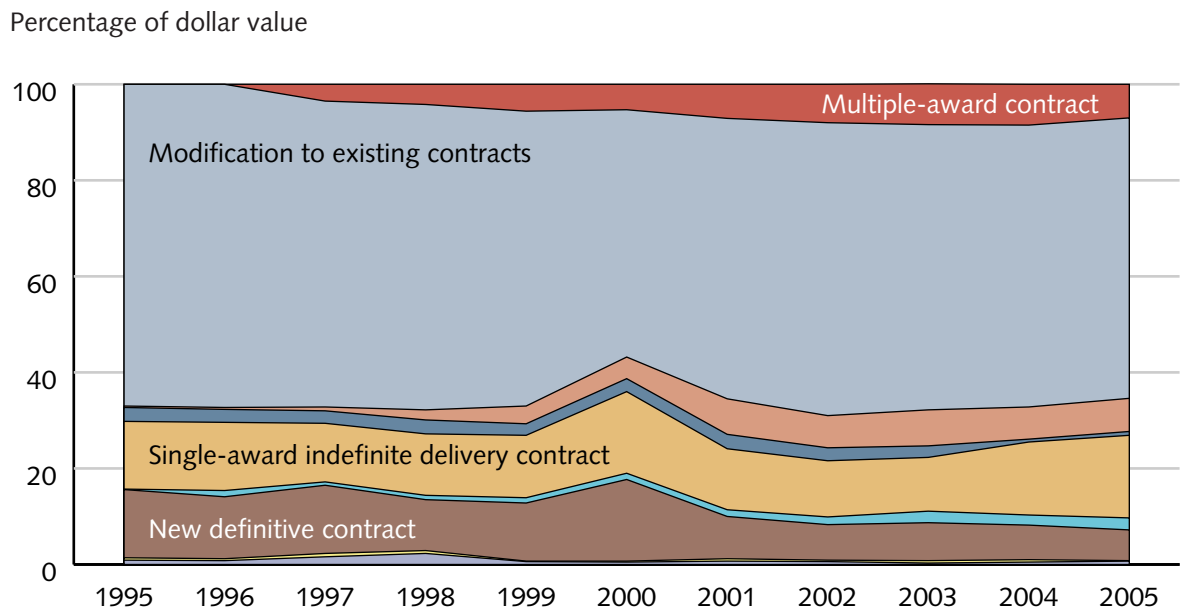
During the past 11 years, the fastest-growing market segments were the ICT services and the PAMS categories, with 13 percent and 11 percent compound annual growth. Although they are very large and represent almost half the services market, the R&D and FRS segments generated much slower growth: 6 percent for R&D, and only 4 percent for FRS. ERS generated 5 percent growth.

The year 2005 was the first year since 2001 in which year-over-year growth was in the single digits, dragged down by declines in the ICT and R&D segments. As noted, preliminary 2006 data indicate that the deceleration continued with a shrinking ICT segment, offset by very robust PAMS growth.

Evolution of Contracting Vehicles — Figures 3.3 and 3.4

Figures 3.3 and 3.4 on the following two pages provide the makeup of overall contract actions awarded by type of contract. These figures show two important trends in the evolution of federal services contract types: modifications to existing contracts have been increasing, and large, multiple-award contracts have also been increasing.

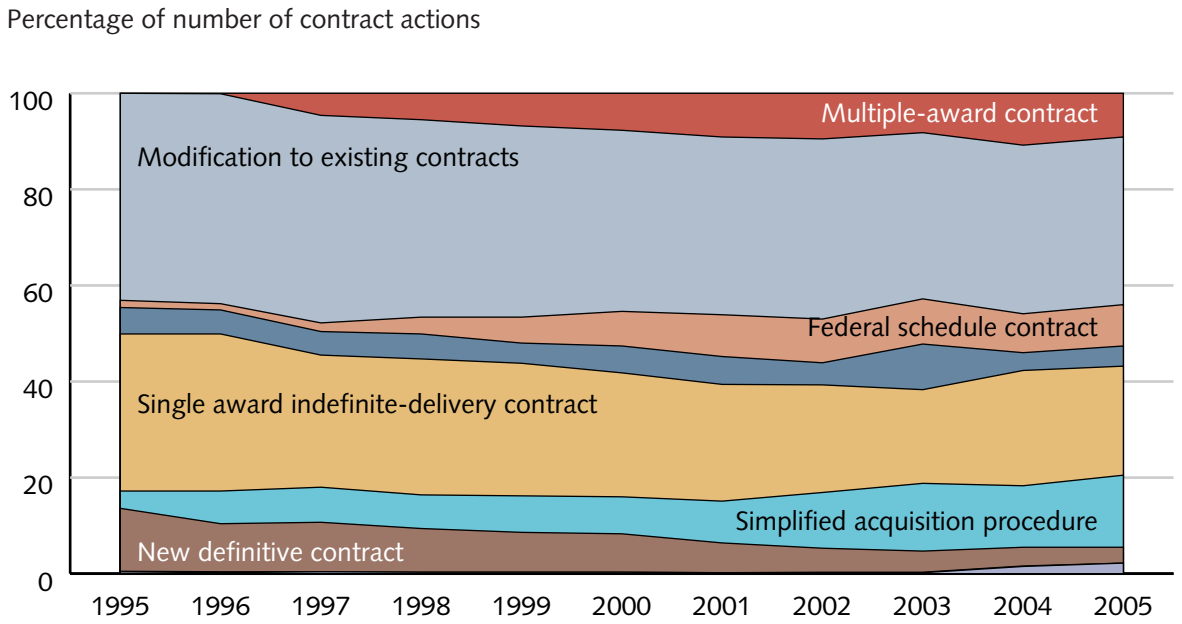
Figure 3.3. Types of Federal Professional Services Contract Actions, by Percentage of Dollar Value of Contract Actions, 1995–2005



	11-year compound annual growth rate (CAGR)
Multiple-award contract	163%
Modification to existing contracts	6%
Federal schedule contract	45%
Basic ordering agreement	–6%
Single-award indefinite delivery contract	9%
Simplified acquisition procedure	52%
New definitive contract	–1%
Contract superseding letter	–12%
Initial-letter contract	6%

Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 3.4. Types of Federal Professional Services Contract Actions, by Percentage of Number of Contract Actions, 1995–2005



	11-year compound annual growth rate (CAGR)
Multiple-award contract	144%
Modification to existing contracts	8%
Federal schedule contract	32%
Basic ordering agreement	8%
Single-award indefinite delivery contract	7%
Simplified acquisition procedure	28%
New definitive contract	–4%
Contract superseding letter (not visible)	–19%
Initial-letter contract	31%

Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Within this growing marketplace, the federal government has been changing the way it contracts for services. There are nine major categories of contract action types:[1]

- Initial-letter contract,
- Definitive contract superseding letter,
- New definitive contract,
- Purchase order/blanket purchase agreement (BPO) with simplified acquisition procedures,
- Single-award indefinite delivery contract (IDC),
- Orders under basic ordering agreement (BOA),
- Order/modification under federal schedule contract,
- Modification to existing contract and exercise of extension options, and
- Multiple-award contract.

The first trend is that modifications to existing contracts represent more than half of the market in dollar terms. This implies that in any one year much of the market is already spoken for and that incumbents on existing programs retain a significant presence in the market. Even more striking is that the only three categories of contract action types in decline have been contract superseding letter (12 percent annual decline in dollar volume), basic ordering agreement (6 percent annual decline in dollar volume), and new definitive contracts (1 percent annual decrease in dollar volume)—all vehicles that are typically used in direct, one-on-one relationships. This further reinforces the point that opportunities for entering the market by simply winning new contracts have become more limited.

The second important trend is where the opportunities for new entrants have developed. Over the past decade, there has been dramatic growth in the use of the newer, larger, multiple-award contract vehicles. These include government-wide acquisition contracts (GWACs) although these have experienced a significant decline in 2004–2006, multiagency indefinite delivery indefinite quantity (ID/IQ) contracts, and agency-wide ID/IQ contracts. The dollar volume associated with multiple-award contracts grew at a 163 percent CAGR during 1995–2005, the value of federal schedule contracts has grown 45 percent per annum, and the worth of simplified acquisition procedure contracts has expanded 52 percent a year. By 2005, one-sixth of all contract actions were multiple-award, federal schedule, and simplified contracts.

A list of GWACs as of December 2006 includes:

- General Services Administration (12 GWACs): Alliant (not yet awarded), Alliant Small Business (not yet awarded), ANSWER, HUBZone, ITOP II, Millennia, Millennia Lite, VETS, Virtual Data Center, Disaster Recovery, Seat Management, and STAR (the latter four are no longer receiving new orders);
- National Institutes of Health (3 GWACs): CIO-SP2i, Image World 2 New Dimensions, and Electronic Commodities Store (ECS) III;
- Department of Commerce: COMMITS NexGen;
- National Aeronautics and Space Administration: SEWP III;
- Environmental Protection Agency: READ.

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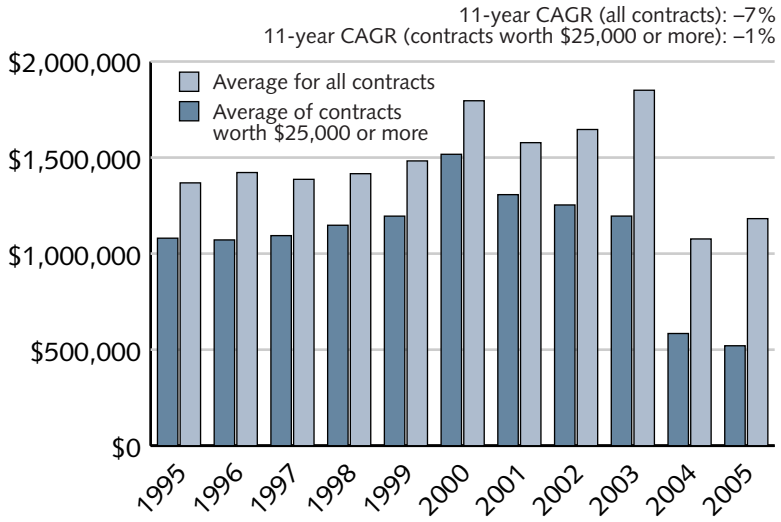
1. These categories are based on the FPDS database used in 1995–2003; 2004 and onward uses similar—but not equivalent—categories.

The list of multiagency and agency-wide contracts is much longer; some 240 existed at the end of 2006. The growth in the use of agency- and enterprise-wide multiple-award contract vehicles raises interesting policy questions. No interagency or intraagency review is undertaken when they are created, which often results in a duplication of efforts. For example, various departments and agencies have issued enterprise-wide contracts to procure IT services (rather than leveraging government-wide vehicles) despite the fact that most of these services are almost identical across all of government.

The phenomenon of proliferating agency-, enterprise-, and government-wide contracting vehicles is actually raising transaction costs for industry as well as government. To participate in the services industry now and in the future, it is mandatory for companies to compete for and participate in one or more of these multiple-award or federal schedule contract vehicles. Furthermore, the competitive implications of the growth in GWAC and ID/IQ contract types is that industry participants must now compete twice—once to qualify for the overarching contracting vehicle and again for each major task under these ID/IQs. Because half the market is represented by modifications to existing contracts and opportunities are reduced for winning new definitive contracts, a company that fails to win a position in one of these broad overarching vehicles has increasingly limited opportunities to enter the market, except through mergers and acquisitions.

In recent years there has been an increasing demand for more transparency in government- and enterprise-wide contracting procedures. The Office of Federal Procurement Policy (OFPP) under the Office of Management and Budget (OMB) is now surveying the contracts currently in operation, their scope, their primary users, and the rationale for why they exist. In 2007, it is expected to publish clearer guidelines for issuing and managing enterprise-wide contracts. This may cause a slowdown in the growth of these types of contracts, although they will remain part of the landscape for many years to come.

Figure 3.5. Average Value of Federal Professional Services Contracts, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

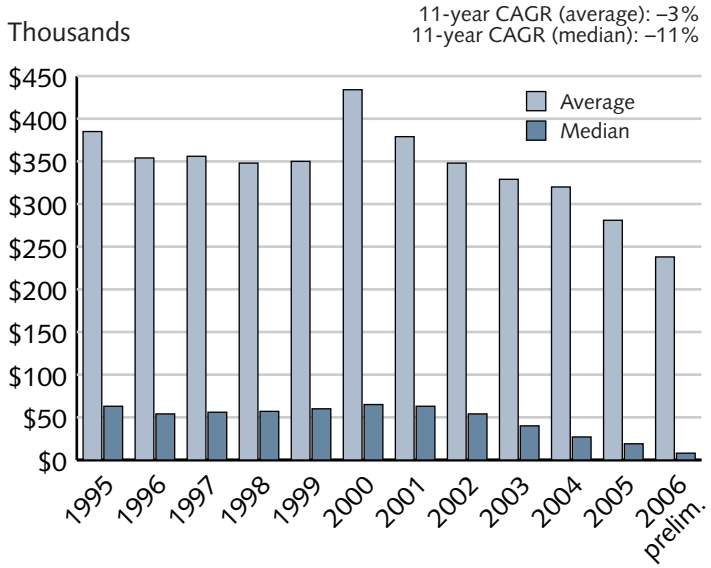
Average Value of Contracts — Figure 3.5

Another dynamic under way in the services market has been the changes in average contract size and contract action size. Figure 3.5 shows that the average value of all contracts during the past 11 years has almost halved, from a little more than $1 million per contract to $0.5 million in 2005. This is largely explained by the fact that in 2004 it became mandatory to report to FPDS any contract action of $2,500; until that year, only contracts of $25,000 and over were to be reported. When contract actions worth less than $25,000 are not counted throughout the 11-year period, the average contract size remains quite constant. Despite a four-year peak (2000–2003) when the average contract was approximately $1.5–$1.8 million, the majority of years saw the value relatively steady at $1.2–$1.4 million.

Average and Median Values of Contract Actions — Figure 3.6

In contrast, as figure 3.6 shows, there has been a dramatic decline in the average and median values of individual contract actions during the past decade, in particular since 2001. During the past 11 years, the average contract action size has decreased 25 percent, to $280,000 in 2005, while the median contract action value has dropped more than 70 percent, to $19,000 in 2005. The increased use of broad multiple-award contract types with multiple contract actions underneath them has been driving this trend.

Figure 3.6. Average and Median Values of Federal Professional Services Contract Actions, 1995–2006

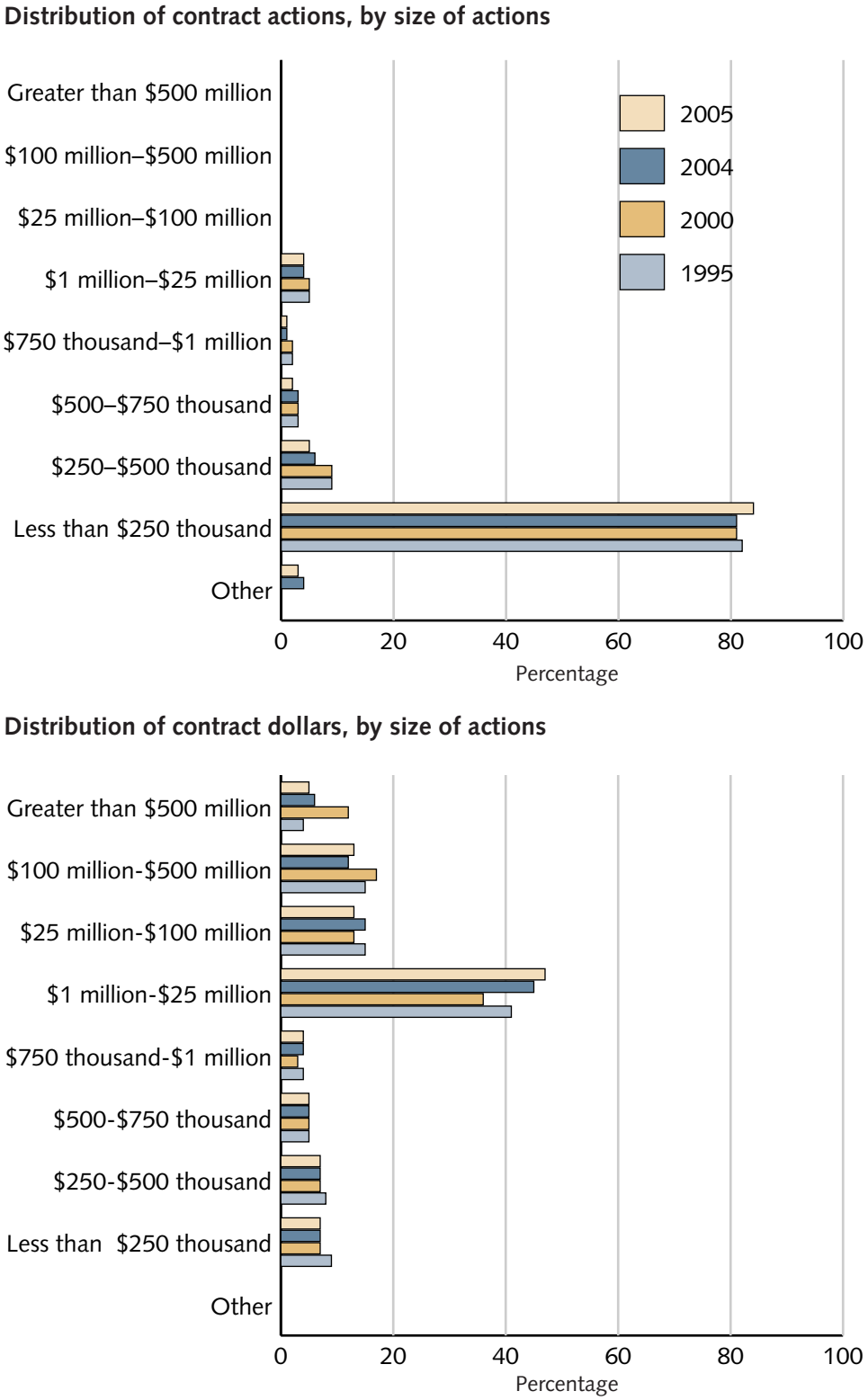


Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Distribution of Contract Actions — Figure 3.7

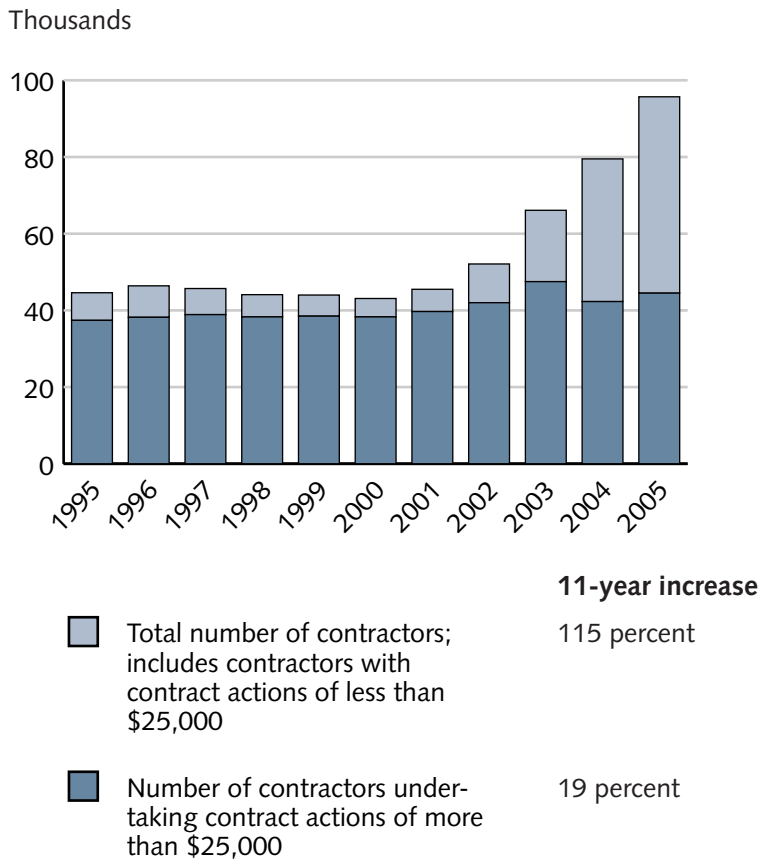
The distribution pattern of services contract actions shows that contract actions worth $250,000 or less represent 85 percent of all actions awarded; however, the cumulative value of all these contract actions accounted for less than 10 percent of the total dollars awarded. This represents significant activity for a relatively small part of the market. Thus, 10 percent of the contract actions received approximately 85 percent of total federal dollars spent on professional services, with the sweet spot of the market represented by contracts with the value of $1–25 million.

Figure 3.7. Distribution of Contract Actions, 1995, 2000, 2004, and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 3.8. Number of Federal Professional Services Contractors, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of the Services Contractor Base — Figure 3.8

The overall professional services industrial base remained surprisingly stable at approximately 45,000 contractors for most of the past decade; however, since 2001, the size of the industry has exploded—more than doubling to almost 96,000 contractors in 2005. Thus, while the overall federal professional services market doubled during the past decade, the number of contractors grew by 113 percent, with the majority of that growth occurring in the most recent four years.

A more detailed look at the structure of the professional services industrial base indicates that the bulk of the growth in the number of contractors has occurred through the entry of firms undertaking only contract actions worth $25,000 or less. Even factoring in the inclusion of companies doing $2,500 and above in FPDS since 2004, it is difficult to determine whether this segment of the industrial base represents a permanent addition or whether it represents firms dabbling in a rapidly growing market.

The core industrial base of contractors undertaking larger contract actions has expanded modestly. Figure 3.8 shows that the number of contractors undertaking the larger contract actions has risen from 37,000 to 44,500, an increase of only 22 percent.

The professional services industrial base can be further segmented into small, medium, and large firms. The government has issued rules for what constitutes a small business—$8 million or less in total corporate revenues in most segments, and $21 million or less in total corporate revenues for information technology companies—in order to implement small-business set-aside regulations. For the purposes of this analysis, the CSIS study team adopted the government definition of a small business. Large companies were defined as those with annual corporate revenues greater than $1 billion, and medium-size companies were all those that fell between the small and large categories.

From 1995 to 1999, two-thirds of the industrial base was composed of small firms. Since then the ranks of small businesses have doubled, to the point where three-quarters of the industry is currently made up of small companies. The number of medium-size firms has increased by about 56 percent during that same time period.

Another way of characterizing the industry would be on the basis of the amount of federal services contracting a company undertakes, not the overall size of the firm. An analysis of the 2005 data indicates that, of the 96,000 professional services contractors, only a few thousand (2,000–4,000) have $8 million or more of federal professional services revenues, and a few hundred firms have $100 million or more of services revenues. This implies that the vast majority of the industry comprises small firms or medium-size firms that undertake relatively little federal professional services work relative to their overall corporate size.

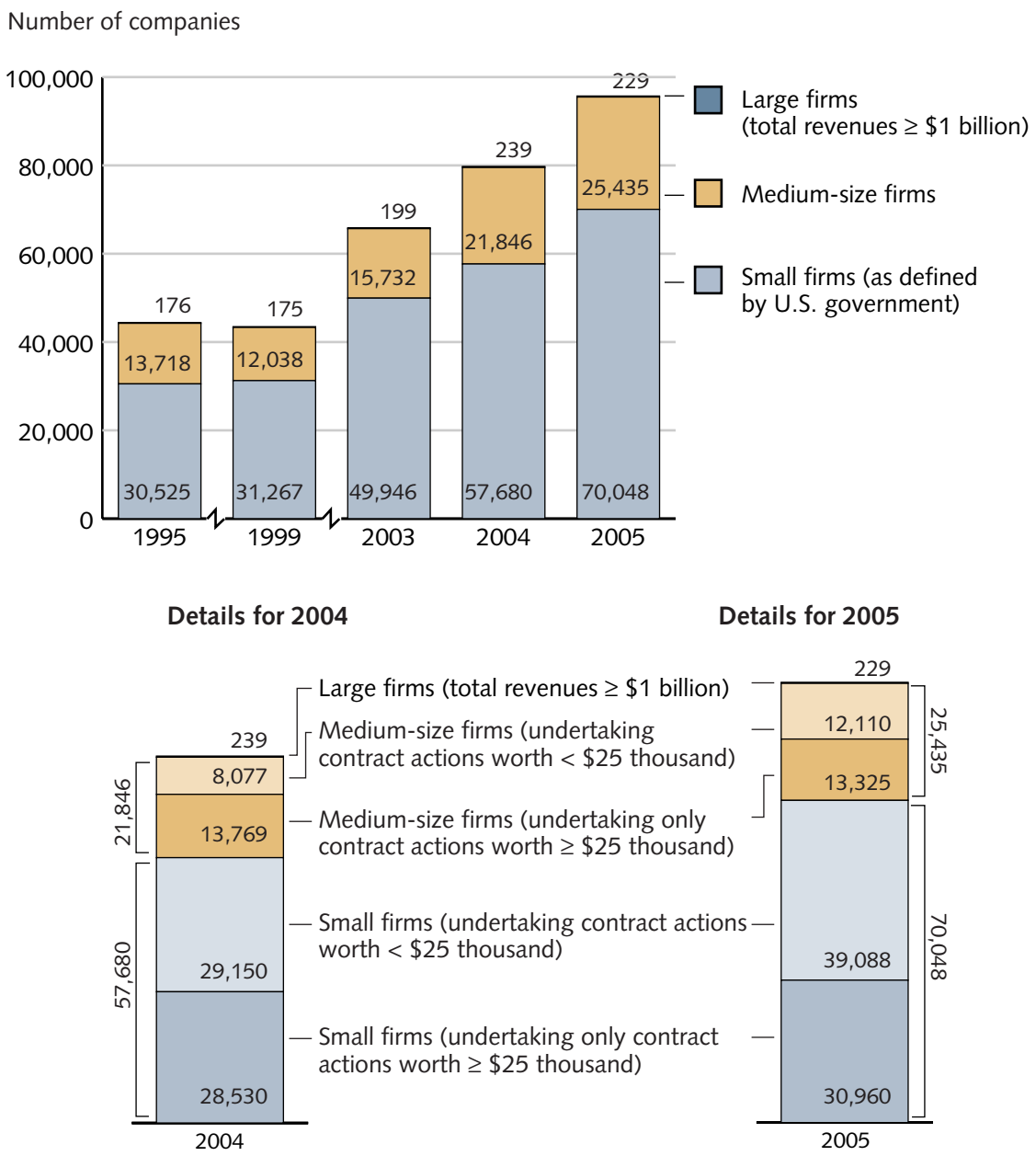
Segmentation of the Services Contractor Base — Figure 3.9

Figure 3.9 shows that more than one-half of the small firms and almost one-half of the medium-size firms execute only contract actions that are smaller than $25,000. Three-quarters of the companies undertaking the small contract actions are small businesses. It remains to be seen what proportion of these small-business, small-contract participants will remain in this market should federal professional services budgets come under significant pressure at some point in the future.

Evolution of Market Shares — Figure 3.10

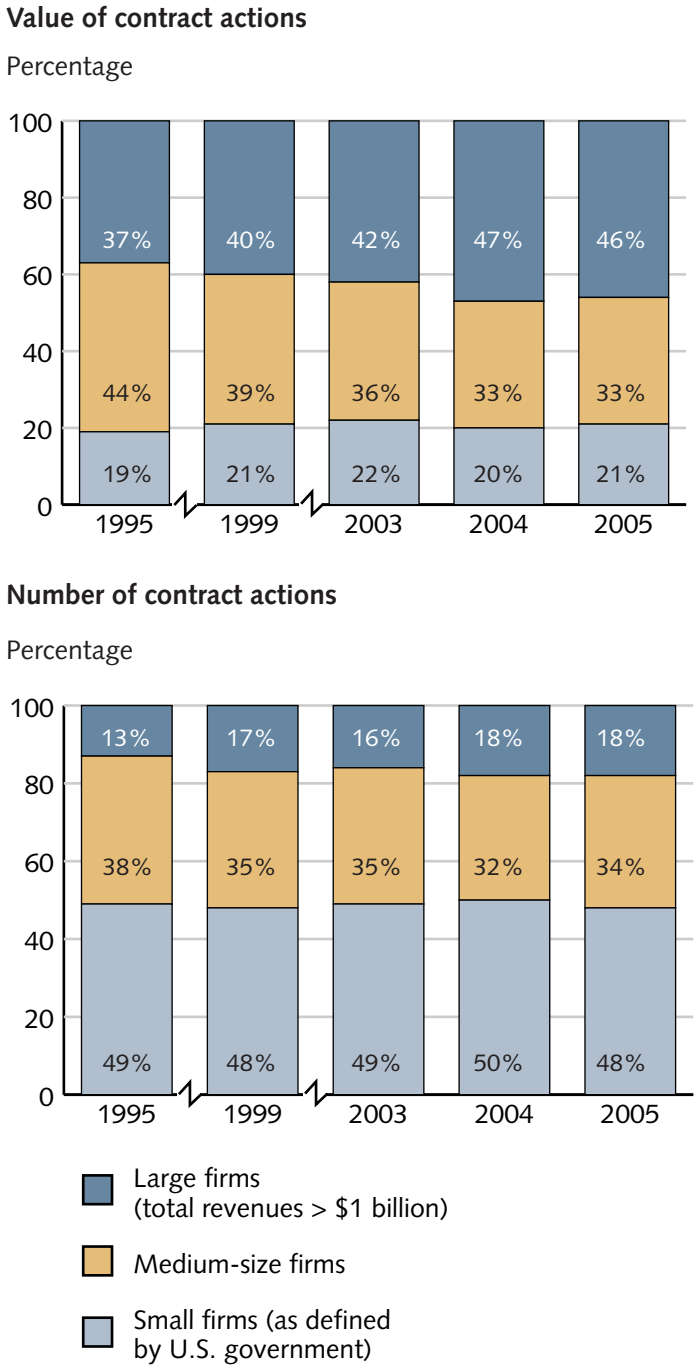
When the market shares held by the small, medium, and large companies in the industry are examined, it is clear that middle-tier companies have suffered a significant erosion of their relative share. In 1995, middle-tier companies captured 44 percent of the total value of federal professional services contracts. By 2005, the middle-tier companies were able to capture only 33 percent of that value. Small-business set-aside laws and other policies protecting small firms have clearly worked in the professional services industry. Small companies have sustained a 19–22 percent market share in the value of prime contracts (their share of the market is larger if the value of subcontracts is included). The large companies in this industry have been particularly active via mergers and acquisitions and have been able to increase their market share, from 37 to 46 percent. Thus, the middle tier has been squeezed from above by consolidation and from below by small businesses holding on to their share of the market.

Figure 3.9. Number of Small, Medium, and Large Firms in the Federal Services Industry, 1995, 1999, 2003, 2004, and 2005



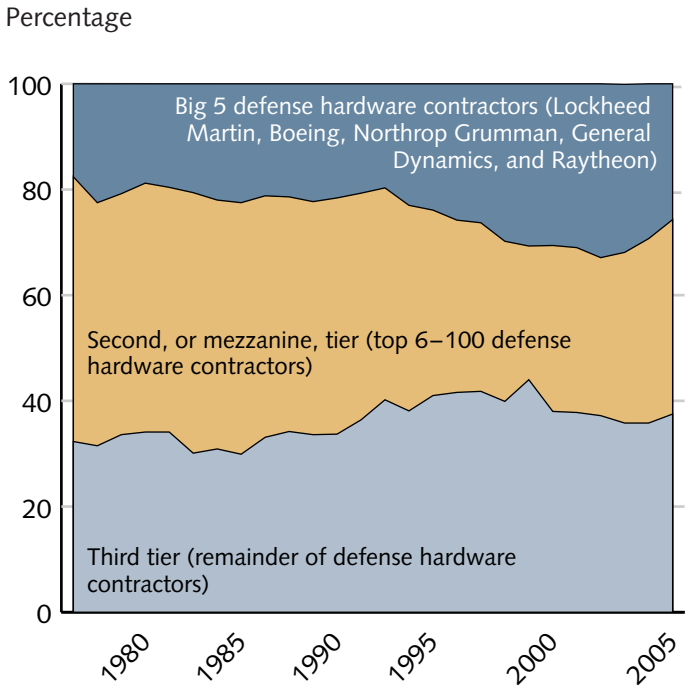
Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 3.10. Market Share of Small, Medium, and Large Firms Participating in the Federal Services Industry, by Value of Contract and by Number of Contract Actions, 1995, 1999, 2003, 2004, and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 3.11. DOD Prime Contract Dollars Awarded to Small, Medium, and Large Contractors, 1977–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of Defense Hardware Market Shares — Figure 3.11

This squeezing of the middle tier was for a while also seen in the overall defense industrial base. During the past decade, the Top 5 defense companies (Lockheed Martin, Boeing, Northrop Grumman, General Dynamics, and Raytheon) increased their market share from about 26 percent to about 33 percent of prime contract value awarded by 2002, before dropping back to 26 percent in 2005. The third tier of the defense hardware industry—in part assisted by small-business set-aside policies—has actually expanded market share to 37 percent of the value of contracts awarded. Again squeezed from above and below, the mezzanine tier of the defense hardware industry saw its market share decline to 30 percent during through 2002, before making somewhat of a comeback, reclaiming a portion of their share from the Top 5 and returning to 37 percent in 2005.

Table 3.1. Distribution of Contractors in the Five Professional Services Categories, 1995 and 2005, percentage

	1995					2005				
	ICT	PAMS	R&D	ERS	FRS	ICT	PAMS	R&D	ERS	FRS
ICT	100	33	19	25	9	100	40	14	22	14
PAMS	7	100	13	6	6	10	100	10	9	10
R&D	9	30	100	9	4	11	33	100	13	11
ERS	11	13	8	100	12	10	17	8	100	16
FRS	1	4	1	3	100	3	10	4	9	100

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

Cross-Category Participation by Contractors — Table 3.1

Many of these contractors provide the federal government with services in more than one category. Table 3.1 shows, as would be expected, that there is considerable overlap between contractors undertaking both ICT services and PAMS contract actions. In 2005, 40 percent of ICT contractors were also active in the PAMS category, and that interrelationship has only increased during the past decade. The other area of substantial and growing overlap, revealing the increased demand for studies, is between contractors undertaking both R&D work and PAMS services. On a small scale, there are more ERS firms undertaking PAMS work, again reflecting the growth in studies and analyses.Finally, ICT companies are taking on more FRS work. Overall, the past decade has witnessed the federal professional services industry becoming much more integrated.

Top 20 Contractors — Table 3.2

An analysis of the Top 20 contractors (by value of contract actions) in the federal professional services industry further reveals how the industrial base has changed over time. The Top 20 companies in the industry had a 31 percent market share in 1995, and a 32 percent share in 2005 (down from almost 37 percent in 2004). The Top 5 companies have lost some of their market share (19 to 17 percent) since 1995, although the majority of this decrease, from 21 to 17 percent, occurred in 2004–2005. Furthermore, the definition of critical mass has changed. In 1995, contract awards of a few hundred million dollars allowed a company to be contractor number 20; in 2005 that ranking required annual awards of almost $1.3 billion.

The composition of the Top 20 contractors also changed significantly between 1995 and 2005. As in the defense hardware market, there are fewer commercial conglomerates in the professional services industry today compared with 1995 (11 of the companies on the 1995 Top 20 list compared with 9 in 2005). The major new entrants in the Top 20 are the heavy engineering firms, which in 1995 accounted for just one of the Top 20 (Bechtel), but in 2005 made up four of the Top 20 (Halliburton, Bechtel, Fluor, and BWXT). Clearly this is a reflection of the Afghanistan and Iraq conflicts. Finally, defense hardware and platform companies are increasing their presence in the federal professional services market.

Table 3.2. Top 20 contractors, 1995 and 2005

	1995		2005	
Rank	Company	Value of contract actions ($, thousands)	Company	Value of contract actions ($, thousands)
1	Lockheed Martin	9,189,708	Lockheed Martin	13,058,761
2	Westinghouse	3,216,178	Northrop Grumman	8,852,592
3	Boeing	2,959,228	Boeing	6,550,319
4	Northrop Grumman	2,515,868	Halliburton	5,553,026
5	Raytheon	1,624,159	Raytheon	4,399,741
Subtotals for Top 5		19,505,141		38,414,439
6	CSC	1,505,354	SAIC	3,804,292
7	Rockwell	1,464,352	CSC	3,766,990
8	SAIC	1,236,287	Bechtel	3,039,078
9	Loral	1,203,619	L-3 Communications	2,956,697
10	Sandia Corporation	1,159,740	General Dynamics	2,952,399
11	General Electric	1,121,452	Sandia Corp.	2,291,547
12	TRW	1,097,035	Booz Allen Hamilton	1,920,729
13	DynCorp	640,453	BAE Systems	1,828,549
14	Newport News	630,387	Battelle	1,740,467
15	Bechtel	496,040	EDS	1,657,149
16	IBM	446,053	Westinghouse	1,483,748
17	Unisys	425,543	Dyncorp	1,438,481
18	MITRE	380,305	Fluor Enterprises, Inc.	1,385,150
19	United Technologies	377,825	CACI	1,358,643
20	General Dynamics	360,028	BWXT	1,298,510
Totals for Top 20		32,049,614		71,336,866

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

Details of Top 20 Contractors — Tables 3.3 and 3.4

The types of services in which industry leaders have specialized have also changed over time. Eleven years ago Lockheed Martin received the bulk of its professional services contracts for R&D and FRS work. Today, R&D is still the largest of Lockheed Martin's services activities, but its FRS work has been replaced by a strong presence in the more complex and skills-intensive ICT and PAMS segments. Northrop Grumman has also built leading positions in both the ICT and PAMS segments. Tables 3.3 and 3.4 on the following two pages provide further details about the Top 20 contractors.

Table 3.3. Top 20 Contractors, by Activity Category, 1995 (dollars, thousands)

Contractor	ICT	PAMS	R&D	ERS	FRS	Other	Total
Lockheed Martin	179,678	1,021,073	4,537,281	825,556	2,519,757	106,363	9,189,708
Westinghouse	213,000	101,889	218,167	22,795	2,865,366	(205,039)	3,216,178
Boeing	219,368	404, 864	2,053,125	268,426	1,663	11,782	2,959,228
Northrop Grumman	389,466	783,388	1,060,062	206,657	56,757	19,538	2,515,868
Raytheon	44,639	574, 654	635,547	170,677	195,087	3,555	1,624,159
CSC	857,588	255,358	234,933	27,645	127,670	2,160	1,505,354
Rockwell	1,168	195,128	763,278	465,145	17,862	21,771	1,464,352
SAIC	279,260	451,613	337,129	6,041	98,921	63,323	1,236,287
Loral	194,571	154,621	503,876	195,614	147,931	7,006	1,203,619
Sandia Corporation	0	0	34	0	1,159,706	0	1,159,740
General Electric	0	98, 694	606,956	220,530	190,423	4,849	1,121,452
TRW	30,103	312,428	474,497	16,295	261,267	2,445	1,097,035
DynCorp	28,917	188,497	6,079	247,362	169,487	111	640,453
Newport News	0	120,571	10,045	497,918	1,275	578	630,387
Bechtel	0	171,725	7,184	5,335	200,240	111,556	496,040
IBM	120,787	29,396	131,911	164,284	47	(372)	446,053
Unisys	156,763	45,430	158,625	63,273	1,006	446	425,543
MITRE	10,710	88,116	273,833	0	0	7,646	380,305
United Technologies	0	14,729	274,775	86,804	770,000	(768,483)	377,825
General Dynamics	0	142,062	129,637	78,605	7,883	1,841	360,028
Total	2,726,018	5,154,236	12,416,974	3,568,962	8,792,348	(608,924)	32,049,614

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

Table 3.4. Top 20 Contractors, by Activity Category, 2005 (dollars, thousands)

Contractor	ICT	PAMS	R&D	ERS	FRS	Other	Total
Lockheed Martin	1,307,332	2,142,596	8,155,901	1,118,826	78,282	255,824	13,058,761
Northrop Grumman	1,382,887	2,402,126	4,458,294	246,304	222,137	140,844	8,852,592
Boeing	10,075	733,681	5,348,178	333,237	45,914	79,235	6,550,319
Halliburton	0	5,267,233	4,624	0	281,168	0	5,553,026
Raytheon	165,275	814,310	1,898,302	1,020,723	255,313	245,819	4,399,741
SAIC	1,702,978	1,411,296	452,649	43,955	74,509	118,905	3,804,292
Computer Sciences Corporation	1,516,623	942,905	278,797	809,941	203,381	15,343	3,766,990
Bechtel	0	260,249	463,131	0	1,327,882	987,816	3,039,078
L-3 Communications	252,425	1,505,266	346,667	773,712	13,020	65,608	2,956,697
General Dynamics	535,762	974,591	683,016	708,872	7,688	42,470	2,952,399
Sandia Corp.	0	0	-7	0	2,291,554	0	2,291,547
Booz Allen Hamilton	551,797	889,789	384,938	37,975	5,517	50,713	1,920,729
BAE Systems	195,008	820,337	459,143	283,942	67,253	2,866	1,828,549
Battelle	16,317	270,116	783,897	15,701	640,489	13,947	1,740,467
Electronic Data Systems	1,545,533	96,614	19	5,593	446	8,944	1,657,149
Westinghouse	0	0	468	0	1,483,280	0	1,483,748
Dyncorp	0	460,599	853,738	14,248	88,680	21,215	1,438,481
Fluor Enterprises	0	123,363	3,908	452	856,435	400,992	1,385,150
CACI	422,160	637,379	150,516	103,906	8,479	36,202	1,358,643
BWXT	0	9,341	0	0	1,289,169	0	1,298,510
Total	9,604,172	19,761,792	24,726,178	5,517,385	9,240,597	2,486,743	71,336,866

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

CHAPTER 4

Policy Implications

Professional services providers have clearly become a major resource for the U.S. federal government. Federal spending on services now exceeds $200 billion and represents 21 percent of the total federal discretionary budget. This spending level has more than doubled during the past decade. The benefits of this growth in the public use of private firms are fairly well known. Contracting to private industry for the provision of traditional as well as emerging government functions has allowed the federal departments to redeploy resources to more value-added functions as they increase their responsiveness and create surge capacity for emergencies.

This increased scope and visibility of the federal professional services industry raises important public policy issues. Legitimate questions of limits, incentives, fairness, value received, and appropriateness of regulatory frameworks need to be considered carefully when such large sums of the public treasury are at stake. The balancing of private and public equities will require thoughtful deliberation. Overzealous regulation will drive away the innovative and efficient firms that government is seeking to attract. Lack of proper oversight risks the loss of public trust and acceptance of private contracting as a viable means of executing federal responsibilities. Because the allocation of contracts in our system occurs within both a political and an industrial context, care must be taken not to sacrifice long-term goals for short-term benefits.

Of the multiple policy issues related to the management of the professional services industrial base, we focus on key issues related to the facts analyzed in this study:

What are the natural limits to the government's outsourcing of services? Every category of professional services analyzed in this report exhibited at least mid-single-digit or double-digit compound growth during the past decade. The FAR prohibits the outsourcing of all tasks that are "inherently governmental," but the exact meaning of inherently governmental has varied over time depending on the urgency of the government's needs and its ability to fulfill its own requirements organically. Most senior government executives agree that government should retain the right to make policy, commit public funds, and evaluate the results of services and products procured. Yet these limits have eroded somewhat as demands on government expand, the federal workforce shrinks, and the technical skills within the government atrophy. Examining the line of what is inherently government and articulating a clear policy that can be embraced by all the parties will be critical to maintaining a healthy government-industry relationship.

How much competition is beneficial to the government and under what circumstances? Competition can be an extremely effective tool for managing the industrial base, particularly when there is asymmetry of information between industry and government. Sometimes, however, other tools better fit the job at hand. As a general policy, competition is used to create incentives for suppliers to keep costs down and quality up. In practice though, situations arise in which running repeated competitions for specialized services in areas where

very limited numbers of qualified suppliers exist actually costs the government more money than it saves. The facts that half of the value of federal services contracts is in modifications to existing contracts and that the fastest-growing categories of contract actions are in multiple-award vehicles may or may not indicate that sufficient competition is occurring. A one-size-fits-all approach will not work. The real answers depend on an honest evaluation of where and when the government derives its greatest benefits from competition.

What effect is the rapidly increasing volume of contracting activity having on the federal government contract management workforce? As the size of contract actions continues to decrease, the number of contract actions to be processed increases by at least 11 percent per year. Are the newer contract vehicles really saving the government time and money, or are they just adding to the burden of an already stretched contracting staff?

Is the current structure of the services industrial base sustainable? There are two related but different factors at play here. The first is that the existing small- and disadvantaged-business set-aside laws have clearly been working in the professional services market, as small businesses have consistently maintained a 20–22 percent share of total government services contracts. There is some anecdotal evidence, however, of some negative side effects—companies that never graduate from their protected status, for example—that is worth further study. The other important factor is the growing clout of the companies that are worth more than $1 billion. Together these forces are slowly squeezing out a viable cadre of mid-tier companies. Traditionally, mid-tier companies have served as a conduit for new ideas and improved business practices. Policymakers must determine whether a robust middle tier of services companies is important or desirable for the federal marketplace. If so, current incentives for companies to enter and remain in this mid-market level must be changed in order to encourage this to happen.

How should guidelines be set to avoid organizational conflicts of interest resulting from mergers and acquisitions activity among industry participants? Since 2001, the transaction volume of merger and acquisition (M&A) deals in the professional services sector has doubled. As a by-product of all this activity, several scientific engineering and technical assistance (SETA) contractors have ended up as part of larger firms, sometimes supervising their parent or sister companies for the federal government. Concern within the government is mounting over the potential for organizational conflict of interest. Although there are many remedies, ranging from firewalls to divestiture of the conflicted entities, a clearly articulated policy and industrial-base strategy addressing this issue is lacking.

Does the growth and diversity of this marketplace indicate a need for a fundamentally different set of acquisition regulations, more in tune with the vagaries of services contracting? The current FAR was developed over the past quarter century and with a bias toward the acquisition of material goods and weapons. Matériel can be specified, developed, tested, and accepted over a period of time. Services, by contrast, fill more immediate needs. Although service contracts may extend over many years, services support often starts upon contract signature and can be more direct and personal in nature—even though personal services are prohibited under the current FAR—depending on the exact nature of the contract in question. Many seasoned contracting officers both inside

and outside of government today are raising the question: Should services be treated differently? To the extent that a revised set of services regulations would result in substantial cost or time savings to the federal bureaucracy, this topic should be examined.

A host of other key policy issues, such as the legal implications of contractors deployed outside of the United States under battlefield conditions, are also topics of debate. These issues, while important, are beyond the scope of this study. We focus instead on policy questions related to the size, scope, and development of the federal professional services industrial base.

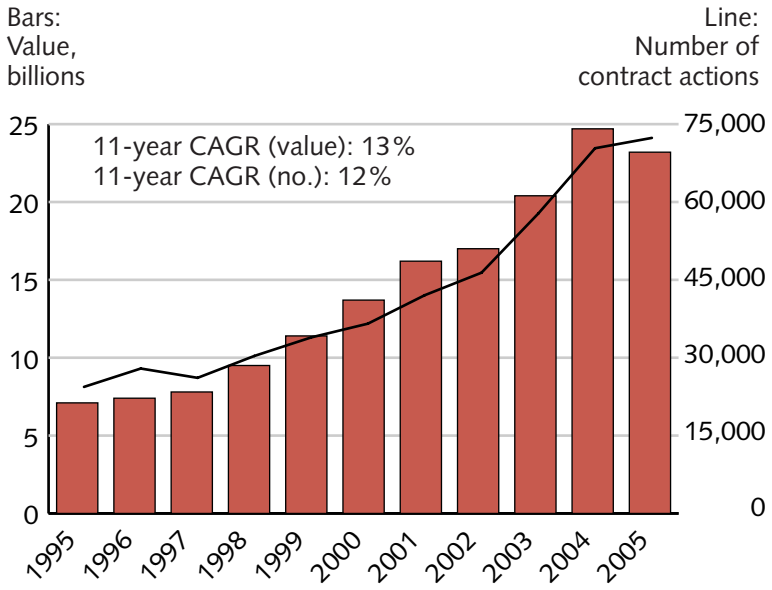
CHAPTER 5

Information and Communications Technology Services

In this chapter:

- 11-year summary of ICT services
- Top 10 customers for ICT services
- Market growth by value and number of contract actions
- Median and average value of contract actions
- Number of contractors
- Market share trends of small, medium, and large companies
- Top 20 contractors (1995 and 2005 compared)

Figure 5.1. Growth of the Federal ICT Services Market, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

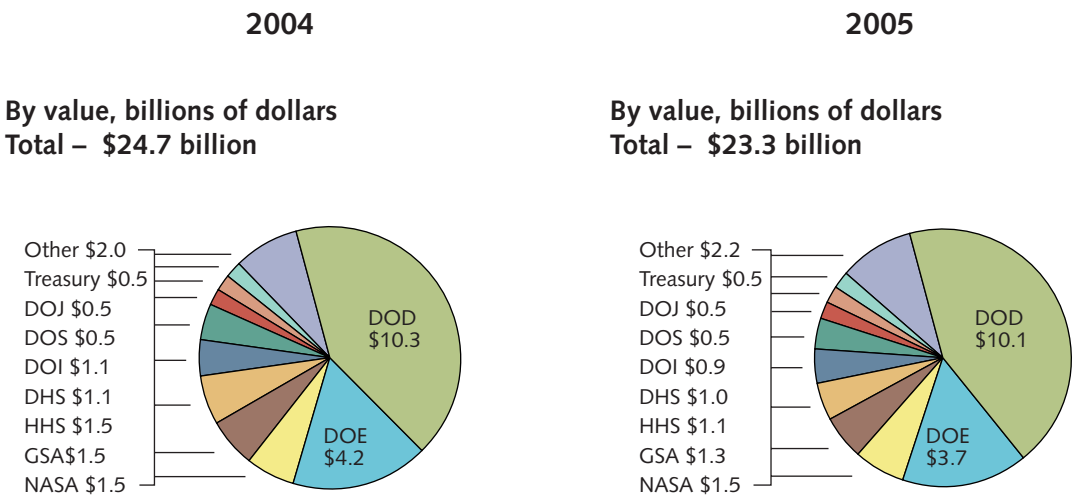
ICT Services Market Growth — Figure 5.1

Federal information and communications technology (ICT) professional services has been the fastest-growing contracting segment during the past decade, with a compound annual growth rate (CAGR) of 13 percent. Overall, the market has grown from $7.1 billion in 1995 to $23.2 billion in 2005. The contracting for and outsourcing of information technology services by the federal government has certainly been a key trend of the past 11 years. This has allowed the ICT segment to be the only market segment to exhibit constant growth from 1995 to 2004. That growth, however, peaked in 2004 and the segment shrank in 2005 and 2006 (according to preliminary data).

Key ICT Services Market Customers — Figure 5.2

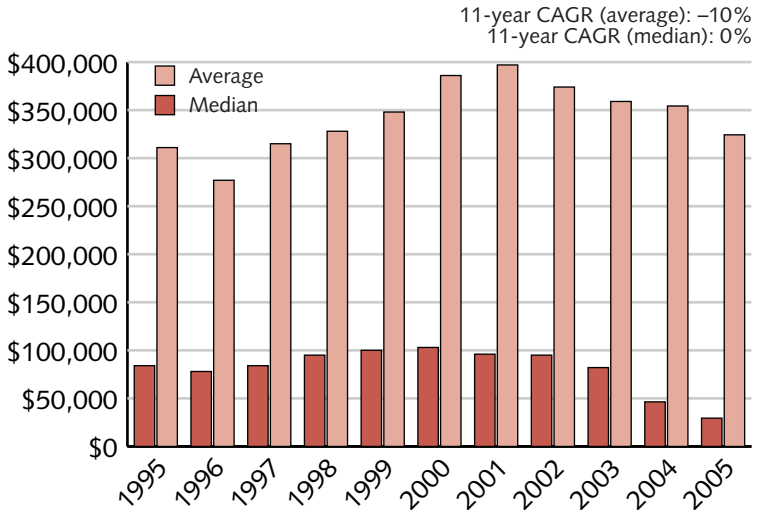
The Department of Defense accounts for 43 percent of this market ($10.1 billion of awards in 2005). Other key customers are the Department of Energy ($3.7 billion), NASA ($1.5 billion), and the General Services Administration ($1.3 billion).

Figure 5.2. Federal ICT Services Market, by Customer, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 5.3. Average and Median Values of Federal ICT Services Contract Actions, 1995–2005

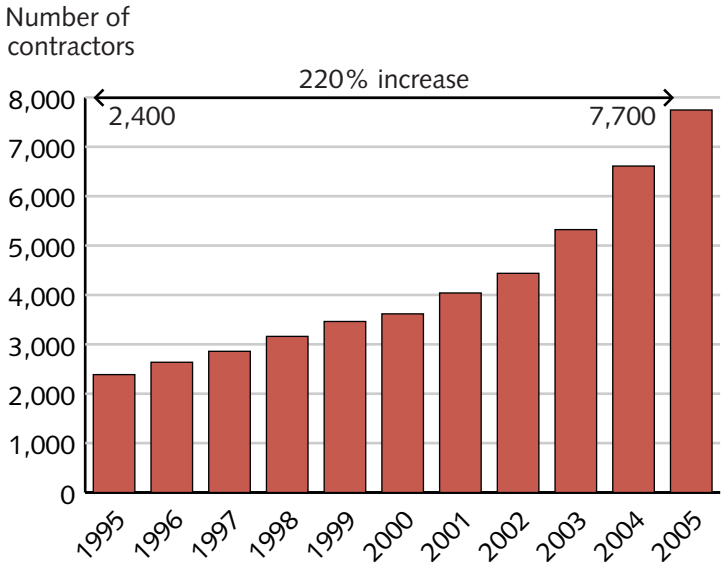


Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of ICT Contract Action Sizes — Figure 5.3

The average and median values of contract actions in the ICT segment rose steadily between 1996 and 2001 but have decreased each year since 2001. By 2005 the average contract action size was $324,000 and the median was $29,000.

Figure 5.4. Number of Federal ICT Services Contractors, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of the ICT Contractor Base — Figure 5.4

The number of federal ICT services contractors has grown in line with the expansion of the market—both have approximately tripled in the past 11 years.

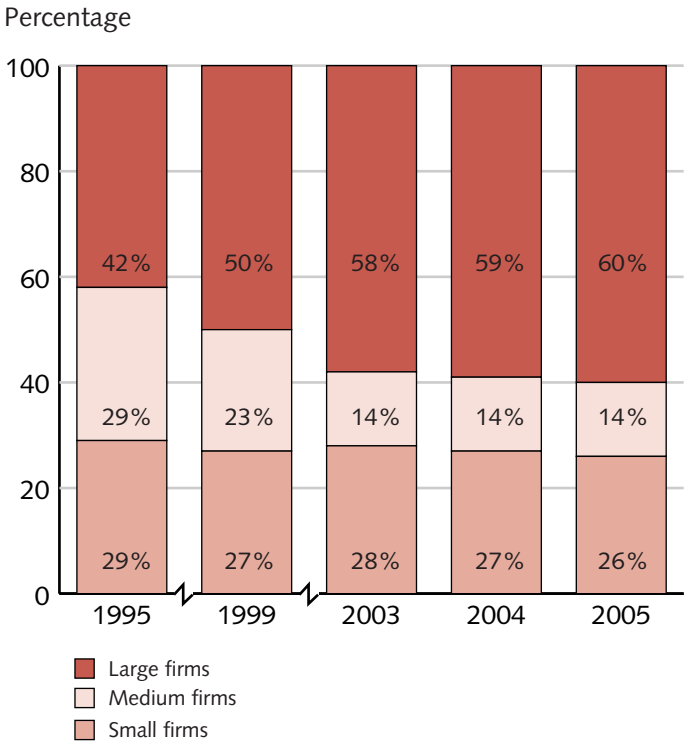
Evolution of ICT Contractors' Market Shares — Figure 5.5

Despite the growth in the number of competitors, this is a market that has seen growing concentration. While the market share held by small companies has remained constant at a relatively high 27–28 percent, the share of contracts held by large companies has grown from 42 percent in 1995 to 60 percent in 2005. ICT is a market segment where having critical mass is important and the threshold for being deemed a major competitor continues to rise. This is driving robust mergers and acquisitions activity by the major firms, and the medium-size firms are being squeezed in the process.

Breakdown According to Size of ICT Contractors — Figure 5.6

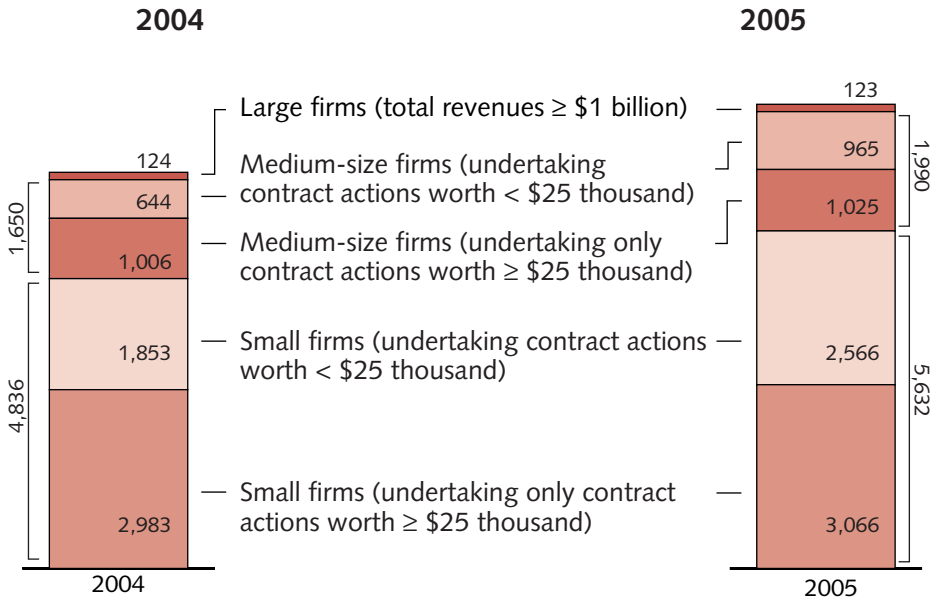
The number of large companies has remained stable, while the number of small and medium sized companies rose at 16.5 and 21percent, respectively. However, in most cases more than 80 percent of that growth was in companies undertaking only contracts worth less than $25,000.

Figure 5.5. Distribution, by Value of Contracts, of Federal ICT Services Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 5.6. Number of Small, Medium, and Large Firms in the Federal ICT Services Market, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Table 5.1 Percentage of ICT Contractors Participating in Other Professional Services Categories, 1995 and 2005

1995				2005			
PAMS	R&D	ERS	FRS	PAMS	R&D	ERS	FRS
33	19	25	9	40	14	22	14

Cross-Category Participation by ICT Contractors — Table 5.1

Companies in the ICT market have been very active in other services segments. There is a heavy and growing overlap between firms participating in the ICT segment and the professional, administrative, and management support (PAMS) segment, as would be expected. In 2005, 40 percent of all the ICT competitors were also involved in PAMS. There has also been an increase in the number of companies in both the ICT segment and the facilities-related services (FRS) segment, from 9 percent in 1995 to 14 percent in 2005.

Table 5.2. Top 20 Federal ICT Services Contractors, 1995 and 2005

	1995		2005	
Rank	Company	Value of contract actions ($)	Company	Value of contract actions ($)
1	CSC	857,588,000	SAIC	1,702,978,074
2	Northrop Grumman	389,466,000	EDS	1,545,533,188
3	SAIC	279,260,000	CSC	1,516,622,707
4	Boeing	219,368,000	Northrop Grumman	1,382,887,218
5	Loral	194,571,000	Lockheed Martin	1,307,331,542
Subtotal for Top 5		1,940,253,000		7,455,352,729
6	EDS	187,180,000	Accenture	591,916,725
7	Lockheed Martin	179,678,000	Booz Allen Hamilton	551,796,960
8	Unisys	156,763,000	SRA	548,678,987
9	IBM	120,787,000	General Dynamics	535,762,014
10	AT&T	81,129,000	MCI	504,642,494
11	Xerox	68,003,000	CACI	422,160,302
12	Comsat	64,495,000	UNISYS	324,440,474
15	MCI	61,294,000	IBM	304,731,143
14	Logicon	50,613,000	L-3 Communications	252,424,860
15	Booz Allen Hamilton	49,804,000	AT&T	251,384,445
16	GTE	45,721,000	Anteon Corporation	205,498,615
17	CACI	45,345,000	BearingPoint	197,143,496
18	Raytheon	44,639,000	BAE Systems	195,008,037
19	Mantech	34,238,000	Honeywell	179,914,109
20	TRW	30,603,000	Raytheon	165,275,014
Total for Top 20		3,160,545,000		12,686,130,404

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

Top 20 ICT Contractors — Table 5.2

In 1995, the Top 5 ICT services providers controlled 27 percent of the market, while the Top 20 controlled 44 percent. By 2005, the Top 5 providers' share of the market had grown to 32 percent, while the Top 20 had increased their share to 54 percent. See table 5.2 for dollar values of contract actions for the Top 20.

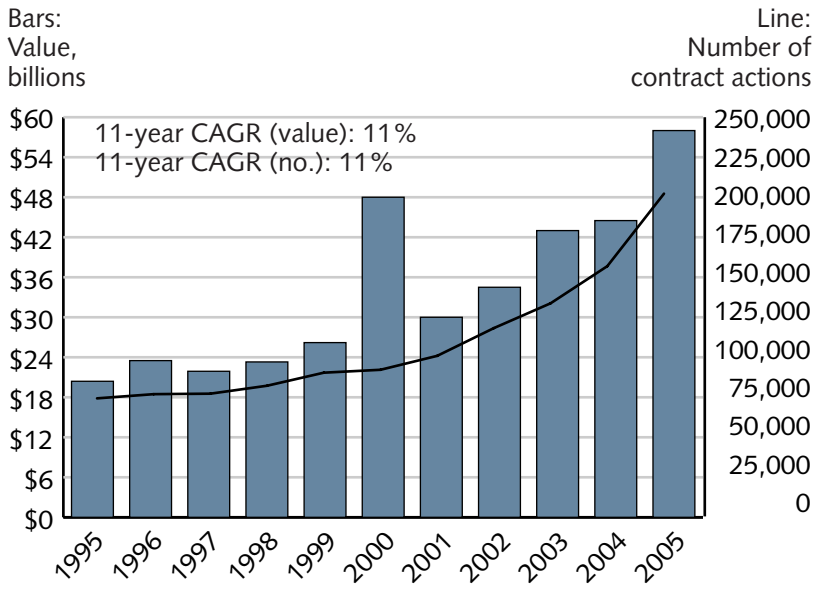
CHAPTER 6

Professional, Administrative, and Management Support Services

In this chapter:

- 11-year summary of PAMS services
- Top 10 customers for PAMS services
- Market growth by value and number of contract actions
- Median and average value of contract actions
- Number of contractors
- Market share trends in distribution of small, medium, large companies
- Top 20 contractors (1995 and 2005 compared)

Figure 6.1. Growth of the Federal PAMS Market, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

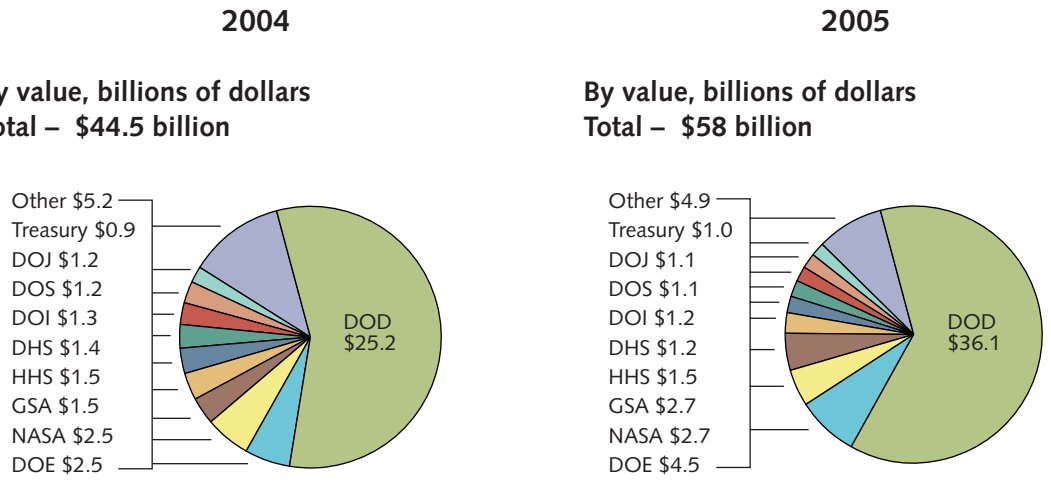
PAMS Market Growth — Figure 6.1

The market for federal professional, administrative, and management support (PAMS) services has witnessed relatively strong growth during the 11 years between 1995 and 2005. From slightly more than $20 billion, it has climbed at a compound annual growth rate (CAGR) of 11 percent to some $58 billion (although the CAGR for the years 2001–2006 was 16 percent per year). There was one anomalous year in 2000 as the market spiked to $48 billion worth of contracts in order to deal with the Y2K computer problem. An examination of preliminary 2006 data indicates that the PAMS segment remains one of the most robust and fastest growing in the industry.

Key PAMS Customers — Figure 6.2

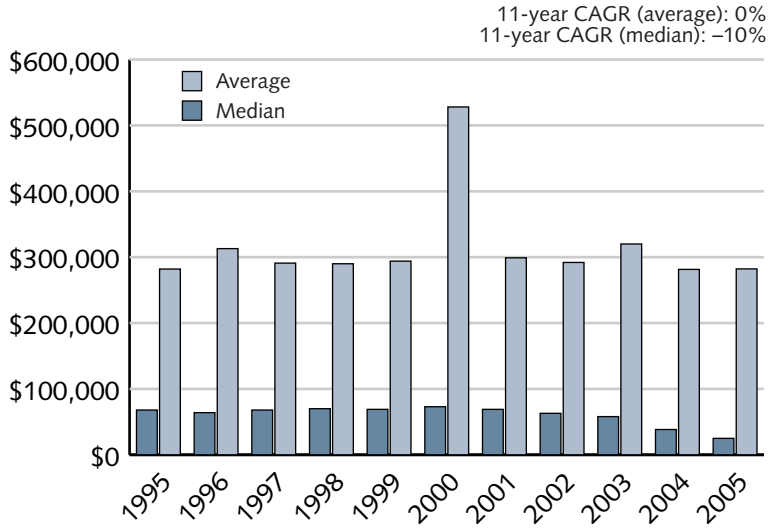
The Department of Defense accounts for almost two-thirds (62 percent) of contract actions—by value—awarded. The Department of Energy was a distant second-largest customer at 8 percent.

Figure 6.2. Federal PAMS Market, by Customer, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 6.3. Average and Median Values of Federal PAMS Contract Actions, 1995–2005

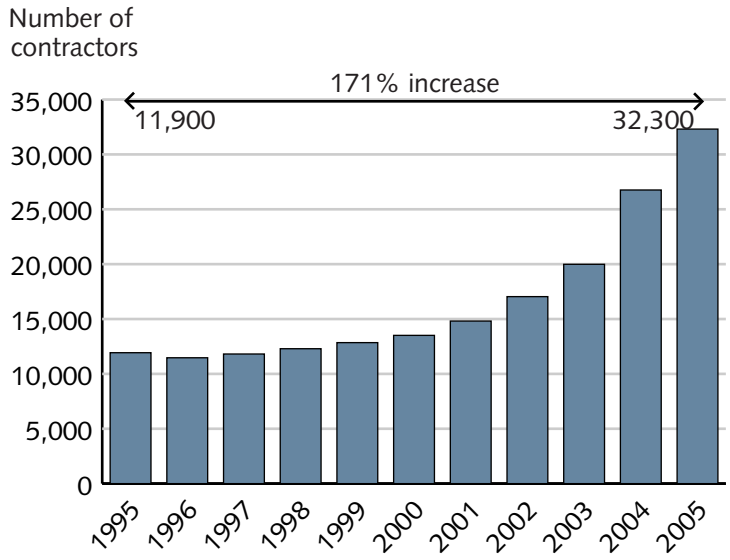


Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of PAMS Contract Action Sizes — Figure 6.3

Average value for PAMS contract actions remained relatively constant throughout 1995–2005, at around $300,000. The only exception was in 2000, when the average contract action was approximately $528,000—the result of contract actions awarded in response to the Y2K computer compliance issue. The median value remained constant at about $70,000 until 2001 and then dropped sharply to $25,000 in 2005.

Figure 6.4. Number of Federal PAMS Contractors, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of the PAMS Contractor Base — Figure 6.4

The number of competitors in the PAMS market has almost tripled during the past 11 years, with the bulk of the increase occurring since 2001 and very large jumps in 2004 and 2005.

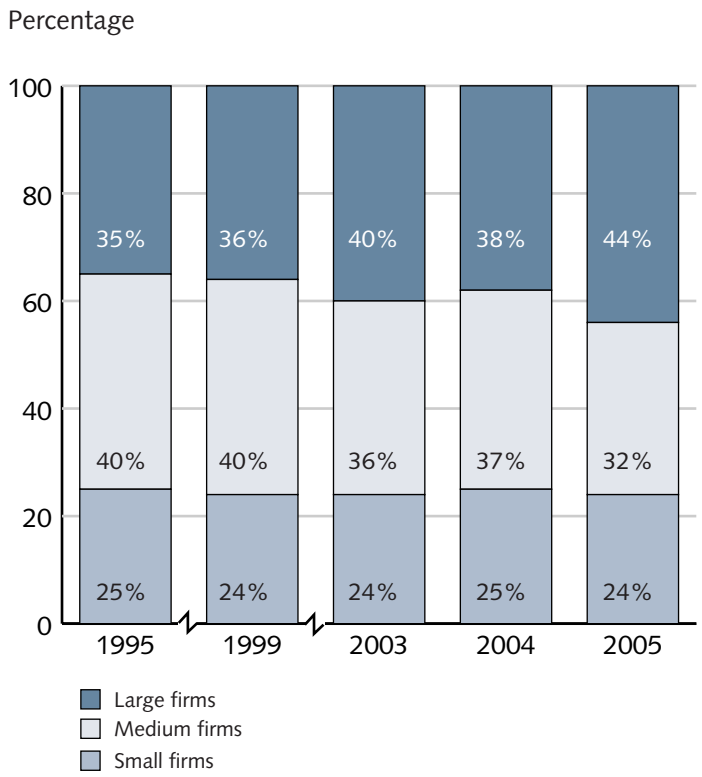
Evolution of PAMS Contractors' Market Shares — Figure 6.5

Similar to all the other segments, the middle tier of the PAMS market has lost market share to the small and large companies. Small firms have maintained their share of the PAMS market at 24 percent of the total value of all contract actions awarded in 2005, and large firms have increased their share of the market to 44 percent of contracts awarded. Note that the Halliburton LOGCAP contract is classified as a PAMS contract in the 2005 FPDS database; at approximately $5 billion, it accounts for the majority of Halliburton's government services work. The PAMS segment remains one of the more fragmented parts of the services market.

Breakdown According to Size of PAMS Contractors — Figure 6.6

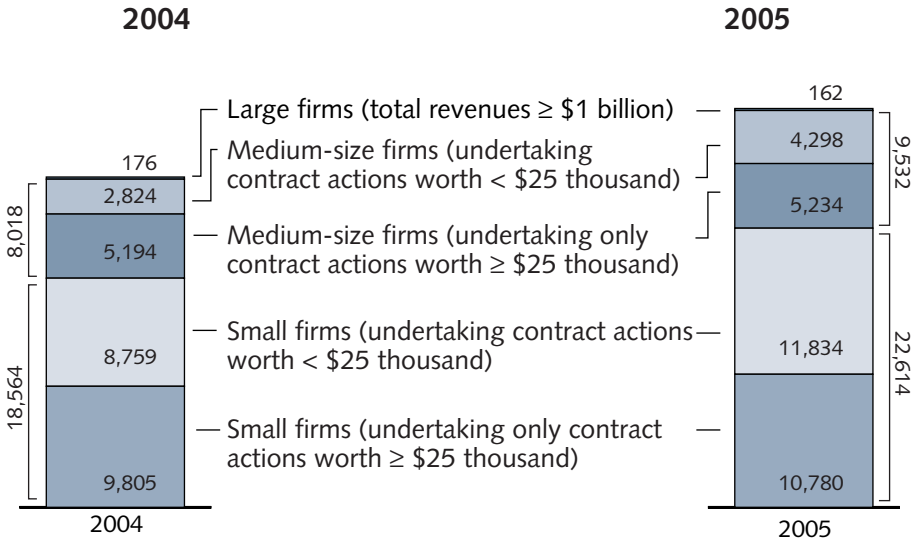
The number of large firms dropped notably from 176 to 162 (an 8 percent decrease) while the numbers of medium and small firms grew by 19 and 22 percent, respectively. However, while most of the growth in the small-sized companies was in those taking small contracts (worth less than $25,000), the growth of small firms taking larger contracts (worth $25,000 or more) was robust at 10 percent.

Figure 6.5. Distribution, by Value of Contracts, of Federal PAMS Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 6.6. Number of Small, Medium, and Large Firms in the Federal PAMS Services Market, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Table 6.1. Percentage of PAMS Contractors Participating in Other Professional Services Categories, 1995 and 2005

1995				2005			
ICT	R&D	ERS	FRS	ICT	R&D	ERS	FRS
7	13	6	6	10	10	9	10

Cross-Category Participation by PAMS Contractors — Table 6.1

Companies in the PAMS segment have for the most part not been very active in other categories. The highest level of cross-segment activity was seen among companies undertaking both PAMS studies and analysis contracts and research and development (R&D) contracts. In 2005, 10 percent of all firms in the PAMS segment also had R&D contracts. There is also some overlap as PAMS firms take on ICT and FRS contracts.

Top 20 PAMS Contractors — Table 6.2

The market share of the Top 5 players in the federal PAMS market grew from 16 percent of the value of all contract actions awarded in 1995 to 22 percent in 2005.

Table 6.2. Top 20 Federal PAMS Contractors, 1995 and 2005

	1995		2005	
Rank	**Company**	**Value of contract actions ($)**	**Company**	**Value of contract actions ($)**
1	Lockheed Martin	1,021,073,000	Halliburton	5,267,233,213
2	Northrop Grumman	783,388,000	Northrop Grumman	2,402,126,492
3	Raytheon	574,654,000	Lockheed Martin	2,142,596,373
4	SAIC	451,613,000	L-3 Communications	1,505,265,573
5	Boeing	404,864,000	SAIC	1,411,295,540
Subtotal for Top 5		3,235,592,000		12,728,517,192
6	TRW	312,428,000	General Dynamics	974,590,870
7	CSC	255,358,000	CSC	942,904,834
8	Rockwell	195,128,000	Booz Allen Hamilton	889,788,556
9	Booz Allen Hamilton	188,990,000	BAE Systems	820,337,312
10	DynCorp	188,497,000	Raytheon	814,310,327
11	Bechtel	174,725,000	Boeing	733,681,426
12	Loral	154,621,000	CACI	637,379,033
15	General Dynamics	142,062,000	Anteon Corporation	619,759,887
14	Newport News	120,571,000	Dyncorp	460,599,214
15	EG&G	110,579,000	MITRE	394,637,595
16	EDS	102,622,000	Mantech	324,019,650
17	Westinghouse	101,889,000	Honeywell	294,241,682
18	General Electric	98,694,000	Battelle	270,116,222
19	Logicon	93,189,000	EG&G Technical Services	268,869,021
20	Jacobs Engineering Group	89,606,000	Bechtel	260,249,068
Total for Top 20		5,564,551,000		21,434,001,890

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

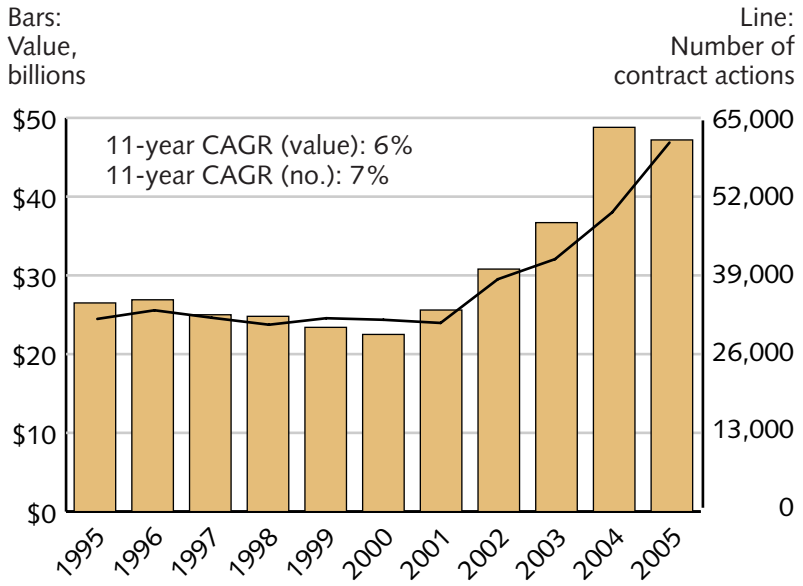
CHAPTER 7

Research and Development Services

In this chapter:

- 11-year summary of the R&D services market
- Top 10 customers for R&D services
- Market growth by value and number of contract actions
- Median and average value of contract actions
- Number of contractors
- Market share trends in distribution of small, medium, and large companies
- Top 20 contractors (1995 and 2005 compared)

Figure 7.1. Growth of the Federal R&D Services Market, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

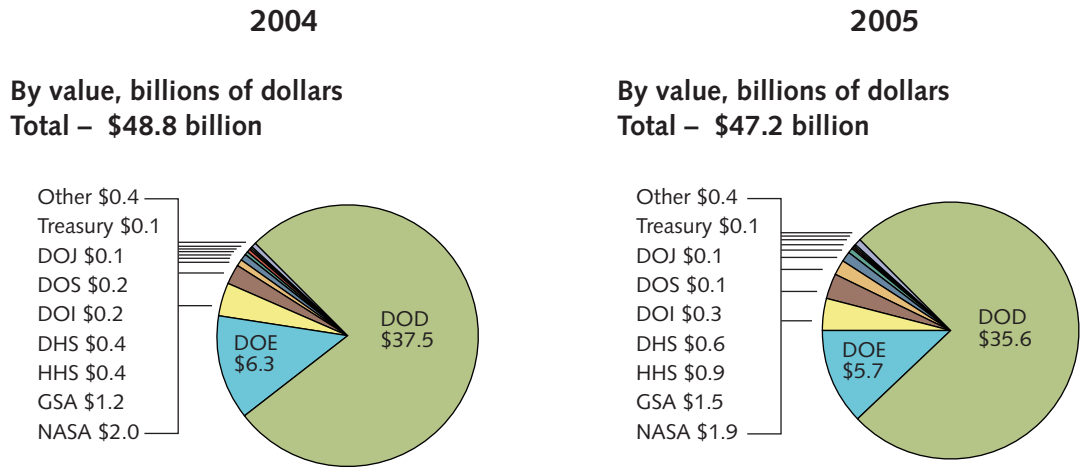
R&D Services Market Growth — Figure 7.1

The federal market for research and development (R&D) services has broadly followed the growth trends of the overall defense budget, declining through the 1990s and then seeing strong growth since 2001. At just over $47 billion in 2005 contract awards, the R&D services segment is one of the largest in the professional services market. Reflecting its cyclical nature, it appears that 2004 was the peak of the market segment, as 2005 shows a decline and preliminary 2006 data indicate there was no growth that year.

Key R&D Services Market Customers — Figure 7.2

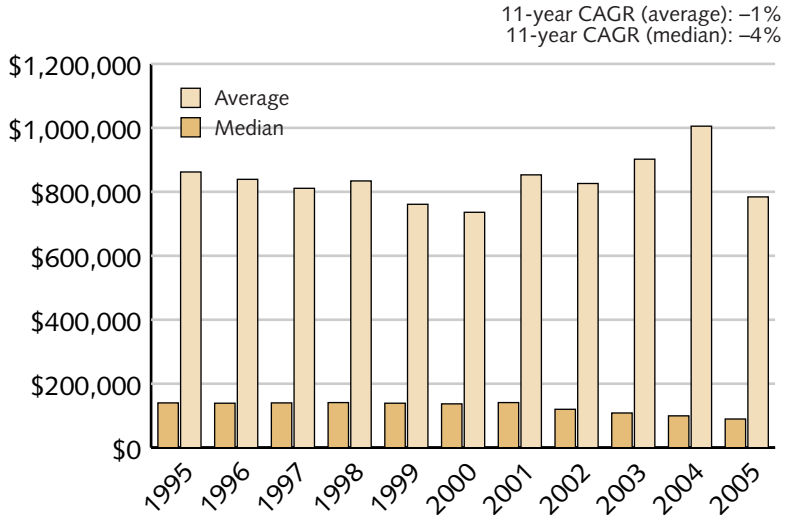
The biggest customer by far for R&D services is the Department of Defense, with 75 percent of the market. The Department of Energy (12 percent) and NASA (4 percent) are next largest customers.

Figure 7.2. Federal R&D Services Market, by Customer, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 7.3. Average and Median Values of Federal R&D Services Contract Actions, 1995–2005

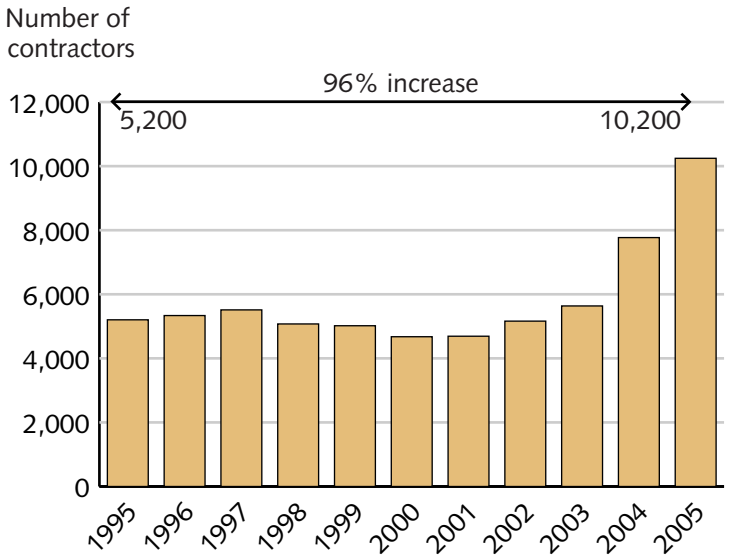


Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of R&D Contract Action Sizes — Figure 7.3

The value of the average R&D services contract action remained relatively constant during the 1995–2003 period, at around $800,000, spiked a $1,000,000 in 2004, then dropped back to just under $800,000. This makes R&D services the segment with the highest average contract action value in the federal services market.

Figure 7.4. Number of Federal R&D Services Contractors, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of the R&D Contractor Base Figure 7.4

The number of competitors in the R&D market was very stable, at just over 5,000 firms, during the past decade, until the 80 percent growth of the past three years.

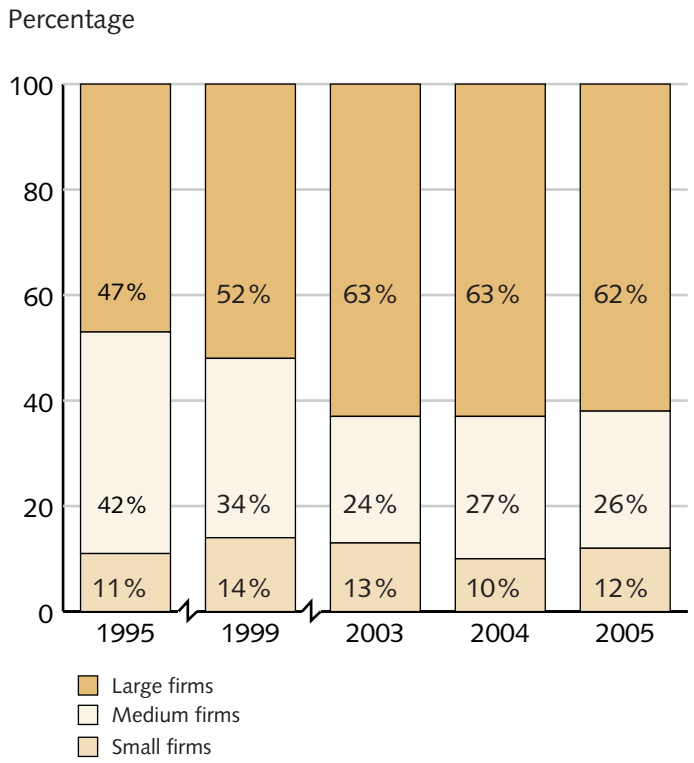
Evolution of R&D Contractors' Market Shares — Figure 7.5

The R&D services segment is oriented toward larger firms more than other market segments. This is the segment with the lowest share held by small businesses. In 2005 the Top 20 firms controlled almost 60 percent of this segment.

Breakdown According to Size of R&D Contractors — Figure 7.6

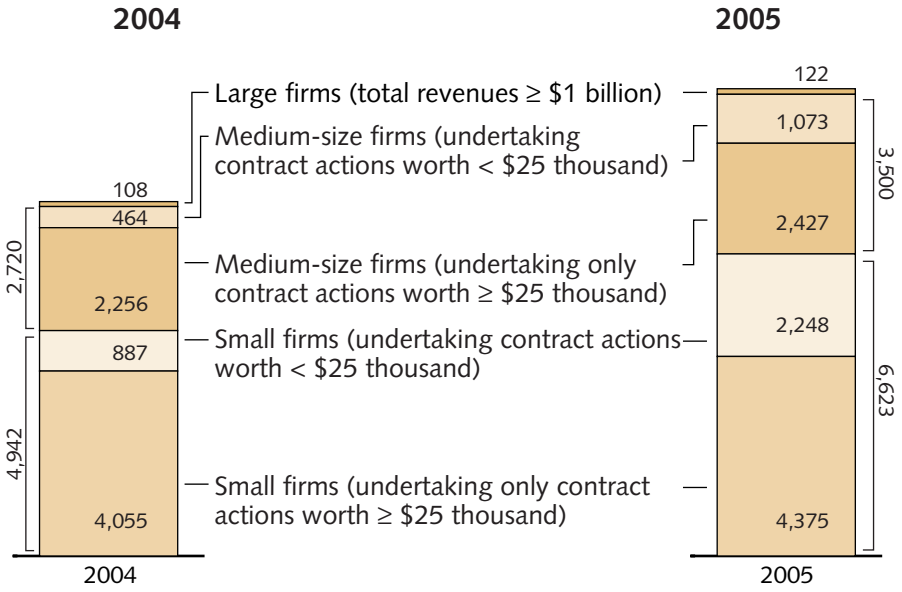
The numbers of large, medium, and small firms all increased by 13, 29, and 34 percent, respectively. The numbers of small and medium-sized firms taking only small contracts (worth less than $25,000) more than doubled. The expansion in small and medium-sized firms taking large contracts (worth $25,000 or more) also rose, but by less than 10 percent.

Figure 7.5. Distribution, by Value of Contracts, of Federal R&D Services Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 7.6. Number of Small, Medium, and Large Firms in the Federal R&D Services Market, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Table 7.1. Percentage of R&D Contractors Participating in Other Professional Services Categories, 1995 and 2005

1995				2005			
ICT	PAMS	ERS	FRS	ICT	PAMS	ERS	FRS
9	30	9	4	11	33	13	11

Cross-Category Participation by R&D Contractors — Table 7.1

Companies involved in the R&D segment deepened their participation in every other segment of the professional services market during the 1995–2005 decade. The greatest increase occurred with R&D firms undertaking more professional, administrative, and management support (PAMS) contracts—33 percent of all R&D contractors took on PAMS contract actions in 2005—and more facilities-related services (FRS) contracts as well. Because the R&D companies are primarily the major defense hardware firms, this trend is actually reflective of the broader phenomenon of defense hardware companies increasing their presence in the services market from 1995 to 2005.

Top 20 R&D Contractors — Table 7.2

The R&D market has become more concentrated during the past decade, with the Top 5 federal R&D services contractors receiving 44 percent of all the awards in 2005 compared with 34 percent in 1995. As expected, the Top 5 consist of the major defense hardware contractors.

Table 7.2. Top 20 Federal R&D Services Contractors, 1995 and 2005

	1995		2005	
Rank	Company	Value of contract actions ($)	Company	Value of contract actions ($)
1	Lockheed Martin	4,537,281,000	Lockheed Martin	8,155,901,188
2	Boeing	2,053,125,000	Boeing	5,348,177,735
3	Northrop Grumman	1,060,062,000	Northrop Grumman	4,458,293,723
4	Rockwell	763,278,000	Raytheon	1,898,301,647
5	Raytheon	635,547,000	United Technologies	1,050,285,674
Subtotal for Top 5		9,049,293,000		20,910,959,967
6	General Electric	606,956,000	Dyncorp	853,737,917
7	Loral	503,876,000	Battelle	783,897,255
8	TRW	474,497,000	General Dynamics	683,015,645
9	SAIC	337,129,000	Aerospace Corp.	677,356,217
10	United Technologies	274,775,000	Bechtel	463,131,029
11	MITRE	273,833,000	BAE Systems	459,142,970
12	Texas Instruments	273,718,000	SAIC	452,648,995
15	CSC	234,933,000	Booz Allen Hamilton	384,938,201
14	Westinghouse	218,167,000	L-3 Communications	346,666,579
15	Unisys	158,625,000	Institute for Defense Analyses	345,328,847
16	United Defense	142,703,000	Unisys	327,276,055
17	IBM	131,911,000	Mitre Corporation	292,053,636
18	General Dynamics	129,637,000	CSC	278,796,865
19	Harris	84,287,000	General Electric	194,329,713
20	Logicon	77,478,000	Oshkosh Truck Corp.	186,619,866
Total for Top 20		12,971,818,000		27,639,899,757

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

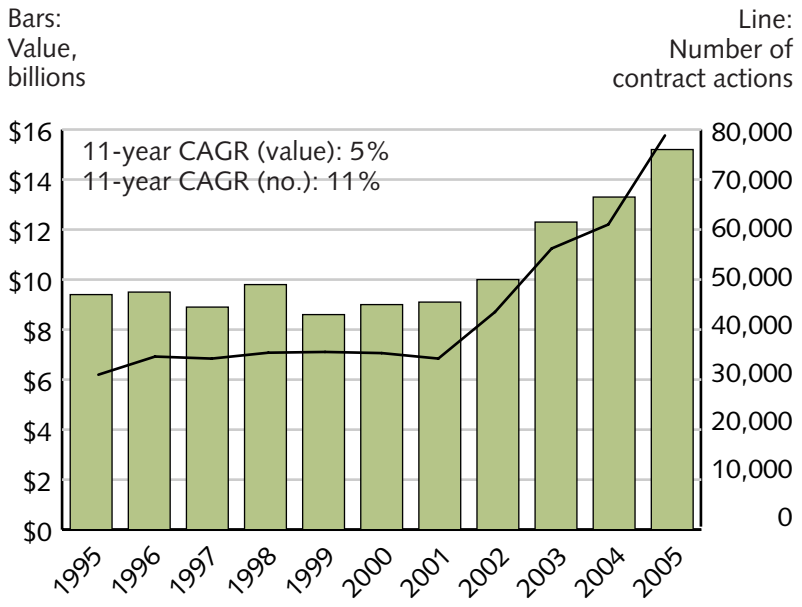
CHAPTER 8

Equipment-Related Services

In this chapter:

- 11-year summary of ERS
- Top 5 customers for ERS
- Market growth by value and number of contract actions
- Median and average value of contract actions
- Number of contractors
- Market share trends of small, medium, large companies
- Top 20 contractors (1995 and 2005 compared)

Figure 8.1. Growth of the Federal ERS Market, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

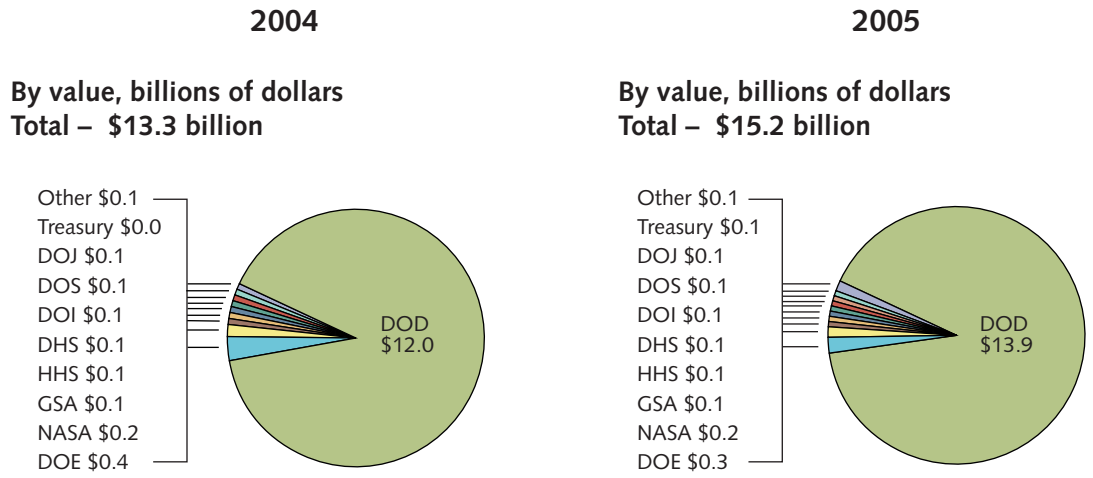
ERS Market Growth — Figure 8.1

From 1995 to 2001 the equipment-related services (ERS) market was essentially flat, despite calls for increased outsourcing of this type of work to private industry. It was not until the wars in Afghanistan and Iraq and the high operational tempo of the U.S. armed forces that the market demonstrated any substantial growth. In the past three years, the total value of ERS contract actions leaped from $10 billion in 2002 to $15.2 billion in 2005, and the total number of contract actions almost doubled, from 41,630 to 78,390.

Key ERS Customers — Figure 8.2

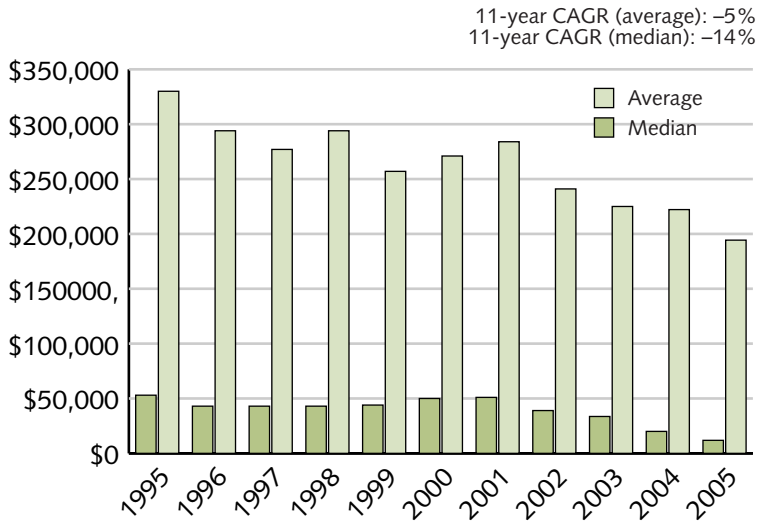
Because the Department of Defense is by far the largest customer for these types of services—91 percent of the 2005 market—this growth can be attributed to the increased operational tempo of U.S. military forces during the past four years.

Figure 8.2. Federal ERS Market, by Customer, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 8.3. Average and Median Values of Federal ERS Contract Actions, 1995–2005

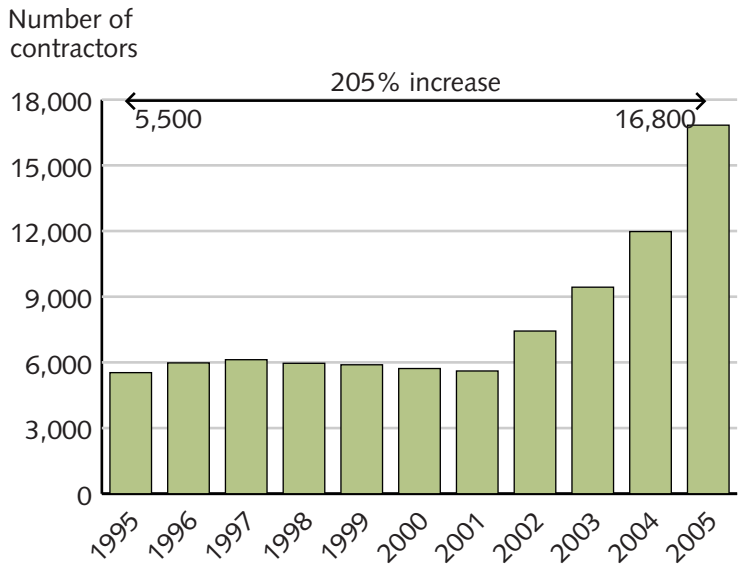


Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of ERS Contract Action Sizes — Figure 8.3

Because the post-2001 war-related activity has triggered large numbers of small contract actions, the average value of a contract action in the ERS segment has dropped significantly, from $330,000 in 1995 to $194,000 in 2005. Meanwhile, the median contract action has dropped from $53,000 to $12,000.

Figure 8.4. Number of Federal ERS Contractors, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of the ERS Contractor Base — Figure 8.4

The number of competitors in the ERS market from 1995 to 2001 matched the lack of growth in the segment. The number of federal ERS contractors during that period remained constant at between 5,500 and 6,000 firms. With the jump in the number of ERS contracts since 2002, however, the number of competitors has increased threefold, to 16,835 firms.

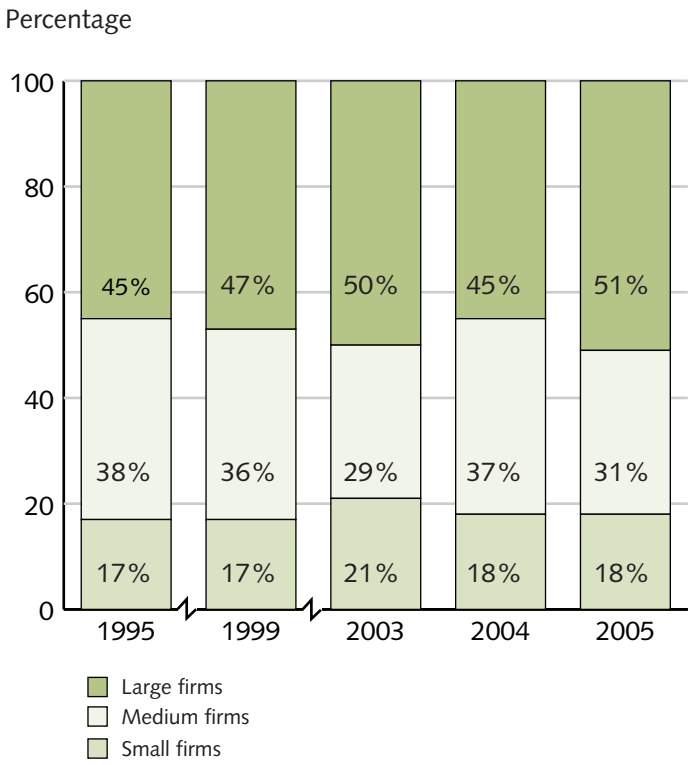
Evolution of ERS Contractors' Market Shares — Figure 8.5

Although the market share held by small companies has remained relatively constant, the share held by large companies has grown from 45 percent to 51 percent during the past 11 years. As with the other segments in the professional services industry, the market share of the medium-size companies has shrunk from 38 percent in 1995 to 31 percent in 2004.

Breakdown According to Size of ERS Contractors — Figure 8.6

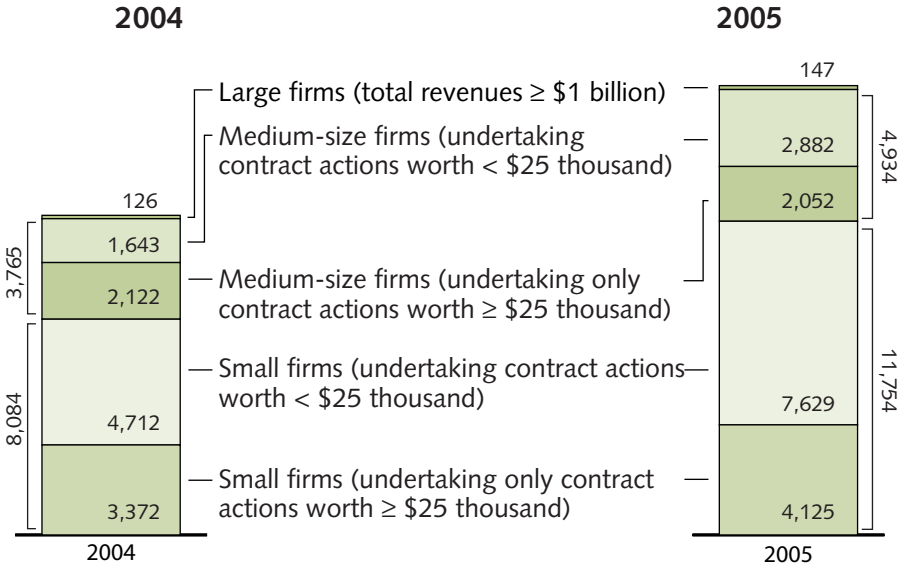
The numbers of large, medium, and small firms all increased by 17, 31 and 45 percent, respectively. Medium and small-sized firms taking only small contracts (worth less than $25,000) increased by more than 50 percent each. The growth of small firms taking large (worth $25,000 or more) contracts was substantial at 22 percent. Surprisingly, this widespread growth masked a small drop (3 percent) in the number of medium firms taking large contracts.

Figure 8.5. Distribution, by Value of Contracts, of Federal ERS Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 8.6. Number of Small, Medium, and Large Firms in the Federal ERS Market, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Table 8.1. Percentage of ERS Contractors Participating in Other Professional Services Categories, 1995 and 2005

1995				2005			
ICT	PAMS	R&D	FRS	ICT	PAMS	R&D	FRS
11	13	8	12	10	17	8	16

Cross-Category Participation by ERS Contractors — Table 8.1

The companies in the ERS segment are not very active in other segments. Over the 11-year period, more of the firms became involved in the professional, administrative, and management support (PAMS) segment, and there has been increased penetration of the facilities-related services (FRS) segment, likely a result of combining the repair of equipment with the maintenance of repair facilities.

Top 20 ERS Contractors — Table 8.2

There has been some change in the market shares of the Top 20 ERS companies. They controlled 43 percent of the market in 1995 and 49 percent in 2005. See table 8.2 for dollar values of contract actions for the Top 20.

Table 8.2. Top 20 Federal ERS Contractors, 1995 and 2005

	1995		2005	
Rank	Company	Value of contract actions ($)	Company	Value of contract actions ($)
1	Lockheed Martin	825,556,000	General Motors	1,157,058,290
2	Newport News	497,918,000	Lockheed Martin	1,118,825,610
3	Rockwell	465,145,000	Raytheon	1,020,722,812
4	Boeing	268,426,000	CSC	809,940,968
5	DynCorp	247,362,000	L-3 Communications	773,712,119
Subtotal for Top 5		2,304,407,000		4,880,259,799
6	General Electric	220,530,000	General Dynamics	708,872,002
7	Northrop Grumman	206,657,000	Boeing	333,236,842
8	Loral	195,614,000	BAE Systems	283,941,568
9	GTE	189,009,000	Northrop Grumman	246,303,701
10	Raytheon	170,677,000	Anteon Corporation	209,845,879
11	IBM	164,284,000	Johnson Controls	146,979,579
12	Rolls Royce	95,838,000	CACI	103,905,689
15	United Technologies	86,804,000	Xerox	99,315,571
14	General Dynamics	78,605,000	ITT	95,879,147
15	Unisys	63,273,000	Honeywell	80,002,506
16	AT&T	63,101,000	General Electric	56,694,381
17	Harris	59,515,000	Mantech	46,406,694
18	Xerox	48,266,000	SAIC	43,954,841
19	CSC	27,645,000	Booz Allen Hamilton	37,975,108
20	Westinghouse	22,795,000	Harris Corp.	25,767,380
Total for Top 20		3,997,020,000		7,399,340,685

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

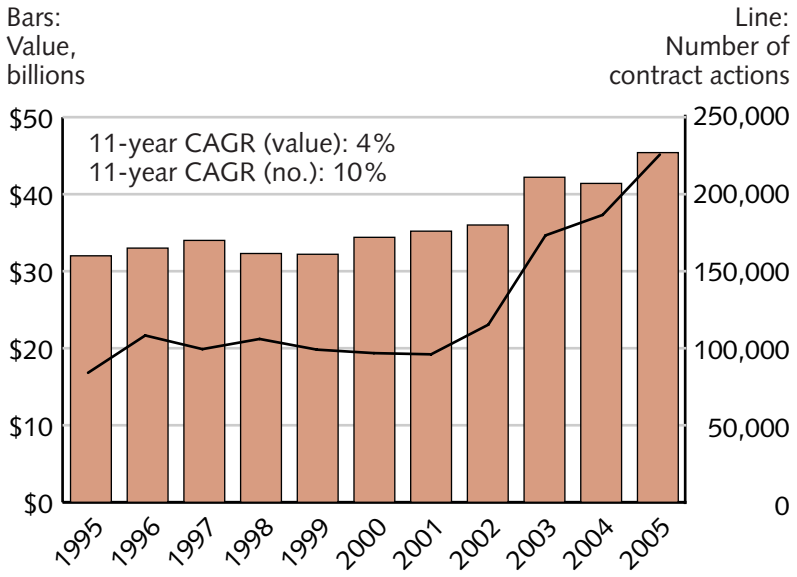
CHAPTER 9

Facilities-Related Services

In this chapter:

- 11-year summary of FRS
- Top 10 customers for FRS
- Market growth by value and number of contract actions
- Median and average value of contract actions
- Number of contractors
- Market share trends of small, medium, large companies
- Top 20 contractors (1995 and 2005 compared)

Figure 9.1. Growth of the Federal FRS Market, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

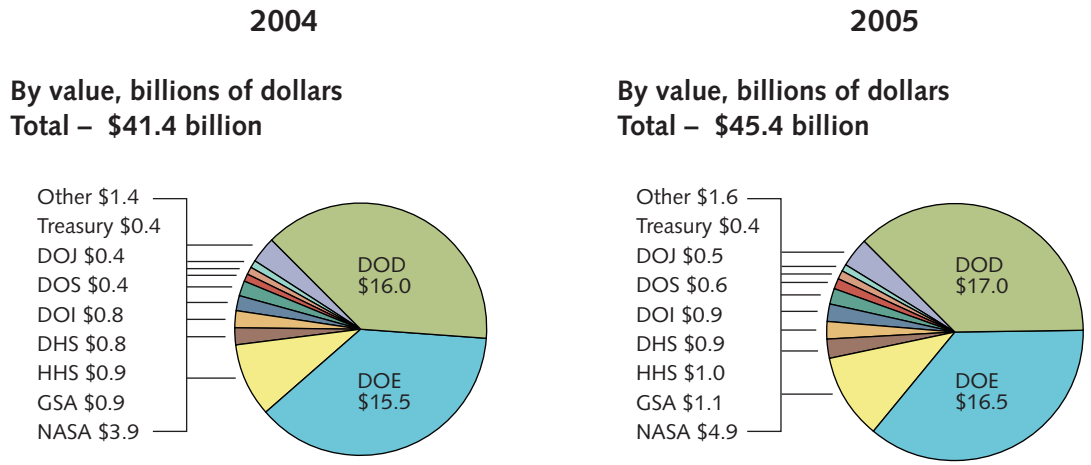
FRS Market Growth — Figure 9.1

The facilities-related services (FRS) segment has been a relatively large—$45.4 billion in contract actions in 2005—but slowly growing market. During the past 11 years, the FRS market has expanded at a mere 4 percent compound annual growth rate (CAGR). In 2005, however, the market jumped almost 10 percent. The number of contract actions awarded has grown by 167 percent, from 83,500 in 1995 to 223,191 in 2005.

Key FRS Customers — Figure 9.2

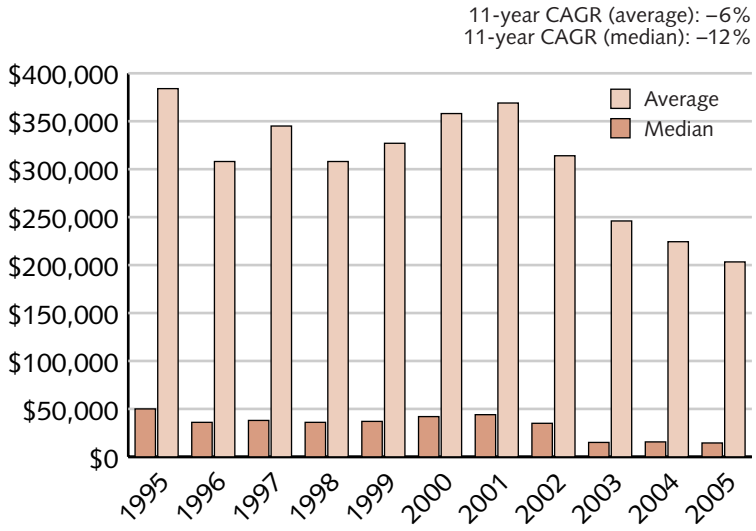
The Department of Defense and the Department of Energy are the two large customers in this segment. The $17 billion worth of contract actions awarded by DOD and the $16.5 billion awarded by DOE account for more than 74 percent of all federal expenditures on facilities-related services. The DOE market is driven by large contracts to manage DOE nuclear facilities and other research facilities.

Figure 9.2. Federal FRS Market, by Customer, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 9.3. Average and Median Values of Federal FRS Contract Actions, 1995–2005

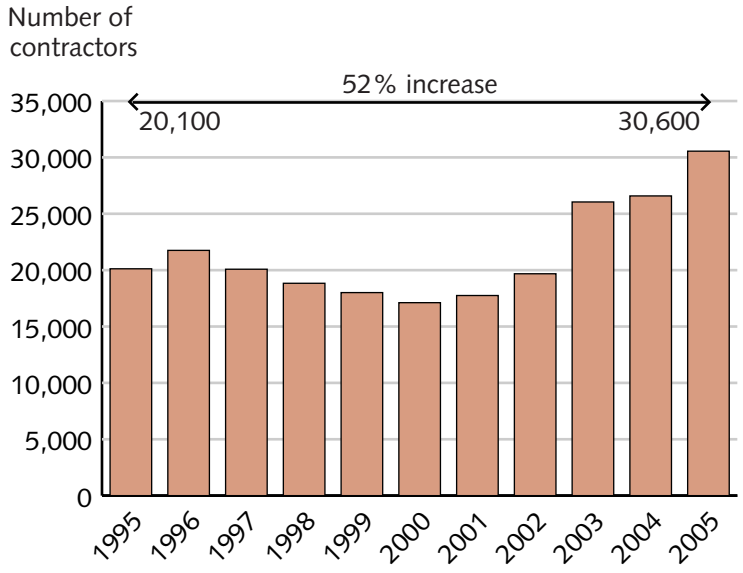


Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of FRS Contract Action Sizes — Figure 9.3

The average and median values for contract actions in FRS have fluctuated greatly during the 1995–2005 period. The downtrend in size of average and median contract actions since 2001 leveled off in 2005 to $203,000 per average contract action and $15,000 per median contract action.

Figure 9.4. Number of Federal FRS Contractors, 1995–2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Evolution of the FRS Contractor Base — Figure 9.4

Of the five professional services categories analyzed in this report, the FRS segment has shown the least change in the number of competitors for contracts. This segment actually saw a decline in contractors at the end of the 1990s. The ranks of the FRS segment were replenished only after 2001, with significant jumps occurring in 2003 and 2005.

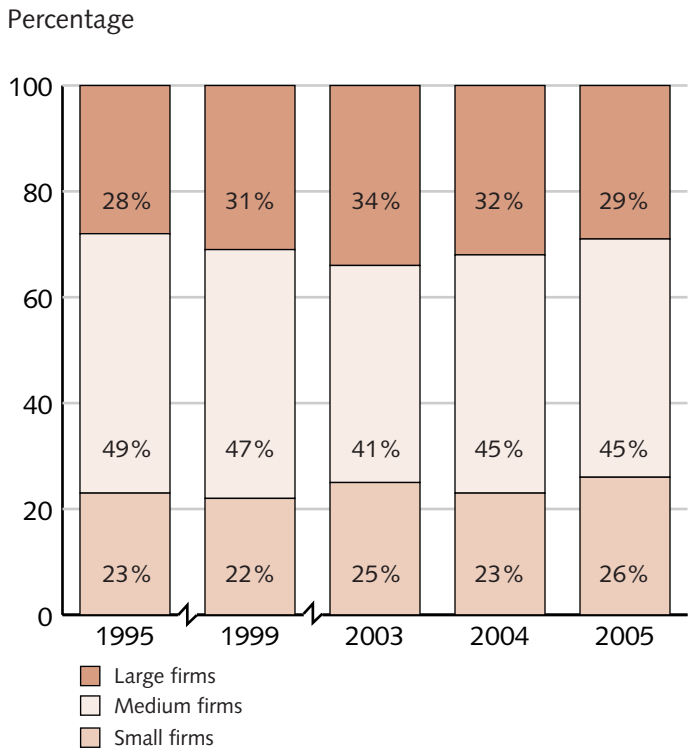
Evolution of FRS Contractors' Market Shares — Figure 9.5

The FRS segment is one of the most fragmented sectors in the federal professional services market. Small companies have increased their share from 23 percent in 1995 to 26 percent in 2005, while the large firms have modestly increased their presence from 28 percent of the market in 1995 to 29 percent in 2005. The middle tier was squeezed from 49 percent to 45 percent during same period.

Breakdown According to Size of FRS Contractors — Figure 9.6

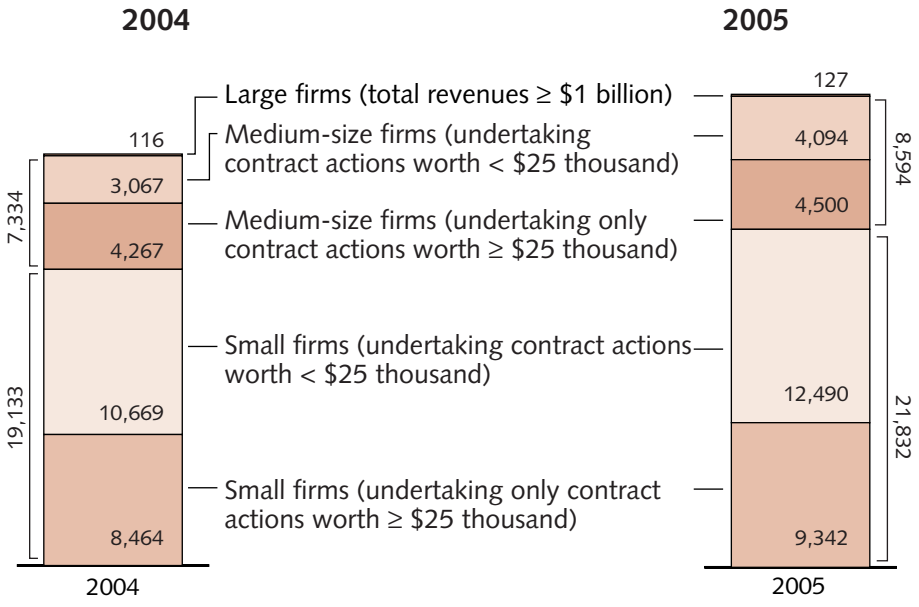
The numbers of large, medium, and small firms all increased by 9.5, 17, and 14 percent respectively. Medium-sized company growth was small relative to other categories of professional services, but the growth in medium-sized companies undertaking large (worth $25,000 or more) contract actions was not trivial (5.5 percent). The story was different for small companies, where the growth in firms doing only small contracts (worth less than $25,000) was relatively low at 17 percent (half the rate of growth for the industry as a whole). At the same time, the growth in small companies taking large contracts was a relatively robust 10 percent.

Figure 9.5. Distribution, by Value of Contracts, of Federal FRS Market to Small, Medium, and Large Firms, 1995, 1999, 2003, 2004, and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Figure 9.6. Number of Small, Medium, and Large Firms in the Federal FRS Market, 2004 and 2005



Source: Federal Procurement Data System; analysis by CSIS Defense Industrial Initiatives Group.

Table 9.1. Percentage of FRS Contractors Participating in Other Professional Services Categories, 1995 and 2005

1995				2005			
ICT	PAMS	R&D	ERS	ICT	PAMS	R&D	ERS
1	4	1	3	3	10	4	9

Cross-Category Participation by FRS Contractors — Table 9.1

Compared with competitors in other segments, companies in the FRS market are the least active in other federal services categories. But from a modest base, the FRS firms have been expanding their participation in other segments. The biggest increase has occurred in the professional, administrative, and management support (PAMS) and equipment related services (ERS) segments, with 10 and 9 percent of FRS companies now taking on these contracts.

Top 20 FRS Contractors — Table 9.2

The major engineering firms have become important participants in this market during the past decade. The share of the top contractors, however, has grown from 22 percent of the market controlled by the Top 5 in 1995 to in 26.5 in 2005.

Table 9.2. Top 20 Federal FRS Contractors, 1995 and 2005

	1995		2005	
Rank	Company	Value of contract actions ($)	Company	Value of contract actions ($)
1	Westinghouse	2,865,366,000	Sandia Corporation	2,291,554,411
2	Lockheed Martin	2,519,757,000	Westinghouse	1,483,280,296
3	Sandia Corporation	1,159,706,000	Bechtel	1,327,881,926
4	TRW	261,267,000	BWXT	1,289,168,848
5	Bechtel	200,240,000	Fluor Enterprises	856,435,185
Subtotal for Top 5		7,006,336,000		7,248,320,667
6	Raytheon	195,087,000	CH2M Hill	767,429,952
7	General Electric	190,423,000	Kaiser Hill	647,906,989
8	DynCorp	169,487,000	Battelle	640,488,848
9	Fluor	169,017,000	Honeywell	562,227,443
10	Loral	147,931,000	KAPL	391,168,207
11	Vinnell	132,119,000	Halliburton	281,168,037
12	CSC	127,670,000	Raytheon	255,312,827
15	SAIC	98,921,000	Johnson Controls	252,881,042
14	Wackenhut	83,608,000	Northrop Grumman	222,136,783
15	Tokyo Electric Power	78,228,000	Wackenhut	209,244,579
16	Northrop Grumman	56,757,000	CSC	203,381,166
17	Johnson Control	49,098,000	VT Griffin Services	93,758,802
18	Korea Electric Power	39,920,000	Dyncorp	88,680,184
19	Pacific Gas & Electric	38,270,000	ResCare Inc.	88,538,114
20	Res-care	36,551,000	Lockheed Martin	78,282,454
Total for Top 20		8,619,423,000		12,030,926,093

Source: Federal Procurement Data System; analysis by CSIS Defense-Industrial Initiatives Group.

Invigorating Defense Governance

A Beyond Goldwater-Nichols Phase 4 Report

Author
Kathleen H. Hicks

March 2008

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CONTENTS

Acknowledgments v

Executive Summary vi

Introduction xi

1. Defense Governance Today 1

2. Creating a Decision-Execution-Assessment System 7

3. Improving Strategic Direction 13

4. Furthering Capabilities-Based Approaches 29

5. Creating an Accountable Execution System 39

6. Sustaining Good Governance—The Director for Strategy, Execution, and Assessment 42

7. Advocacy for Future Joint Force Development 47

8. Improving Force Development Processes 57

Appendix A. BG-N 4 Governance Working Group Members 65

Appendix B. BG-N 4 Governance Senior Review Group Participants 66

Appendix C. Notable Defense Reform Efforts, 1947–2007 67

Appendix D. Summary of BG-N 4 Governance Recommendations 69

About the Author 73

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The author thanks the members of the *Invigorating Defense Governance* working group. These experts, drawn from the public and private sector, assisted in the project's yearlong development process by attending working group meetings, facilitating interviews with current and former mid-level and senior officials, providing feedback on the study's seven interim briefings, and editing the final report. Working group members are listed in appendix A of this report.

In the final phase of this study, the BG-N 4 study team twice turned to prominent groups of former senior defense officials to review its recommendations. Senior Review Group participants are listed in Appendix B. The author is grateful for the time these busy leaders took to offer their wealth of knowledge about and experience in governing the Defense Department. Of particular note, the author wishes to thank Dr. John Hamre for his oversight of these discussions and his personal investment of time and insights throughout the course of the project.

Participants in the *Invigorating Defense Governance* working group or senior review groups do not necessarily endorse the study's findings and recommendations, which are the author's alone.

Finally, the author owes a debt of gratitude to the many individuals interviewed for this report. From combatant commanders and senior officials in the Office of the Secretary of Defense and the Joint Staff to the uniformed and civilian workers toiling in the sometimes infertile vineyards of these institutions and on Capitol Hill, they spoke remarkably candidly about the state of defense governance today and a universal desire to get reform right. This report is dedicated to them.

EXECUTIVE SUMMARY

This Phase 4 report is the final installment in the Beyond Goldwater-Nichols (BG-N) project assessment of defense reform. It takes a strategic view of defense governance, focusing on the future efforts of the next secretary of defense and the secretary's senior-most aides to fulfill priority objectives. With so many prior reform efforts upon which to build, the BG-N study team sought to identify the key problems inhibiting effective performance in the Department of Defense (DOD) and the barriers to reform that prevented earlier proposals from taking root. It concluded that many proposed changes have faltered because they failed to account for and find ways to alter the likely behavior of individuals and organizations. As Goldwater-Nichols taught, the ability to affect incentive structures is the most indispensable ingredient of any successful reform. Attempts to simply rework organizational wiring diagrams or create new and seemingly more nimble processes will fail unless they are buttressed by changes in the underlying incentives that motivate individual and organizational actions.

Major Challenges to Defense Governance

Beginning with the same problem-centric approach that characterized prior BG-N studies, this Phase 4 effort focuses on overcoming the key leadership and governance obstacles to fulfilling an administration's defense agenda:

- A complex web of interactions comprises DOD's governance and management processes, which are difficult for a secretary to understand and control. Within this system, the senior leadership's decision points are many, but they are often disconnected.
- Key stakeholders are underrepresented in governance processes and forums. This is especially problematic for the department's self-proclaimed internal customer, the joint warfighter, represented today by the Joint Staff and the combatant commands. It is also true for congressional and civilian U.S. government and international partners, all of whom are critical to achieving DOD's goals.
- There is little accountability built into the DOD governance system, which establishes neither clear incentives for positive performance nor discipline for poor performance, and the system provides no systematic tracking of either.
- Feedback across the various governance and management processes is limited at every level.
- DOD's outdated governance processes and analytic tools are linear, plodding, and iterative, too often focused on making change at the margin rather than enabling substantial trade-offs.

A Defense Governance Framework

A secretary of defense cannot hope to solve all of the governance problems afflicting the vast defense enterprise, nor should that be his focus. Rather, he and his team need to create a simple,

compelling framework for advancing the administration's highest priorities.[1]

- This governance approach should facilitate senior leadership's readiness to decide, which includes its ability to make informed decisions on the right issues.
- The process must ensure that, once decisions are made, DOD components execute them.
- Effective governance requires a systematic means to assess both decisions and their execution.

Decision, execution, and assessment often overlap and occur at multiple levels. Most issues can and should be addressed by empowered and accountable principals throughout the enterprise. For the secretary's highest priorities, however, he will want to more directly oversee the drive to demonstrate results. A secretary of defense can certainly create an informal decision-execution-assessment framework through sheer leadership prowess, holding principals and organizations accountable for achieving his goals and disciplining failure through shifting budget share and other tools already at his disposal. Yet leadership unsupported by grounded governance processes and weak governance institutions is unlikely to succeed for long. Good governance will only become part of the department's institutional culture when the various expertise, processes, and tools central to its execution are staffed and resourced appropriately. Accordingly, the following sections briefly delineate several proposed areas for key supporting reforms.

Improving Strategic Direction

DOD's current strategic direction processes fail to align desired ends with the ways and means needed to achieve them. This seems to be caused in part by an overemphasis on articulating ends at the expense of adequately defining the requisite ways and means of achieving them. The BG-N study team recommends that the secretary of defense establish a routine governance tempo, or rhythm, that makes use of some unchangeable elements of the American political landscape, namely quadrennial presidential elections and annual federal budgeting. Leveraging this reality requires thinking of strategic direction in quadrennial, annual, and supporting quarterly increments.

- **Quadrennial.** The Quadrennial Defense Review (QDR) is a statutory requirement that Congress will not eliminate in the foreseeable future. Congress should nevertheless better leverage the QDR to create a broad and competitive debate about defense priorities. The secretary of defense should use the QDR to create and articulate his four-year defense agenda. In so doing, he must ensure that the QDR creates more value for him—focusing on his key priorities—than it costs in invested staff and governance time. To be most useful, the QDR should be nested within a broader Quadrennial National Security Review conducted under the president's guidance. The next QDR should also be prefaced by a set of competitive, independent analyses of the strategic environment and its implications for U.S. defense policy.
- **Annual.** A renaissance in joint capability portfolio analysis and an emphasis on detailed, execution-oriented guidance form the heart of the BG-N study team's recommendations for improving annual strategic direction. Fundamentally, the current approach to routine strategy development must be reversed. Whereas today DOD first develops its broad statements of strategic direction, such as the *National Defense Strategy* and *National Military Strategy*, and subsequently derives its detailed guidance from these, it should instead focus its energy on

1. This report uses the masculine pronoun for the major DOD institutional actors purely for convenience, not as an expression of support for current practice. The BG-N study team believes that opportunities for women in DOD should be expanded and expects that more women will be appointed or promoted to the most senior levels as part of that process.

developing a full and frank description of strategy-connecting ends, ways, and means—with its eye toward execution. The broad strategic statements can then be published as the public distillation of these more thoughtful strategic road maps.

- **Quarterly.** An unused strategy is an irrelevant strategy. Providing strategic guidance is the secretary of defense's core governance function. The secretary of defense should focus each quarter on the statement or confirmation of his highest priorities and on focusing his senior advisers on the execution and continual assessment of those priorities.

Furthering Capabilities-Based Approaches

Capabilities-based approaches offer tremendous promise for logically linking desired ends to ways and means. This linkage is critical not only for the secretary's ability to develop the defense program but also for his ability to persuade the White House and Congress that it is indeed the right one. DOD has made strides in improving its capabilities-based analytic capabilities, but it suffers from confusion over the meaning and implications of "capabilities-based planning." It also fails to invest in the tools and expertise necessary to actualize capabilities-based concepts.

The secretary of defense should ensure the promulgation of a uniform lexicon and framework for capabilities-based approaches, including the much discussed but underdefined "capabilities-based planning." By establishing a uniform understanding of capabilities-based approaches and improving joint analytic capabilities, the secretary of defense will strengthen his ability to withstand challenges to the defense agenda. He should also ensure the department continues on its current path of developing joint capability portfolios that facilitate senior leaders' ability to examine trade-offs within and among missions and functions. Transparent force and financial databases are a critical precursor to effective trade-off analysis.

Creating Accountability

A secretary's ability to govern through a decision, execution, and assessment system is only as powerful as his willingness to force individual and organizational accountability within that system. Without secretary-driven performance incentives, other, sometimes countervailing, incentives will prevail. The secretary must link attainment of his short list of actionable priorities to performance measures. His quarterly governance meetings should be used to assess progress on these priority goals, with consequences associated for success and failure. Performance-based compensation should be further institutionalized for defense employees, and the department's federated performance management approach should be improved.

Integrating Strategy, Execution, and Assessment

Structural changes have many drawbacks. Nevertheless, they are sometimes necessary to align incentives effectively. The linkages among elements of strategy, the execution monitoring of the secretary of defense's priorities, and the routine assessment of strategic direction are currently spread across multiple organizations that too often find themselves at odds. The BG-N study team recommends that the secretary of defense create a director for strategy, execution, and assessment (D(SEA)) to replace the director for program analysis and evaluation (D(PA&E)), situating the narrower PA&E mandate and skill set within a broader enterprise framework. The D(SEA)'s goals would be to integrate and advocate analytic and decision support for the secretary of defense. His

principal functions would include administering the QDR, drafting the secretary's overarching guidance and more detailed mid- to long-term guidance, providing agenda-setting and analytical support capabilities to the secretary in support of his quarterly governance process, overseeing the monitoring of key performance measures, and developing independent civilian expertise in capability portfolio assessment.

Advocating for the Future Joint Force

DOD's core business is creating an effective joint force. The joint force is represented in the governance process by a variety of individuals, including principals within the Office of the Secretary of Defense, the chairman and vice chairman of the Joint Chiefs of Staff, and sometimes through the direct participation of a combatant commander. Its needs are rightly assessed by force providers, who provide unique expertise across the range of doctrine, organization, training, matériel, logistics, personnel, and facilities (DOTMLPF) solutions. Yet the equilibrium between supply viewpoints and demand viewpoints still tilts too far toward the former, with force providers dominating the key governance processes. Combatant commanders need better force development expertise, access, and capacity. Further, the department's leaders need an individual or set of individuals to focus primarily on advocating for the future force, which today has no dedicated proponent. The BG-N study team recommends that the president direct the commander, U.S. Joint Forces Command to be the advocate for the future joint force, with attendant changes in his Unified Command Plan areas of responsibility, that the Congress add him as a statutory member of the needs-identifying Joint Requirements Oversight Council and that the secretary of defense insist upon his active participation in other key governance forums.

Improving Force Development

Today, the resource-intensive yet slow-performing Joint Capabilities Integration and Development System (JCIDS) is DOD's most maligned process. Although some analysts have recommended eliminating JCIDS, the BG-N study team concluded that, despite its many faults, its fundamental rationale is sound—to articulate the needs of the joint force in a manner that is clearly linked to future joint concepts. Further, at present, any alternative process would suffer from the same misalignment of incentives that currently favor the force provider community's perspectives and seriously threaten the viability of a joint process. To change this incentive structure, the BG-N study team proposes:

- Streamlining the joint operational concept (JOpsC) development process to focus on key emerging functional areas tied to the secretary's priorities;
- Strengthening the value of JCIDS and JOpsC by infusing the former with dedicated oversight from the commander, U.S. Joint Forces Command and shifting the latter completely under his direction; and
- Providing more power to a JROC better balanced across supply and demand perspectives so as to facilitate program changes based on its decisions.

The BG-N study team also recommends continuing with the Concept Decision Initiative approach to improve linkages between the OSD-led acquisition process and the Joint Staff–led JCIDS and strengthening the role of DOD's technology experts, including the director, defense research and engineering, in building the future force. Finally, the BG-N study team recommends creating

> The task of strategic leadership is . . . not to follow a given formula or set of steps. Instead it is to gather appropriate information, evaluate it thoughtfully, and make choices that provide the best chance for the company to succeed, all the while recognizing the fundamental nature of business uncertainty.
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> Phil Rosenzweig, "The Halo Effect, and Other Managerial Delusions," *The McKinsey Quarterly*, no. 1 (2007)

an incentive fund, or "wedge," for which components could compete by offering up changes to or termination of a program late in system development.

Conclusion

DOD's attributes make governing difficult. From its scale and complexity to the Title 10 supply-and-demand division between providers and customers to the dynamics of the iron triangle comprising DOD components, the defense industry, and Congress, DOD is a unique organization in the U.S. government and in American society. Changes in culture will ultimately be needed to realize marked improvements in DOD governance. A healthy skepticism is warranted about the prospects for achieving such change.

Yet a shift in DOD culture is already under way. The next secretary of defense should leverage ongoing changes to focus the department even more on the president and the joint warfighter as its customers. He should emphasize the centrality of performance and execution to achieving his vision and encourage adaptability and innovation. He should reach for integrated, department- and government-wide solutions to complex problems and invite Congress to join a dialogue on defense priorities.

This report's recommendations are intended to help the next secretary of defense and Congress accelerate the pace of reform. Creating a secretary of defense–driven decision, execution, and assessment system that holds principals and their organizations accountable is the foundation for any other reforms attempted in DOD. Establishing a principal staff assistant, such as the proposed D(SEA), to help the system function will improve the system's chances for enduring. Effective use of capabilities-based approaches, including JCIDS and capability portfolio assessment, will better link ends to ways and means and improve the defense program's transparency and rationality. Finally, creating a dedicated advocate or set of advocates for the future joint force will begin to bring supply and demand into needed equilibrium. For Congress's part, there must be urgency to the confirmation of key national security decisionmakers if defense reform, especially in the area of strategic direction, is to succeed.

As this simple tool kit demonstrates, the keys to effective governance will ultimately not be found in a proscribed set of institutionalized processes, but in the ability of the secretary of defense and his principal civilian and military advisers, working closely with Congress, to make good and timely decisions and ensure their nimble execution.

INTRODUCTION

The U.S. Department of Defense (DOD) is one of the world's largest organizations. In addition to the 23,000 employees at its headquarters in the Pentagon, DOD employs some 2 million active duty military and civilian men and women at more than 6,000 facilities around the world.[1] The Department of Defense's enormous $471 billion budget reflects the vastness of the military enterprise.[2] DOD's effectiveness, in turn, is measured in U.S. military capability, which is unparalleled not only in the current times but throughout recorded history.

Given DOD's size and scope, it is unsurprising that numerous studies during the past decade have focused on its management and governance reforms. The Government Accountability Office alone has produced 90 reports on DOD management- and governance-related issues since 1997.[3] By comparison, over the same period, the GAO has produced only 11 reports on State Department management.[4] Among the goals DOD reform proposals cite are protecting the lives of U.S. service personnel, improving the capabilities provided to the joint warfighting community, promoting broad national security objectives, and providing a better return on U.S. taxpayers' enormous financial commitment.

From its inception, the CSIS Beyond Goldwater-Nichols (BG-N) project has championed targeted defense reform. In its Phase 1 report, the BG-N study team called for rationalized headquarters structures, a joint approach to command and control, better defense resource allocation, a strengthened civilian national security cadre, improved interagency and coalition approaches, and better congressional oversight of the defense establishment.[5] The Phase 2 report built on this strong analytic foundation. In addition to its interagency reform recommendations, the report emphasized the need for better joint capabilities requirements and defense acquisition processes, improvements to logistics support and the management of defense agencies, updates to the military officer management system, and modernized professional military education.[6] In 2006, CSIS issued its BG-N Phase 3 report. The report assessed several influential DOD and independent studies relating to defense acquisition and the department's planning, programming, budgeting,

1. This figure for total personnel does not include U.S. National Guard and Reserve, which constituted an additional 1.1 million people as of September 2007; see http://www.defenselink.mil/pubs/dod101/index.html.

2. Department of Defense Appropriations Act, 2008, Public Law 110-116. This figure does not include emergency supplemental appropriations.

3. The number of Defense Department reports includes all GAO reports for the period 1997–2007 in the following categories: financial management, defense headquarters, defense management, Quadrennial Defense Review, and defense plans.

4. The number of State Department reports includes all GAO reports for the period 1997–2007 in the following categories: major management challenges, program risks, and financial management. The most recent relevant GAO report for the State Department was in 2003.

5. Clark A. Murdock et al., *Beyond Goldwater-Nichols: Defense Reform for a New Strategic Era: Phase 1 Report* (Washington, D.C.: CSIS, March 2004).

6. Clark A. Murdock and Michèle A. Flournoy, *Beyond Goldwater-Nichols: U.S. Government and Defense Reform for a New Strategic Era, Phase 2 Report* (Washington, D.C.: CSIS, July 2005).

and execution (PPBE) system but withheld recommendations on these issues pending the fourth phase of the Beyond Goldwater-Nichols effort.

This Phase 4 report is the final installment in the Beyond Goldwater-Nichols project's assessment of defense reform. It takes a strategic view of defense governance, focusing on the efforts of the next secretary of defense and his senior-most aides to fulfill priority objectives. With so many prior reform efforts to build on, the BG-N study team sought to identify the key problems inhibiting effective performance in DOD and the barriers to reform that prevented earlier proposals from taking root. During nine months of research, the team interviewed current and former DOD officials (from the military departments, combatant commands, Joint Staff, and the Office of the Secretary of Defense), congressional staff, and independent experts; assessed prior reform proposals and the potential applicability of corporate governance and organizational reform literature; and regularly consulted a working group made up of expert stakeholders. The study team further refined its recommendations in consultation with numerous senior reviewers.[7]

Based on its research, the BG-N study team adopted the following "golden rule" to guide its proposals:

> Senior leaders in any organization are generally predisposed toward reforms that are simple to understand and implement, inexpensive, reduce personnel, do not require new organizations or layers, and do not require new authorities or legislative action. Wherever possible, the BG-N study team sought to achieve its objectives in line with leaders' predispositions in order to strengthen the chances for implementation and eventual institutionalization. Yet, some of the most successful reforms, such as the 1986 Goldwater-Nichols Act, defy leaders' predispositions. Where more radical change is needed, reformers must understand and accept that true organizational adaptation requires strong executive or legislative leadership, or both, as well as changes in underlying organizational incentives.

Building on this golden rule, the BG-N study team adhered to the bedrock principles delineated in the Phase 1 and 2 reports, as well as to additional guiding principles identified during the course of the Phase 4 effort:

- **Civilian control of the military is a paramount value.** As the president's representative, the secretary of defense should have appropriate tools and mechanisms to exercise authority and control over the defense establishment and U.S. military forces.
- **Unity of effort is necessary.** Jointness—the ability to plan, organize, and operate as a cohesive whole—should be improved and extended as a means to achieve superior military, interagency, and coalition outcomes.
- **The institutional vitality of the military departments should be maintained.** Success in joint operations depends on strong, innovative, and independent military departments that can propose competing solutions and complementary ingredients for joint, interagency, and coalition problems.
- **DOD should continue to man, train, and equip along component lines.** The military departments should retain their fundamental man, train, and equip functions, as provided for in Title 10 of the U.S. Code. Significant changes are needed in how the executive and legislative branches assess and prioritize capabilities, which this report will address. Nevertheless, once key programming decisions are made, the military departments, defense agencies, and other

7. Members of the BG-N 4 Governance Working Group are listed in appendix A; participants in the BG-N 4 Governance Senior Review Group are listed in appendix B.

empowered providers are generally best prepared to execute those decisions.

- **The strength of the American political system should be sustained.** Divided government may create inefficiencies, but it should be fully embraced as the defining element of the U.S. Constitution's tenet of checks and balances. Good governance must ensure effective congressional oversight of the Department of Defense, which requires improvements in both the executive and legislative branches.
- **Facilitating action is preferable to incentivizing inaction.** Cultures and processes that resist change or take too cautious an approach to change will significantly impede reform. The rapid evolution of the security environment requires nimble adaptation by our security apparatus.
- **Any individual or organization given new roles or responsibilities should have the ability to execute them.** Too often, reforms change organizational wiring diagrams without commensurate adjustments in resources and authorities. This creates a particularly hostile environment for new or adapted organizations, significantly decreasing their chances of success.
- **Competition of ideas is critical to effective decisionmaking, but it should be structured and managed.** A successful governance process must create an environment that balances independent and innovative thought with incentives for clarity and decisiveness.
- **Large staff size is a poor metric for success.** Efficient operations should be rewarded. Those organizations that get the most done with the least staff should be considered the most reliable agents for new missions. Conversely, organizations performing poorly despite a substantial dedication of human resources should not be targeted for new missions.
- **Organizations, processes, and authorities should facilitate the actions of effective leaders while mitigating the potential damage of ineffective ones.** Individuals and their relationships are critical factors in the success of any organization. The right mix of personalities can tremendously advance good governance; poor leadership can doom even the most rational system. A good governance process should align organizational incentives in such a way as to assist good leaders in achieving success and minimize poor leaders' ability to undermine it.
- **Changes in behavior require changes in underlying incentives and organizational culture.** Organizations are highly unlikely to change their behavior simply because they have been di-

> Studies are simply too prone to advance far-reaching proposals while remaining insensitive to possible sources of support and opposition in the bureaucracy, White House, Congress, and public. If they are to influence the shape of public institutions such as the Department of Defense, organization studies and other literature of this genre must advance reorganization proposals developed with an informed appreciation of the likely boundaries of the politically possible.
>
> Archie Barrett
> Key contributor to the
> 1986 Goldwater-Nichols Act

rected to do so. Generally, they and the people who populate them are at some level utilitarian: their performance and culture directly reflect the incentive structure within which they operate. The 1986 Goldwater-Nichols Act's requirement that all general and flag officers have prior joint duty service is a model for the power of incentives in behavior modification.

Too often, reform efforts fail to abide by this last principle. Many proposed changes have faltered because they neither take account of reality nor create a new reality that leaders can embrace. The most important ingredient of successful reform is its influence on incentive structures. Proposed changes must either work within the existing incentive structure or propose a new one to replace it.

The menu of defense governance problems is extensive. The BG-N 4 study team focused its work by using prior treatment of issues in the Beyond Goldwater-Nichols project as a determinant for issue inclusion. It did not reevaluate standing BG-N recommendations except in those exceptional cases where it deemed such revision to be warranted. In cases where prior BG-N study teams had identified issues for future inquiry, the BG-N 4 team incorporated such issues into the problem set.

In addition, the BG-N study team applied an initial cost-benefit analysis, weighing the likely benefits to be reaped by overcoming a particular inefficiency or barrier in DOD's governance enterprise to determine whether the issue was worthy of attention. It then assessed stakeholders' openness to change in that particular issue area and the anticipated resource requirements to implement change, in terms of time, personnel, and financial resources. Where payoff for change was potentially high, either because an issue was of overriding importance or because barriers to reform initially appeared low, the problem area was included within the scope of study.

The remainder of this report addresses each major issue area in turn. Chapter 1 provides background on defense governance today. Chapter 2 provides an overarching framework for DOD governance. Chapter 3 focuses on improving strategic direction. Chapter 4 focuses on the difficult task of improving long-term DOD capabilities development. Chapter 5 assesses ways to create an accountable execution system. Chapter 6 articulates ways to sustain good governance. Chapter 7 focuses on advocacy for future joint force development. Finally, chapter 8 articulates ways to improve force development processes.

1 DEFENSE GOVERNANCE TODAY

Defining Governance

Governance is the structure and relationships among key stakeholders that determine an organization's direction and performance. The Department of Defense is host to a complex web of interactions, the management of which directly affects the secretary of defense's success. The secretary of defense's relationship with the chairman of the Joint Chiefs of Staff, and that of their respective staffs, is one such set of associations. Two others are the secretary's links to the unified and combatant commands and the military services. The secretary's key internal customer is the joint warfighter, embodied today by the regional combatant commanders. The joint warfighter is responsible for executing all military missions assigned to the Department of Defense.

To govern DOD effectively, the secretary must also cultivate relationships with stakeholders outside the department. The president is the secretary of defense's primary external customer. The secretary must ensure that he is advancing the president's defense agenda including through close interaction between his staff and the president's staff, the National Security Council staff, and the Homeland Security Council staff. The secretary of defense must also manage his relationship with interagency counterparts, most notably the secretary of state and the secretary of homeland security. These interagency partners rely on DOD expertise and assets to achieve their goals, just as the secretary of defense relies on their expertise and assets to manage roles and missions for the military. Congress is a crucial stakeholder and potential partner for the secretary. Without support on Capitol Hill, the secretary cannot advance the administration's defense agenda. Finally, the secretary of defense must attend to relationships outside the U.S. government. This includes an ever-increasing array of actors, including foreign allies, coalition partners, nongovernmental organizations, multinational defense organizations, and the United Nations.

Objectively, DOD's governance can be judged against two basic questions:

- Did the secretary of defense, the department's chief executive officer, achieve his key goals in the expected time frame?
- Are the joint warfighter and the president of the United States satisfied with the value they are receiving?[1]

Yet, the secretary of defense is not afforded the luxury of a solely objective reality. Societal and political lenses are applied to the secretary's performance as well. These more subjective measures can be reduced to:

- The perception of having set and made substantial progress on an effective defense agenda;
- The perception of having advanced positive civil-military relations; and
- Having overseen successful military operations.

1. Department of Defense, *Quadrennial Defense Review Report*, February 6, 2006, p. 1, defines this as a key goal.

This second set of metrics may not always be fair, but they are real nevertheless. At a minimum, an effective governance process should facilitate the secretary's ability to succeed with regard to objective criteria. Optimally, a robust governance framework will also advance the secretary's prowess along subjective measures.

In its 2006 *Quadrennial Defense Review Report,* DOD noted two additional levels of activity below governance: management and work. These three levels of activity—governance, management, and work—translate easily to a defense context where they accord well with military levels of operation—strategic, operational, and tactical. The BG-N study team thus adopted this three-tiered view of enterprise activity while noting that, as in levels of operations, lines often blur and multiple gradations within each level are common.[2]

DOD's Current System of Governance

Today, the Department of Defense's senior leadership uses several major forums and processes to govern. Governance forums change routinely. Figure 1.1 depicts the major governance forums and their relationship to one another as they existed in mid-2007. The secretary of defense holds a quarterly Defense Senior Leaders' Conference (DSLC), including the deputy secretary of defense, chairman and vice chairman of the Joint Chiefs of Staff, ten combatant commanders, four service chiefs, and five under secretaries of defense, along with a handful of other key advisers. The DSLC has met quarterly for the past few years, but current plans are to reduce its frequency to twice each year. Agenda setting for the DSLC is primarily managed by the Office of the Under Secretary of Defense for Policy and the Joint Staff.[3] Former secretary of defense Donald Rumsfeld originally convinced the DSLC, and its predecessor Strategic Planning Council, to supplement his primary governing forum, the Senior Leader Review Group (SLRG).[4] That more frequent meeting venue included the same set of actors as the Defense Senior Leaders' Conference with the notable exclusion of the combatant commanders. The SLRG seldom met during 2007 and may be defunct for the remaining tenure of this administration. Nevertheless, many secretaries of defense have convened groups with similar composition to help steer the Department.

Much of the department's formal governance activity occurs below the senior principals level. The BG-N study team refers to this secondary layer of governance as "Tier 2" to distinguish it from the secretary's own "Tier 1" layer. The current locus of enterprise-wide oversight occurs in Tier 2 through the Deputy's Advisory Working Group (DAWG); this is chaired by the deputy secretary of defense and nominally co-chaired by the vice chairman of the Joint Chiefs of Staff. The DAWG includes the service vice chiefs; the under secretaries of defense; the deputy commander, U.S. Special Operations Command; the director, Program Analysis and Evaluation; and a few other Office of the Secretary of Defense (OSD) staff. Deputy Secretary Gordon England established the DAWG at the conclusion of the 2005 Quadrennial Defense Review (QDR), during

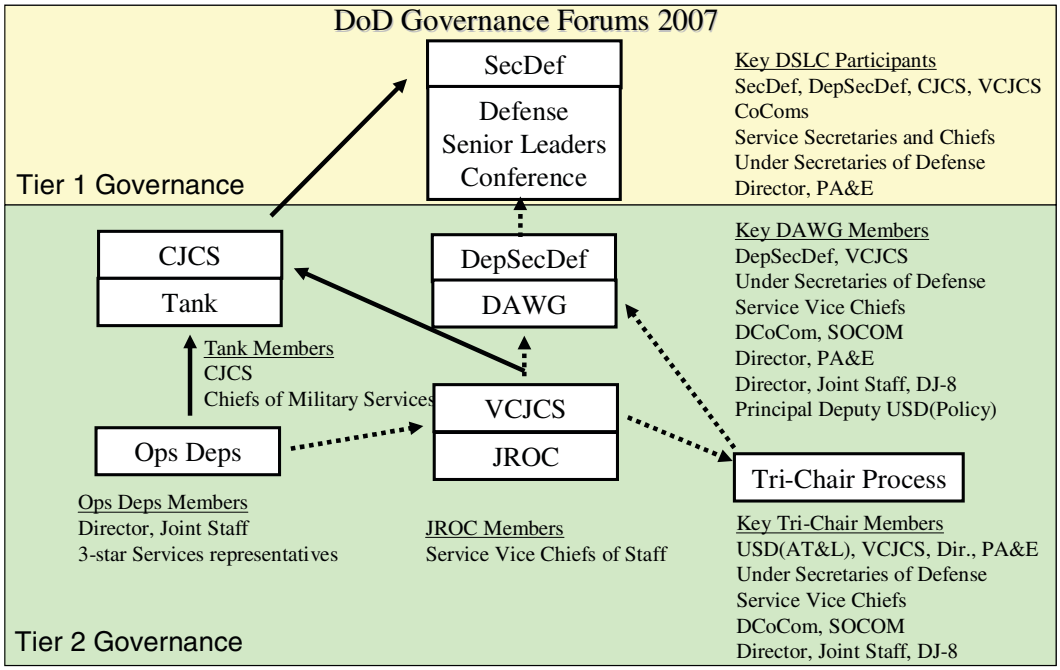
2. For a brief description of the distinctions among governance, management, and work, see the 2006 *Quadrennial Defense Review Report,* p. 65.

3. The DSLC is held in conjunction with the chairman-led combatant commanders' conference.

4. The SLRG was actually former secretary Rumsfeld's second effort to establish a governance forum. His first, the Senior Executive Council, comprised the service secretaries, comptroller, chairman, and vice chairman, and the under secretary of defense for acquisition, technology, and logistics.

The Strategic Planning Council was created based on a recommendation from former under secretary of defense Pete Aldridge, whom Rumsfeld asked to make recommendations for defense reform. For the full set of Aldridge's recommendations, see Joint Defense Capabilities Study Team, *Joint Defense Capabilities Study: Improving DOD Strategic Planning, Resourcing, and Execution to Satisfy Joint Capabilities*, Final Report, Department of Defense, January 2004. The BG-N Phase 1 Report addressed in detail both the Aldridge group's recommendations and DOD's early implementation efforts.

Figure 1.1. DOD Governance Forums, circa 2007



Note: Dashed lines indicate informal relationships among forums. Solid lines denote formal chains of command.

which he had used a similar body, the so-called Group of 12, to steer the department's effort. Previous deputy secretaries of defense have used a group much like the DAWG to assist in overseeing DOD's key resource and business process issues.[5]

Multiple second-tier governance processes feed into the DAWG. The most prominent are program and budget, defense acquisition, and force development. Each of these systems has its own governance and management processes and leads. From 2005 to 2007, former under secretary of defense for acquisition, technology, and logistics Ken Krieg spearheaded a substantial effort to integrate these three processes. Along with the vice chairman of the Joint Chiefs of Staff and the director, program analysis and evaluation, Krieg led a "Tri-chair" forum as part of a "Concept Decision Initiative." It consisted of a group almost identical in composition to the DAWG. As the defense acquisition executive, the under secretary for acquisition, technology, and logistics has the authority to make acquisition decisions that are not technically subject to the deputy secretary's review. The Tri-chair process at once reasserted this distinction while securing appropriate coordination with the deputy's agenda and the other processes of the department. Since key 2007 changes in civilian and military leadership took place in the summer of 2007, the Tri-chair process has yet to convene. At the working level, efforts to integrate requirements, acquisition, and programming continue under the auspices of the Tri-chair process. As of January 2008, it is unclear whether the Tri-chair process will be maintained or if some other formal or informal coordination processes may take its place.

With the exception of some issue-by-issue attention in the DSLC and an increasing though still limited focus in the DAWG, defense strategy and national security policy is largely decided

5. The Defense Resources Board was one such DAWG predecessor.

outside of the formal governance processes. The under secretary of defense for policy, or USD(P), under whose purview these matters reside, is an invitee to both the DSLC and the DAWG. Nevertheless, the normal method of discourse for these issues is for the under secretary and a smaller set of advisers to work them directly with the secretary and deputy secretary of defense.

Challenges to Effective DOD Governance

Over the past two years, the Department of Defense, and the deputy secretary of defense in particular, has worked hard to improve DOD governance. The 2006 *Quadrennial Defense Review Report* highlighted the issue, noting, "as we emphasize agility, flexibility, responsiveness, and effectiveness in the operational forces, so too must the department's organizations, processes and practices embody these characteristics if they are to support the joint warfighter and the Commander in Chief."[6] Yet many significant governance problems remain.

There is no single, common vision of governance in DOD. The most unifying governance process within DOD is the Planning, Programming, Budgeting, and Execution (PPBE) System.[7] Forty years after its creation, PPBE remains DOD's best system for articulating desired ends and developing a near and mid-term resourcing strategy to meet these ends. The PPBE system has nevertheless withered significantly over the past decade, a topic addressed in greater depth in chapter 3. Further, PPBE cannot possibly capture the breadth of activity critical to good governance. A member of the BG-N study team liked to quip, "If it ain't in the POM (Program Objective Memorandum), it ain't." In times of relative peace, resourcing is usually seen as the most important decision execution indicator. It is not the only one, however. Operational success, efficient use of taxpayer investment, and geopolitical advances are other performance measures that are not well captured in today's PPBE system.

A related problem is the paralyzing complexity of Department of Defense processes. There are numerous systems of direction and oversight, and a variety of forums to guide the department's activities. Senior leaders have many opportunities for visibility and decisionmaking, but their guidance is not well orchestrated across key issue sets, including strategy development, force management, force development, and business processes. When multiple guidance documents produced by these competing systems conflict, customers, capability providers, and other stakeholders inside and outside the department are left to determine which are binding and which can be ignored. As should be expected, components often take advantage of Balkanized guidance, interpreting it as favorably as possible for their own interests.

Compounding the complex and stovepiped nature of DOD enterprise governance is the paucity of feedback and assessment mechanisms. Even if the secretary of defense had an ideal decisionmaking process, he would still suffer from the department's currently limited ability and appetite to track the most important decisions through execution and then systematically evaluate them in order to adjust policy and activity where needed.

Where success is achieved in the department's current governance system, it is typically due to good relations among key individuals. In recent years, the Department of Defense has touted the strong relationships that exist among the civilian and military members of the secretary's team. Positive relationships are critical for the success of any governance system, but they cannot sustain themselves in the midst of a stifling incentive structure. As the rise and potential fall of the Trichair concept demonstrates, when personalities change, so often do processes. Moreover, good

6. Department of Defense, *Quadrennial Defense Review Report,* 2006, p. 73.

7. PPBE was originally christened the Planning, Programming, and Budgeting System (PPBS). In 2002, its name was changed in an attempt to emphasize the importance of effectively executing the budget.

relations at the top do not guarantee cooperative working relationships across the organization. Absent longer-term incentives to instill a culture of transparency and collaboration, positive working relationships across competing interests tend to wither.

The twentieth century data management, process, and analysis tool set with which DOD governs is a further hindrance to its effectiveness. Many of the systems and processes have not adapted in line with organizational theory and information technology advances. Analytic models and other tools are often cumbersome and input intensive. Major processes, such as PPBE, are excruciatingly slow and iterative. Moreover, systems and processes lack commonality. Each service and other major DOD component has its own system for storing and displaying data about forces, resources, and personnel. Often, the secretary's staff is unable to assess across these databases—or must invest heavily to do so. The lack of a single, common analytic or financial database significantly impedes the decisionmaking capability of the secretary and his team.

In short, DOD suffers from significant integration problems. Integration needs are both horizontal, tying the services and other "business units" together to focus on enterprise missions to which many contribute, and vertical, ensuring that decisions made at the top are executed and the results are then assessed. Foremost among the inhibitors to effective integration are conflicting incentive structures, which tend to drive individual components to either maximize their own share of resources or collaborate with others to settle for a least-common-denominator, logrolling payoff. Both behaviors result in suboptimal outcomes for the department as a whole.[8]

A second integration barrier is the underrepresentation of key stakeholders in the current governance system. This is particularly true of the combatant commands, among the Pentagon's self-identified customers. In interviews, representatives of these customers (in some cases the combatant commanders themselves) universally shared their frustration at being ill served in many of the Pentagon-centric governance and management forums. In addition, dysfunctional relations between DOD and the Congress, a major stakeholder, have hampered good governance of the department.

The department's inchoate processes for setting a strategic agenda and decision support also make enterprise-wide governance difficult.[9] This is true for even the best-intentioned secretary, but the situation is even more problematic in the too frequent instances where the secretary of defense fails to directly invest himself in agenda setting. Since 2005, the deputy secretary of defense has largely governed the Department of Defense. Although the deputy secretary should be applauded for ensuring that DOD at least has a governance system, by virtue of his division of labor with the secretary of defense, his view of the governance problem set is decidedly more management focused than might be provided by combatant commanders, service chiefs, and the secretary himself. As one study team member remarked, "It shouldn't be surprising that a second-tier governance process gives you second-tier governance results."

Conclusion

Today, DOD shows multiple signs of governance shortcoming. Its complex system of governance and management processes are often poorly integrated. There are few effective execution oversight,

8. Game theory illuminates how rational these behaviors are for DOD's components, given existing incentive structures. Components may choose to defect rather than cooperate, in the classic prisoner's dilemma sense, for fear of others' potential defections, thus maximizing their potential payoff. Alternatively, if they fear reprisal from other components for a defection, or maximizing strategy, they choose to cooperate in order to balance out the payoff that each can receive.

9. Some working group members and interviewees believe the agenda setting process is really in hibernation. These individuals spoke with admiration of earlier eras of defense agenda setting. The McNamara era and the late Cheney years were two time frames highlighted to the BG-N study team in this regard.

performance measurement, and feedback mechanisms for the secretary's highest-priority issues. The relationship between the department's governance agenda and the administration's key defense priorities is seldom obvious. Key stakeholders, especially Congress, civilian U.S. government partners, and the combatant commanders, have too little insight into governance forums. The Department of Defense, like any organization, needs a framework for determining its direction and measuring its performance. Creating such a framework is a secretary of defense's linchpin of success. His own performance will be judged in large part by the department's perceived progress in fulfilling the administration's defense agenda. Reforms aimed at addressing the system's current failings could significantly improve the next secretary's chances for success.

PARTNERSHIP FOR PUBLIC SERVICE

ISSUE BRIEF | BRAIN DRAIN 2008

Our federal government today faces challenges of unprecedented complexity, from combating terrorism, to competing in a global marketplace, to fixing our nation's decaying physical infrastructure, to dealing with an aging population at home. As federal agencies grapple with these and other critical issues, their most experienced workers are retiring — and the government is ill-prepared and ill-equipped to replace this talent. By 2012, federal agencies will lose nearly 530,000 employees, many of whom hold leadership and critical skills positions. This challenge is intensified for the federal government because downsizing in the 1990s reduced the size of the federal workforce by nearly 400,000 positions and left agencies with critical skills gaps. Moreover, the war for today's talent is fierce, and the federal government is at a distinct hiring disadvantage with its often slow and antiquated hiring practices.

TROUBLE ON THE HORIZON

Exodus of Talent. Throughout the next five years, about one-third of the federal government's full-time permanent workforce will leave government, the majority through retirement. While the private sector faces similar challenges, the crisis for government is more acute, because its workforce is older. The civil service has far more employees over age 45 (58 percent) than the private sector (41 percent), and the average age of a federal worker is 46 and climbing.

Given these statistics, it comes as no surprise that federal government turnover has increased. From fiscal years 2002 to 2006, annual separations of permanent full-time employees increased from 5 to 6.7 percent. During the same four-year period, the number of full-time permanent employees who voluntarily retired increased by almost 50 percent, from about 30,300 annually to more than 45,000.

Loss of Key Employees. While the numbers alone are alarming, the impact on government effectiveness will be compounded by the concentration of turnover in high-level and supervisory positions, and for agencies with disproportionate numbers of retirees. For example:

- By 2012, 36 percent of the Senior Executive Service will retire.[i] The proportion of SESers who will be *eligible* to retire is even higher — 76 percent — meaning actual retirements could be greater than projected. In 2006, several agencies had SES turnover rates of more than 15 percent (e.g., Department of Homeland Security, Federal Trade Commission, Small Business Administration and Office of Personnel Management), meaning that these agencies are losing the civil servants charged with leading the organization.

- Twenty-seven percent of the supervisors who direct the day-to-day work of 1.6 million civil servants will retire by 2012. According to the National Academy of Public Administration, "… even a small deficiency (in federal supervision) could result in a loss of billions of dollars."

- By 2012, retirements at 23 large agencies will top 20 percent of their workforces. These include agencies that provide direct and highly-visible services to the public, such as the Federal Aviation Administration (26 percent of employees projected to leave) and the Social Security Administration (23 percent). The Department of Defense, the largest federal agency, is projected to lose 20 percent of its more than 600,000 employees through retirement. Retirement eligibility percentages in these agencies are even higher.

The brain drain will also hit specific occupations hard. For example, almost 6,300 air traffic controllers (almost one out of every three) are projected to retire by 2012. And, just as 78 million baby boomers reach retirement age, 24 percent (6,500) of Social Security Administration workers will retire by 2012. Likewise, the government is increasingly contracting more work, to the tune of more than $400 billion annually, at a time when 5,250 (19 percent) of all federal contracting officers are projected to retire by 2012.

TOP TEN AGENCIES WITH HIGHEST PERCENTAGES OF EMPLOYEES PROJECTED TO RETIRE BY 2012

Agency	Percent Retirements
Federal Aviation Administration	26%
Department of Housing and Urban Development	26%
Social Security Administration	23%
Department of Education	22%
Department of Energy	22%
National Science Foundation	22%
General Services Administration	22%
Department of the Interior	21%
Department of Labor	21%
Department of Treasury	21%

Making this challenge even more daunting is the often slow and inefficient federal hiring process, which can take a year or more. Federal employment also requires U.S. citizenship, and more than half of federal employees have college degrees (compared to about one-third of employees in the private sector). These factors further limit the pool of qualified candidates for federal jobs.

NEW APPROACHES NEEDED

There is some good news, too. Some federal agencies are focusing more on mapping their skill needs and hiring new talent. But much more work remains. The Partnership urges agencies to:

- Develop and implement workforce plans that identify and meet future talent needs, with OPM maintaining its leadership role.
- Modify recruiting strategies to attract new talent, including at the mid- and senior- levels.
- Streamline hiring processes, and make greater use of recruitment, retention, and relocation incentives, including student loan repayments.
- Also focus on retention, including taking steps to improve employee satisfaction, and strategically using workforce flexibilities to help retain experienced talent.

We also urge Congress to enact legislation to allow retired federal employees to return to government part-time and still retain their pensions.

The Bottom Line. Heading off this brain drain will require federal agencies to aggressively recruit a new generation of top talent at all levels, will require Congress to conduct much-needed oversight and consider legislative reforms, and will require the American public to hold government accountable for addressing its workforce needs.

[i] All retirement projections are from the Office of Personnel Management, based on permanent full-time employees on board as of October 1, 2006. These are the most recent OPM retirement projections.

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Effective government requires effective management. For too long, our federal government's operational challenges have received insufficient attention, with serious consequences for the nation. The transition from one presidential administration to the next offers an important opportunity to tackle this problem.

To help shape the next president's management framework, a number of leading government reform experts forged a consensus about critical federal workforce management issues and actions our next president should take to improve government operations. We believe good government starts with good people, and these proposals concentrate on improving the federal government by focusing on its greatest asset – its people.

We are proud to present this report and look forward to working with the next administration to enhance the performance of our federal government.

Sincerely,

Max Stier
Partnership for Public Service

Lynn Jennings
Council for Excellence in Government

David Abshire
Center for the Study of the Presidency

Roz Kleeman
Coalition for Effective Change

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IBM Center for The Business of Government

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ROADMAP *to* REFORM

A Management Framework for the Next Administration

PARTNERSHIP FOR PUBLIC SERVICE

The Partnership for Public Service is a nonpartisan, nonprofit organization that works to revitalize the federal government by inspiring a new generation to serve and by transforming the way government works.

INTRODUCTION

Nothing drives government reform like a crisis. After federal officials failed to connect the dots pre-9/11, Congress created the Department of Homeland Security. In the wake of the botched response to Hurricane Katrina, the Federal Emergency Management Agency (FEMA) was reorganized — again. When 30 million toxic toys had to be recalled, the Consumer Product Safety Commission got a makeover and a budget increase. In isolation, these responses may make sense and seem sufficient. But here's the catch: they are not isolated from one another — and, as a result, they are not sufficient. They are symptoms of a larger problem: the eroding organizational health of our federal government. Unless our next president moves past piecemeal reforms and executes an effective strategy to improve operations across government, he will likely fall short of achieving his goals — and may even find himself dealing with his own avoidable crisis.

Most of government's management challenges have developed over decades, and they stem from a tendency of our federal leaders to emphasize policy at the expense of operational issues. The focus on policy is understandable. It is also a recipe for failure, as evidenced by the aforementioned incidents, which were largely operational breakdowns.

There are two primary reasons why operational issues are often overlooked: Our government is run by short-term political leadership that often has little incentive to focus on long-term issues, and our government operates in an environment without any real-time metrics for performance or organizational health. The transition from one presidential administration to the next offers an important opportunity to change this paradigm and push to improve government operations.

The key to improving our federal government's operational health is a robust management framework — a roadmap to reform — that tackles challenges from federal budgeting to the use of technology to deliver services. The centerpiece of the president's government reform plan needs to be a strategy to restore prestige to — and increase the capacity of — our federal workforce. Every single policy of the next administration will be influenced by the people charged with executing it. Simply put, good government starts with good people.

History tells us that getting the "people piece" right won't be easy — or glamorous. Going back several decades, every president has rolled out his own government reform plan. Despite these repeated efforts, government's management challenges persist. While it's good that each administration offers its own reforms, it's also part of the problem. Operational issues can't be resolved in four- or eight-year blocks. Yet, when a new occupant comes into the White House, we hit reset. There's no continuity of effort, which is a major reason these reforms have limited impact. Making matters worse, this never-ending parade of reform plans

has caused "change fatigue" to set in across government. Any new effort to fix government may be met with skepticism by veterans of previous reforms.

Our next president should resist the temptation to wipe the reform slate clean. Before launching his government reform effort, the president and his team should review the management policies and accomplishments of previous administrations, assess the results of their reforms to see what has worked and what hasn't, and then try to understand why. When the president does launch his management framework, he should make it a high-profile initiative that is viewed by all federal leaders and the general public as integral to the realization of the president's goals — not just a box to check. An investment in management issues is an investment in achieving the president's ultimate goals.

The federal government is the nation's largest employer, and its workforce is incredibly complex with many unique challenges. More than 80 percent of the 1.9 million career civil servants work outside of the Washington, D.C. area. This workforce is graying, and a third of these workers are expected to leave government in the next five years, the majority through retirement. Interspersed among these civil servants are roughly 4,000 presidential appointees who hold key leadership and management positions.

By some estimates, there are also more than 7 million federal contractors, who increasingly carry out the work of our federal government. In this multi-sector workforce, federal employees are often complemented by contractors to help accomplish agency missions. As a result, federal strategic human capital planning involves this broad talent pool, and agency leaders must determine the appropriate staffing for each situation.

Each aspect of the "people piece" of government deserves more attention, but the new president's management framework should focus on the talented, but underutilized, civilian workforce. The goal should be clear: to improve organizational performance. Core components of an effective workforce, which foster high performance, include:

- ***The Right Talent*** — Government has the right people, from top to bottom, with the right skills to work on behalf of the American people.

- ***An Engaged Workforce*** — Government employees are motivated, empowered and performing to the best of their capabilities.

- ***Strong Leadership*** — Managers are able to inspire and make meaningful and credible distinctions among employees in terms of performance.

- ***Public Support*** — Americans value and support federal public service and understand the importance of having good people in the federal government.

Public support for a vital civil service drives policymaker support for a vital civil service. If lawmakers know support for a first-rate civilian workforce is comparable to the backing that exists for our military services, they will spend more time promoting constructive solutions. Attitudes toward federal employment are also a key part of the federal recruiting climate. When federal service becomes more appealing, it's reasonable to expect that large numbers of qualified applicants will apply for hard-to-fill positions.

The other three elements of an effective workforce — the right talent, an engaged workforce, and strong leadership — serve as the organizing framework for a human capital management plan. This document outlines the most pressing people management challenges our government faces and suggests solutions for each, gathered from a variety of perspectives and supported by the good government community. It also offers specific ideas for how to use metrics and leverage the presidential transition to enhance future reform efforts. These pieces are interconnected and interrelated, both to one another and to the goal of high performance. The new president will need a comprehensive agenda that addresses all of them. Effective government requires effective management.

WHAT TO DO — A FRAMEWORK FOR REFORM

1 THE RIGHT TALENT

If good government starts with good people, an effective workforce management plan logically starts with strategies to attract and retain top talent. Both logic and math dictate the need for increased attention to federal recruiting. Our federal government expects to lose approximately 530,000 employees in the next five years, as the retirement of baby boomers depletes our government of many expert and experienced workers.

Our federal government needs to view the way it recruits, hires and retains talent from the applicant's perspective to ensure job candidates are treated fairly, openly and promptly. Another consideration is that not all of today's job seekers want their next job to be a career — some want it to be a career-builder. Government needs to recognize these attitudes and re-imagine itself as a place that can draw talent for both short and long periods of time, at all experience levels.

CHALLENGES

LACK OF KNOWLEDGE ABOUT FEDERAL OPPORTUNITIES

There's a widespread perception that most Americans are not interested in government jobs. That's not exactly right. When given a set of choices, most people are roughly as interested in federal jobs as private-sector alternatives. The problem for federal recruiters is a lack of public knowledge about federal job opportunities. Government service is simply off the radar of most job seekers.

Government has specific recruiting challenges among mid-career and older workers. Often, government brings in talent at the entry level, but agencies need to take a closer look at bringing on external talent in mid-level and senior positions, where talent needs will be particularly acute due to the retirement of baby boomers. Like their younger counterparts, experienced workers know very little about federal opportunities, but they also hold more negative views toward government, requiring a recruiting pitch aimed at their specific concerns.

STUDENT LOAN DEBT

Even when individuals are knowledgeable about and interested in federal jobs, other barriers remain. Among younger people, a growing number find themselves priced out of public service by increases in the average student debt burden.

CONFUSING AND CLOSED HIRING PRACTICES

Many applicants find themselves shut off from interesting opportunities, in large measure because of our government's practice of opening only half of all jobs to external candidates. As a whole, current recruitment and hiring regulations, policies and practices are inadequate. In too many cases, the process takes too long, is too complicated, lacks transparency and fails to produce the right talent for the job.

ANTIQUATED COMPENSATION SYSTEM

Our government's nearly 60-year-old compensation system is inflexible, antiquated and lacks market sensitivity. The General Schedule (GS) system is widely criticized for providing too little latitude to recruit top talent and reward exceptional workers, while also making it too hard to discipline poor performers. Longevity is the primary determinant of a worker's pay increases, denying federal managers a potentially valuable tool for attracting new workers and motivating existing ones.

LACK OF ACCOUNTABILITY

When it comes to federal recruiting and retention policies, a lack of accountability for the right outcomes perpetuates the status quo.

INCREASING USE OF PRIVATE CONTRACTORS

We increasingly rely on external contractors to do government work, but we often don't know a lot about who they are and how to best manage them. The use of contractors also raises questions about what functions are inherently governmental, the true size of government and the right combination of skills needed to deliver services to the American people.

RECOMMENDATIONS

ENGAGE IN MORE AGGRESSIVE, STRATEGIC RECRUITING

- The federal government needs to develop improved pipelines of talent by fostering relationships with college campuses, better utilizing internship programs, leveraging technology, and recruiting aggressively and widely.
- Federal agencies need to expand outreach to young audiences, mid-career candidates and retiring boomers. To reach these potential applicants, agencies should update their messages to highlight opportunities to "do good and do well" in government service (including practical advantages such as the opportunity to work on interesting and important issues, competitive benefits and a good work-life balance).
- Just filling vacancies is inadequate. Federal agencies must craft job descriptions in a forward-looking manner, to address future skill needs.

EXPAND THE USE OF FINANCIAL INCENTIVES

- The president, working with Congress, should establish a new government-wide scholarship program to fund graduate-level study in exchange for a federal service commitment in targeted mission-critical jobs. The bipartisan *Roosevelt Scholars Act*, proposed by Reps. David Price (D-NC) and Chris Shays (R-CT), would create a graduate-level ROTC-like program that could restore prestige to federal service by more broadly raising awareness about federal opportunities and rebranding the government as a place where the best and brightest go to make a difference.

- Congress should fully fund agency requests for improvements to their human resources practices, including enhancement of existing recruitment tools, such as expanded use of recruitment bonuses or student loan repayments for hard-to-fill mission-critical occupations.

- Congress should enhance the value of loan repayment assistance by treating it as a non-taxable benefit.

FIX THE FEDERAL HIRING PROCESS

The federal hiring system must be fundamentally rethought. While adhering to long-standing federal public policy goals, such as merit-based selection and veterans' preference, the government can substantially improve its ability to attract and hire the best talent available. In particular, the president should encourage all agencies to adopt a "Federal Applicant's Bill of Rights" that ensures all candidates will be treated fairly, openly and promptly. This includes a clear description of the opportunity, a user-friendly application and a transparent process. Agencies should:

- Streamline the application process to better reflect what applicants expect. Rather than relying on lengthy essays, agencies should move toward a more resume-based application process. Improve job descriptions to make them easier to understand and follow.

- Open jobs that have traditionally been closed to the public if there is no compelling reason to limit them to internal candidates.

- For positions that require experience, allow adequate time to reach the most qualified applicants.

- Maximize the use of open continuous job postings for positions that need to be filled on a high-volume, ongoing basis.

- Make the hiring process more efficient and more effective by updating tools for assessing job candidates to make sure we select the most capable applicants.

- Continue to focus on improving the timeliness of the security clearance process, so top talent isn't lost due to excessive wait times.

- Allow greater flexibility for converting qualified individuals, like interns who have demonstrated superior job-related skills, into permanent career roles.

MAKE THE FEDERAL PAY SYSTEM MORE PERFORMANCE- AND MARKET-SENSITIVE

- Federal agencies must establish credible performance management systems. This is an essential pre-cursor to implementation of more performance-sensitive compensation systems.
- The president and Congress should phase out the existing General Schedule (GS) system and replace it with a fair, credible, transparent and market-sensitive pay system. Increases in compensation should be driven more by employee performance than under the GS system.
- Federal agencies should be allowed to tailor the system to their individual needs while ensuring that all agencies have a level playing field with regard to overall compensation levels for similar occupations and experience levels.

INCREASE OVERSIGHT AND REPORTING

Congress should exert oversight authority to hold agencies accountable. Members should hold hearings on recruiting and hiring, and agencies should issue regular reports on their workforce management. In addition, Congress should work with the next administration to:

- Require agencies to annually submit their hiring projections to the U.S. Office of Personnel Management (OPM). This data — broken down by occupation and grade level — should also be made easily accessible to the public through the USAJOBS Web site and the FedScope searchable database. This aids recruitment and enterprise-wide planning.
- Increase transparency and make more readily available information about the hiring mechanisms and incentives that agencies use to attract and retain employees. This information would enable potential applicants to compare, by agency, what percentage of recent hires were external, how many were converted from intern or fellowship programs, and the use of loan repayment, bonuses and other hiring incentives.
- Create a system of metrics to gauge the effectiveness of federal recruiting and hiring, which is essential to effective oversight.

EFFECTIVELY MANAGE THE MULTI-SECTOR WORKFORCE

- Federal agencies need to recruit individuals with the skills to manage private contractors and train existing workers to oversee federal contracts.
- Workforce planning efforts should be driven by consideration of how to most effectively achieve the aims of government.
- Contractors must be accountable to the public good. Federal agencies must have the capacity to accomplish that which is inherently governmental, determine what would be most efficiently and effectively done externally, and guide and evaluate the work of contractors.

2 AN ENGAGED WORKFORCE

Research consistently shows that increases in employee engagement lead directly to improvements in organizational performance. Engaged employees are satisfied with their jobs and organizations, derive a sense of personal accomplishment from their work, believe their talents are used well, and are given the chance to develop and innovate.

Government-wide, the key drivers of engagement are strong leadership, a good match between employee skills and a job's mission, and work/personal life balance. Government's track record on these fronts is a mixed bag. Relative to their counterparts in the private sector, federal employees are motivated by their agencies' missions and satisfied with their work-life balance. Unfortunately, the most important driver — leadership — is the area where government most dramatically lags the private sector. Federal civil servants also give government relatively low scores for creating a performance-based culture, sharing information and providing training. Many of these perceptions are rooted in reality.

CHALLENGES

INSUFFICIENT ATTENTION TO WORKFORCE ENGAGEMENT

Historically, federal leaders have failed to take a strategic approach to improving workforce engagement. It has not been viewed as an indispensable means for improving agency performance.

UNEVEN PLANNING FOR HUMAN CAPITAL NEEDS

Federal agencies are required to develop and implement strategic human capital plans. Unfortunately, some agencies view this as a paperwork exercise rather than an opportunity to develop a valuable tool to improve engagement of their employees.

LACK OF EFFECTIVE PERFORMANCE MANAGEMENT SYSTEMS

Many agencies do not have effective employee performance management systems, which enable managers and employees to set — and strive for — specific goals directly linked to organizational mission and strategy. Such systems should also provide every federal employee clear performance expectations, regular feedback and an understanding of how their activities align with the agency's mission. Each year offers a cycle in which supervisors and employees should re-establish goals and discuss progress toward those goals.

SHORTCHANGING PROFESSIONAL DEVELOPMENT

Professional development opportunities are another tool for engaging workers, but federal training dollars are regularly unavailable or unspent. Human resources budgets are often raided to meet other organizational needs, such as when Congress doesn't fully fund the annual pay increase and agencies must look elsewhere to make up the shortfall. Other development programs, which usually involve on-the-job training, are frequently uneven.

Most federal agencies also miss a huge opportunity to engage their employees by making scant effort to integrate and engage new employees. A typical welcome for a federal employee is a one-day orientation for new hires that consists of little more than filling out paperwork.

RECOMMENDATIONS

MEASURE ENGAGEMENT AND COMMIT TO IMPROVEMENTS

- Agencies should measure, track and document the link between employee satisfaction and individual and organizational performance.
- Agencies should systematically collect and analyze exit interview data and identify barriers to retention.
- Congress should enact — and financially support — a centrally administered, government-wide annual federal human capital survey.
- Managers should be held accountable, through effective performance management and reward systems, for high levels of employee engagement.
- Agencies should maximize workplace flexibilities that help attract, engage and retain talented employees (e.g., telework, flexible work schedules, part-time schedules, job sharing).

IMPLEMENT STRATEGIC HUMAN CAPITAL PLANNING

A strategic human capital plan serves as a roadmap for assembling and maintaining the right mix of talent to achieve the agency's mission. Employee engagement, training and development are critical components of a well-designed plan. Agencies should:

- Employ workforce planning to systematically identify future workforce needs, competencies, competency gaps and strategies to eliminate the gaps.
- Leverage employee engagement and effective training and development to help minimize competency gaps.
- Link training and development to the agency's mission, performance and desired outcomes.

DEVELOP CREDIBLE PERFORMANCE MANAGEMENT SYSTEMS

- Every federal employee should receive an annual written review from a capable supervisor who can effectively communicate performance expectations and provide constructive feedback.
- Federal leaders should establish regular feedback mechanisms, in addition to formal annual reviews. If a formal review includes new critiques not previously shared with the employee, there is a breakdown in the system.
- Managers should build a clear line of sight from an employee's work to accomplishments of broader objectives and the agency's mission.
- Establish a clear and valid correlation between employee performance and advancement.
- Enhance federal managers' flexibility to reward strong performers and fairly and efficiently deal with poor performers.

ENHANCE FORMAL TRAINING AND ON-THE-JOB DEVELOPMENT

Congress should ensure human resources budgets meet agency needs — and statutorily allocate money for training that can't be eliminated or re-budgeted. This could be done for specific critical skills areas such as contract management or leadership development. Additionally, agencies should:

- Develop and implement skill- and competency-based training curricula geared to key occupational and employee groups such as first-line supervisors, managers, human resources professionals, engineers, language specialists and procurement specialists.
- Be allowed to "roll over" unspent funds from one fiscal year to the next, to finance training opportunities.
- Make greater use of mentoring and coaching to prepare employees for advancement, including into supervisory and managerial positions.
- Provide cross-training/rotational assignments to broaden employees' experience bases and competencies and prepare them for advancement.
- Federal leaders should view the way they bring new workers on board as a year-long process of acculturating new employees into the organization and providing them with the tools, resources and knowledge to become successful and productive.

3 STRONG LEADERSHIP

Although leadership is the most critical factor in determining employee engagement and organizational effectiveness, it consistently ranks near the bottom of a list of 10 different workplace categories in the *Best Places to Work in the Federal Government* rankings compiled by the Partnership for Public Service and American University. Employees in the federal sector are twice as likely as their private sector counterparts to report that their leaders — political and career — do not have the leadership skills needed to do their jobs effectively.

CHALLENGES

LACK OF MANAGERIAL SKILLS AMONG SENIOR LEADERS

The federal government has an inconsistent track record selecting, developing and retaining top political and career leaders with strong management skills. Senior political appointees' competence should be the foremost concern during the appointment and confirmation process, but sometimes political connections are given precedence. Selection of career leaders is often based on their technical expertise, not leadership and management skills such as communication, team-building and conflict resolution.

SHORTCHANGING LEADERSHIP DEVELOPMENT

With reduced training budgets in recent years, the only option for leadership development often becomes no- or low-cost training, not the best training. As a result, effective leadership development is concentrated among an inadequate number of employees.

SHORT-TERM LEADERSHIP VS. LONG-TERM CHALLENGES

Federal leadership tends to be short-term, leaving political appointees little opportunity to focus on long-term issues as they seek to maximize their impact on an agency over the course of the average 18-month tenure. Career federal leaders can provide stability and continuity when the political leadership changes, but this cadre often lacks a broad perspective on government operations — and it is poised to retire in large numbers. Based on OPM retirement projections, it is likely that the number of federal leaders and managers who will retire in the next several years will exceed the number of qualified internal candidates ready to replace them.

RECOMMENDATIONS

PRIORITIZE COMPETENCIES FOR POLITICAL AND CAREER LEADERS

Effective leadership, whether in the public or private sector, begins with selecting individuals with the right knowledge, skills, abilities and behaviors required to drive program performance and needed management reforms.

- As a starting point for improving government leadership, our elected officials and career leaders must carefully consider the competencies required to effectively lead in the public sector. While relevant technical competencies should be a prerequisite for any leadership position in government, the selection process must also carefully consider a candidate's management skills.
- The administration and Congress should build upon the Government Accountability Office's (GAO) proposed questions on key management issues (August 2000) to assess whether an appointee is qualified to run a large and complex organization whose mission is likely to affect virtually every member of the American public.
- Leadership competencies should match government's unique challenges, with a special emphasis on leading people, driving innovation, building collaborative networks and delivering results.
- For both career and appointed managers and executives, performance reviews must include a focus on required management skills, to emphasize the importance of successful operations across government.
- Agencies should offer a "dual-track" for advancement that provides technical experts advancement opportunities that offer more seniority, responsibility and pay without also requiring leadership and management duties for which they may be ill-suited.

INVEST IN TRAINING FOR CURRENT AND FUTURE LEADERS

Federal agencies must invest in the training and development of their political and career leaders. While political appointees need more preparation around government's intricacies (e.g., budgeting, working with career employees, Government Performance and Results Act requirements) upon entering public service, career leaders need more robust training over the long-term.

- With an average tenure of less than two years, political appointees can't afford to learn the ropes gradually through trial and error. These managers should receive orientation regarding government operations, laws and policies immediately upon assuming their position and thereafter, as needed, throughout their time in government.
- Leadership development should include a blend of classroom training, performance feedback from managers and subordinates, developmental relationships (e.g., mentoring/coaching) and challenging job assignments.

- Require basic, mandatory training for all supervisors to improve their success and their employees' job satisfaction.

ESTABLISH LONG-TERM LEADERSHIP

- The president should appoint a chief management officer (or a chief operating officer) for each department to oversee implementation of management initiatives, particularly tracking program and organizational performance. In some cases, a Deputy Secretary may already fill this role through a focus on management. To address ongoing management challenges across administrations, this position could be a term appointment.
- Expand talent exchanges between agencies and other public, private and nonprofit employers, particularly for the Senior Executive Service. Agencies should also explore the idea of requiring service in more than one office to qualify for promotion to government's most senior positions. Our military has proven this idea can work with a "joint duty" requirement that was recently replicated by the intelligence community.

ROADMAP TO REFORM: A SUMMARY

CHALLENGES	RECOMMENDATIONS
1 THE RIGHT TALENT	
Lack of knowledge about federal opportunities	Engage in more aggressive, strategic recruiting
Student loan debt	Expand the use of financial incentives
Confusing and closed hiring practices	Fix the federal hiring process
Antiquated compensation system	Make the federal pay system more performance- and market-sensitive
Lack of accountability	Increase oversight and reporting
Increasing use of private contractors	Effectively manage the multi-sector workforce
2 AN ENGAGED WORKFORCE	
Insufficient attention to workforce engagement	Measure engagement and commit to improvements
Uneven planning for human capital needs	Implement strategic human capital planning
Lack of effective performance management systems	Develop credible performance management systems
Shortchanging professional development	Enhance formal training and on-the-job development
3 STRONG LEADERSHIP	
Lack of managerial skills among senior leaders	Prioritize competencies for political and career leaders
Shortchanging leadership development	Invest in training for current and future leaders
Short-term leadership vs. long-term challenges	Establish long-term leadership

HOW TO DO IT — IMPLEMENTATION METHODS

IMPROVING PERFORMANCE: MEASURING SUCCESS

Efforts to get the right talent, engage employees and strengthen leadership only matter if they help to achieve the ultimate goal of improving organizational performance. But our government lacks a proven system of indicators to measure programmatic success and to determine if federal agencies have the right people with the right skills to do our nation's work.

Creating performance measurement tools is harder in the public sector, where one cannot simply look at profits as a yardstick of success. As a result, our government has lagging indicators of performance, such as the failure to keep toxic toys out of the country, and fewer measures that are operationally useful in preventing problems and improving government effectiveness.

Since you can't change what you can't measure, creating new, useful metrics is an essential component of a successful workforce management plan. It will be a major challenge to develop real performance metrics for the federal government that are both outcome-oriented and in line with public expectations. The process will be iterative, requiring work with multiple stakeholder groups over time to ensure that our results are clear, accurate and practical.

A performance measurement tool can help pinpoint major problems in government when there is still time to do something about them. It can also uncover notable successes and best practices that can be replicated across government. This information will also help federal managers to understand what factors may cause these problems and successes, such as a lack of resources.

Recent administrations have emphasized results. Under Presidents Bill Clinton and George W. Bush, efforts to assess success represented progress toward measuring program performance and making data transparent for the general public. As a next step, such initiatives should emphasize public outcomes, rather than programmatic activities. Assessing how government deals with a subject like food safety across agency lines would offer the American people a better sense of how government is performing than grading individual programs.

Operational metrics are not only integral to promoting the ultimate goal of improved performance, but also to gauging efforts to secure the right talent, engage employees, improve federal leadership and build public support.

RECOMMENDATIONS

MAKE METRICS USEFUL BY FOCUSING ON OUTCOMES

- The administration and Congress should create measurement systems that enable government employees and citizens to identify where government is working well — and where it needs to improve.
- Federal leaders should evaluate performance by missions and outcomes, considering cross-cutting programs that require collaboration across agencies.
- The new administration should review existing practices, such as state and local government "Performance Stat" models, to identify techniques that manifest a culture of performance. With these tools, create an ongoing dialogue in which agencies engage in identifying deficiencies and crafting long-term solutions.

PROMOTE TRANSPARENCY

- Agencies should publish program performance results, providing ready access to interested parties and stakeholders, and clearly account for and justify the resources expended to achieve those results.

CLOSE DATA GAPS

- Although the federal government collects a great deal of human capital/workforce data, some is still not standardized, combinable across agencies or useful. Congress and the administration should require that essential data be uniformly collected, analyzed and made available to all agencies and relevant stakeholders.

LEVERAGING THE TRANSITION

Solving government's operational challenges cannot be done overnight and will require patience. But the period of transition from one administration to the next is critical to the long-term hopes of any management reforms. It is also a time of great opportunity. The transition generally consists of three phases: pre-election, post-election and post-inauguration, which covers the first six months of the new administration. The following recommendations propose utilizing the post-election and post-inauguration phases to lay the foundation for meaningful management reforms.

RECOMMENDATIONS

BUILD ON THE FOUNDATION OF PREVIOUS REFORMS

- The next president can score some quick wins by building on pre-existing initiatives where a great deal of work has already been done. Methods

used in previous administrations, such as the balanced scorecard or the Program Assessment Rating Tool (PART), offer a foundation. To shape assessment tools, attention should concentrate on forward-looking measurement, with a focus on outcomes.

FOCUS ON PEOPLE, PARTICULARLY IN THE MANAGEMENT ARENA

- The next president should select qualified and competent political appointees, recognizing the rigors and challenges of the appointment process. The administration should prepare presidential appointees to enhance their ability to manage effectively in the federal environment and to improve the quality of supervision across government.
- Special attention should be paid to attracting highly qualified individuals for key management positions (e.g., chief financial officers, chief information officers, chief human capital officers), which require specialized skills and focus on operational issues. Looking long-term, since these positions are non-ideological in nature, it would be wise to strongly consider making them career positions, to create continuity between administrations.

STREAMLINE THE CONFIRMATION PROCESS

- An astonishing 1,137 positions require Senate confirmation. Congress should reduce the number of Senate-confirmed positions dramatically so that only those jobs that are truly central to the functioning of the U.S. government require such enhanced scrutiny. This will save time, money, and — most importantly — ensure essential leadership positions in our government are filled in a more timely fashion.

REACH OUT AGGRESSIVELY TO CAREER CIVIL SERVANTS AND OTHER POTENTIAL ALLIES

- New political appointees should build relationships with key stakeholders and constituency groups, particularly to engage civil servants and outside expertise in the transition and subsequent reform efforts. People will offer you help. Take it.

CONCLUSION

Focusing on human capital management is not only smart from a policy perspective, it's smart politically. For too long, government operations have not gotten the kind of sustained attention the American people say they want. Regardless of political leanings — whether we favor "big government" or "small government" — everyone can agree that it should be effective government, and we should do it well.

Amid tremendous pressure to score major policy victories in the first 100 days, the new administration must quickly invest in government's long-term organizational health. The next president's overall success rests fundamentally on his ability to effectively manage federal operations. It's time for the president to set in motion long-term management solutions to help build the government that the times demand and the American people deserve.

METHODOLOGY

The Partnership for Public Service works to revitalize our federal government by inspiring a new generation to serve and by transforming the way government works. We believe that good government starts with good people. And we live by our name of Partnership — working with others whenever possible. Since our founding in 2001, we have aimed not to do the job of government, but to help government do its job better, focusing on goals that transcend ideology and politics.

In preparation for the upcoming presidential transition and subsequent government reform in the next administration, the Partnership crafted this proposed framework for federal workforce management as part of its *Presidential Management Initiative*. This report is the product of several sources, including meetings with — and other input from — representatives of good government organizations, past presidential transitions, government reform efforts and private-sector entities. We also conducted a two-day conference at the Pocantico Conference Center of the Rockfeller Brothers Fund focused on government reform and the presidential transition with leaders from the government, nonprofit and private sectors. With support from CNA, we coordinated a series of roundtable discussions to gain valuable input from federal employees in five cities: Atlanta, Chicago, Los Angeles, New York City, and Washington, D.C. As a foundation, we reviewed results of prior projects, research and Congressional testimonies.

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IN GOVERNMENT

The Military Industrial Base in an Age of Globalization

Guiding Principles and Recommendations for Congress

Edited by Jack Spencer

The Heritage Foundation

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Table of Contents

Preface 4

Executive Summary 6

Chapter 1: The Changing Military Industrial Base 9

Chapter 2: Challenges and Concerns 15

Chapter 3: Principles for Congress 21

Chapter 4: Putting the Principles into Practice 29

Chapter 5: Recommendations for Congress 38

Appendices 42

- A. Study Methodology 42
- B. Acronyms 43
- C. Legislation Affecting the U.S. Military Industrial Base 44
- D. Project Participants 46

Acknowledgments 48

Preface

Edwin J. Feulner, Ph.D.

THE MOST IMPORTANT function of the federal government is to provide for the common defense, as mandated by the U.S. Constitution. Although the world is becoming more connected as globalization accelerates across the full spectrum of human activity, the fact remains that Congress's most important goal must be to advance sound national security policy.

It is within this context of globalization that some of the most pro–national security Members of Congress cannot agree on how to build and sustain—or even define—a healthy, reliable, and adequate military industrial base. Some believe that national security is best served by protecting America's industrial base and maintaining maximum domestic capacity. Others believe that open competition, both domestically and internationally, is the best way to assure that America's men and women in uniform have what they need, when they need it.

No organization is better positioned to bridge the gap between these perspectives than is The Heritage Foundation. We have a rich history of supporting strong national security policy as well as advancing the principles of free markets. For this reason, we believe it is our responsibility to address this issue.

The seemingly arcane nature of the military industrial base relegates most debate over it to the halls of Congress, small offices in the Pentagon, and the boardrooms of America. Yet the decisions made today regarding the military industrial base affect every American and will influence the armed forces for decades to come, just as decisions made over the past 100 years continue to have ramifications as our soldiers, sailors, airmen, and Marines are engaged in today's global war on terrorism. As critical as the military industrial base is to U.S. national security today, it is not a new issue.

The United States was unprepared when it became part of World War I in 1917. The nation entered into

the largest ground war in history with an Army that was short nearly 2 million rifles and an Air Corps that had crashed all six of its operational planes chasing after Pancho Villa. As a result of this laxity, U.S. land forces would depend largely on the industrial bases of our allies to meet their requirements.

The nation found itself similarly unprepared for World War II. America's failure to heed the rise of an expansionist Japan and fascist Europe again resulted in major setbacks early in the war. The Allies, for example, endured an unnecessary loss of life and damaging early defeats in North Africa and the Pacific. It was not until 1943 that, with the sheer weight of an "arsenal of democracy" in full swing, the United States was able to turn the tide of World War II in its favor.

Again in Korea, America was caught off guard. Still basking in the euphoria of victory over the Axis, American forces were again forced into a major conflict woefully unprepared for battle. If not for the courage and determination of the men in the Pusan Perimeter, South Korea might very well have been lost due to our inability to respond quickly to the force and material requirements of the situation.

Fortunately, the onset of the Korean conflict changed the way the government managed the military industrial base. President Harry Truman called for a mobilization that would fulfill the needs of our forces in Korea and deter World War III. Thus, for the next 50 years, a close watch was maintained on the state of the industrial base. This was more an effort to guarantee America's technological superiority as a necessary component of strategic deterrence than actual preparation for conventional war.

With the Cold War over, China and India on the rise, and technology thrusting the world toward greater globalization, the parameters of industry, trade, and national security are changing. Just as a pre–World War I approach was inadequate to get the United States through the first half of the last century, a Cold War approach will not be adequate for today. Now is the time for a new approach to assuring that America's armed forces have access to the goods and services they need.

The same close monitoring constructed in the 20th century must be applied to the future military industrial base to ensure that the U.S. maintains technological superiority across the defense spectrum.

The Heritage Foundation has been clear from the beginning of our project that we will not back down from our commitment to free markets. We also understand that the military "market" is unique and that we could not allow our commitment to free enterprise to cloud our vision of what is right for national security. What we found through our analysis, consultations, and research is that free markets once again best serve America's freedom.

The reality is that the military industrial base on which the United States depends is global. To think that the United States could, or even should, be independent from the world regarding the goods and services of the military sector is absurd. So the central question then became: *What is the best way to assure that America's armed forces have access to whatever they need, whenever they need it, to defend our national security?* This report will help Members of Congress answer that question.

Edwin J. Feulner, Ph.D.
President, The Heritage Foundation
and Former Distinguished Fellow, Mobilization Concepts Development Center,
National Defense University

Executive Summary

THIS STUDY IS intended to help Congress answer a simple but vital question: What kind of legislation is needed to ensure that the U.S. military is supported by an adequate industrial base in the 21st century? Our approach to helping to answer this question is equally simple but essential.

Congress needs a set of guiding principles—a doctrine of goals and values against which any proposed laws can be measured. This study provides those principles and then illustrates the results that can be achieved when they are applied, particularly during periods of national crisis. The results demonstrate that policies that maximize the Pentagon's capability to operate in accordance with these principles will also make us safer and freer while promoting economic growth.

What Is the Military Industrial Base?

America's military industrial base is comprised of the private-sector (both privately and publicly owned) and government-owned entities, located in the U.S. and globally, that provide the full array of goods and services required by the armed forces of the United States and select allies.

The military industrial base is essential to national security. The means to forge, deploy, sustain, and maintain fighting forces have been and remain the lifeblood of war. A secure industrial base is a prerequisite for conducting prompt and sustained military operations.

What Is the Problem?

Congress has made many attempts to influence America's industrial capacity regarding national security matters. These efforts have nearly always interrupted the natural tides of the market and have led to unintended consequences, including inefficient practices, high prices, and limited choices for the military. America's warfighting institutions have consistently achieved better results when they have relied on the market to decide where industrial capability should flourish.

Today, the tension between exploiting the advantages of the marketplace to obtain the best equipment at the

best price and Congress's desire to accommodate other priorities has never been greater and is exacerbated by the global character of the 21st century industrial base and a plethora of risks, opportunities, and unknowns.

What We Did

To address this issue, The Heritage Foundation drew on experts in military affairs and industrial practices from government, Congress, academia, and public policy research centers to help develop a framework for guiding Congress in its approach to military industrial base maintenance.

Over the course of a year, through interviews, workshops, and an extensive literature search, we developed a set of principles for Congress. These principles were tested and validated during a series of tabletop exercises, from which we developed a list of recommendations. In each exercise, a team of experts was tasked with addressing a significant national security crisis involving the delivery of goods or services. The principles proved useful both for guiding effective decision making and for deriving insights, which are reflected in our recommendations, about how best to exploit the potential of the global industrial base.

Principles for Congress

The following principles comprise the right framework for maintaining access to the industrial resources necessary for the U.S. armed forces in the 21st century.

PRINCIPLE #1: Excessive central control is inconsistent with national security and should be avoided.

Generally, national security is hampered by excessive legislation and regulation, which hurts the ability of the military industrial base to produce goods and services quickly and efficiently.

PRINCIPLE #2: Policies on the domestic military industrial base should focus on critical technologies, industries, and skills that are not readily available in the global market.

In Congress, debate relating to the military industrial base is caught between free-market trade and protectionism. However, in this policy area, Members of Congress should be concerned primarily with reducing risk for military forces and enhancing the security and defense of the U.S., not protecting local economies or politics.

PRINCIPLE #3: Incentives and open competition in critical technical areas can provide a disproportionate return on investment, encourage the development and furthering of hard science skills, and broaden defense-related industrial capabilities.

The U.S. should identify, develop, and sustain the intellectual capital necessary to support a robust and evolving military industrial base. The military industrial base will lag behind non-defense industrial trends without a cadre of vibrant intellectuals that understands how traditional industrial practices must change to fit 21st century defense requirements.

PRINCIPLE #4: A comprehensive divestiture strategy can generate growth in new technology and manufacturing areas.

The United States invests too many resources in old technology. By moving beyond or divesting from these programs, the Pentagon can reinvest those resources in new, more relevant programs. With the right strategy, the technology base will not get bogged down by yesterday's investments and always be focused on the latest technological trends.

PRINCIPLE #5: The U.S. should impose research and development costs and manufacturing costs on potential adversaries.

The U.S. should actively look for opportunities to redefine areas of competition through those defense products that industry manufactures domestically. By playing to its strengths, the U.S. can force potential enemies to incur research and development costs as they attempt to counter new or improved U.S. capabilities.

PRINCIPLE #6: Stop paying more for decreasing returns.

Procurement policies should support defense-related manufacturing that can remain profitable *and* competitive. Members of Congress need to view the global defense market in much the same way they view the market for everyday goods and services. If a manufacturer does not produce a defense product that works better at less cost, it should expect the Department of Defense to look for another supplier, whether inside and outside of the U.S.

PRINCIPLE #7: Assured access to the global industrial base is necessary for long-term national security.

Industrial independence should not be a national security objective. Maximizing access to the global industrial base and the wide range of products, services, and materiel available advances national security.

PRINCIPLE #8: Not all trading partners are equal. America's closest allies should be considered reliable trading partners/allies for nearly all defense materials. However, geostrategic military and economic alliances will change, and the U.S. must be prepared to adapt.

In developing the manufacturing, supplier, technology-sharing agreements and alliances, the U.S. should carefully consider how global strategic alliances might change over the next century.

PRINCIPLE #9: Greater supply chain transparency is a prerequisite to understanding industrial base vulnerability. The United States must understand where supplies originate and how they are moved before it can undertake any accurate assessments.

Without greater supply chain transparency, risk and vulnerability factors are invisible to planners. Primary and secondary suppliers are largely understood, but third-, fourth-, fifth-, and sixth-tier suppliers are often not as well understood.

PRINCIPLE #10: The military industrial base requires an amalgam of approaches to ensure both access to vital goods and services and reasonable prices.

Given the diversity of goods and services used by the U.S. armed forces, neither a pure free-market approach nor a protectionist approach is adequate to sustain the long-term health of the military industrial base. Instead, the U.S. should rely largely on markets to determine who provides which military goods and services, except for an extremely limited number of functions that should be sustained domestically.

What Is in the Study?

This study consists of five chapters. Chapter 1 describes the industrial base as it exists today and why and how it has evolved. Chapter 2 summarizes the issues and concerns presented by the modern global industrial base. Chapter 3 proposes objectives and principles for guiding policy decisions. Chapter 4 demonstrates how the principles can be applied in practice. The study concludes with Chapter 5, which provides a set of recommendations for congressional initiatives.

Strategic Industrial Base

Ron Ault
President
Metal Trades Department, AFL-CIO

This week I was up on Capital Hill as part of a panel discussion sponsored by the Foundation for Nuclear Studies and the American Nuclear Society, titled "Is the U.S. Workforce Ready for the Nuclear Renaissance?" My question was-: "What Nuclear Renaissance?" The industry now projects building just eight new nuclear power plants with peak employment of maybe 4,000 skilled trades per plant…That's hardly what I would term a "Nuclear Renaissance."

But I digress. Part of the discussion was the lack of a U.S. manufacturing base, a critical element to support new nuclear construction. For now the U.S. nuclear industry will have to get in line to buy foreign components behind those who are already at work throughout the rest of the world constructing new nuclear power plants.

This so-called "renaissance" brings the sorry state of our basic strategic industrial base sharply into focus. How can our nation be sustained should we ever go to war? Suppose our foreign sources for basic goods get cut off or withheld. Get out the white flags, folks! If Mexico decides to invade us we are toast!

The U.S. manufacturing sector is in shambles, at best…. Disaster would be a better description. Name something strategic to the defense of our nation—anything: Computer software for our national satellites? Yep, so-called "friendly" nations overseas are programming billions of lines of code for us on subcontracts….You know they would never include some hidden "backdoor" or "Trojan horse" in those billions of lines of code to enable a third party to get access, and take control, would they? Naw, you would have to be paranoid to think that. If we wanted to check, just to make sure, we could assign a software scientist for the two or three years it would take to read through those billions of lines of code, and we might have a decent chance of finding a back door or Trojan horse if one were there.

How about computer chips for our anti-submarine sonar buoys that detect enemy submarines?…Yep, they're made in China.…What difference to national security could that make? Ask our ally Georgia about trusting their national security to someone else.…The cold war was a dim memory until Russian bombers dropped the first bombs in Georgia.

OK, let's look at our main battle tank….By the way, it is no longer being manufactured. U.S. war planners tell us: "no more tanks." They claim future wars will be fought without tanks, so why have them? How about the next generation of Army Helicopter? Nope—the Comanche Stealth helicopter was shut down, too.…Don't need it. The Pentagon plans to just use unmanned drones and unmanned helicopters. How about the next generation of Navy stealth destroyers, the Zumwalt class, with smaller crews and an awesome array of ten new technologies? Congress is in the process of killing that, too.

But killing the Zumwalt has forced us to focus on another strategic manufacturing problem….the network shipbuilding supplier and component manufacturers is disappearing as many companies are going out of business. Congress is trying to keep or bring back the DDG 51 Arleigh Burke class destroyers into production, but they have discovered the manufacturer of who supplies the reduction gear for the DDG 51 no longer makes those parts….The Zumwalt uses new electric drive technology that eliminates the need for reduction gears.

Our employers have sold off the U.S. manufacturing base. The U.S. based corporations that sent these manufacturing plants overseas (and got a tax break from the federal government to do so) promised as a condition of moving the plants, to keep the research and development here in the USA…remember? That didn't happen. The R&D has to be physically close to the manufacturing, so China, India, Indonesia, Korea and Japan are now in charge of our strategic industrial manufacturing research and development.

In less than a decade, America has fallen from the most powerful nation on earth to a "has been" world power like France, Spain and England after their world domination heydays of the 1700's. The "money changers" have sold off the profitable parts of America for their own personal wealth. America is the world largest debtor nation, owing so much foreign debt, it is impossible for us to ever repay. We have been reduced to a "service industry" nation where we sell each other advice and "consult" about how to invest the devalued dollar in the stock market. The largest private employer in America today is Wal-Mart, a multi-national corporation that teaches its U.S. "associates" how to qualify to get public assistance and state coverage for health insurance. In lieu of the American dream of owning a home, having two kids and retiring with dignity. Today's average U.S. workers are "wage slaves" living from paycheck to paycheck struggling just to survive. The "money changers" stole the American Dream.

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Nuke Workers Losing Benefits; MTD Calls for Congressional Hearings

Nuclear weapons workers exposed to toxic agents in their work have been deprived of their appropriate benefits according to a report by the Ramazzini Institute and Drexel University's School of Public Health. The Metal Trades Department is calling for congressional hearings to investigate the failure of the Energy Employees Occupational Illness Compensation Program (EEOICP) to properly compensate exposed workers or their survivors.

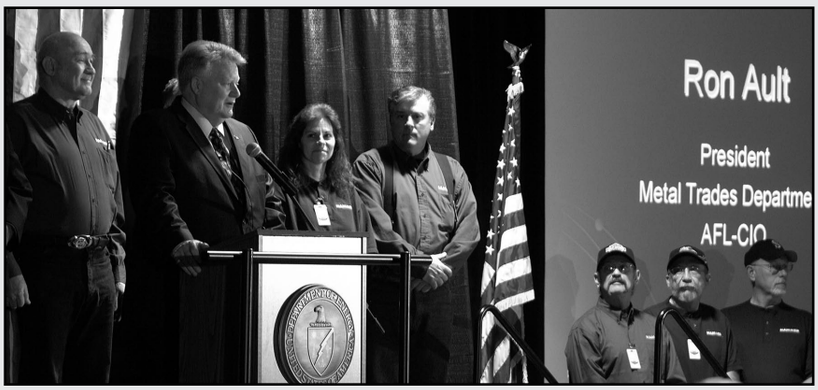
"This program has failed and frustrated the dedicated workers who risked their lives for the American people. Congress should step up and remedy this problem," said MTD president Ron Ault.

The EEOICP was enacted to compensate nuclear workers and their survivors for harm suffered because of exposure to radiation during their work, but the program has been plagued with out-of-control bureaucracy. According to an investigation conducted for the MTD by Sheldon W. Samuels of the Ramazzini Institute and Drexel University's School of Public Health, the Department of Energy has run up a woeful record of failures in administering the program in its first three years of life.

The report charges that: EEOICP has failed to work with state workers' compensation commissions; hired merely one part-time physician on staff and 100

See 'Nuclear Workers,' page 3

HAMMER Marks Tenth Anniversary



MTD President Ron Ault was a guest speaker at the HAMMER rededication late last year—marking the 10th anniversary of the opening of the facility. Over the past decade, HAMMER has provided more than 350,000 days of training for local agencies in radiation and respiratory protection, handling hazardous waste, hoisting and rigging, asbestos handling, emergency preparedness and deactivation and decommissioning mockups. HAMMER was the vision of the late and legendary Sam Volpentest, an entrepreneur and developer in the tri-city area that encompasses Pasco, Richland and Hanford, Washington.

MTD Will Mark Centennial at Las Vegas Conference

The annual Metal Trades Conference will open on Wednesday, October 22, 2008 at Bally's Hotel and Conference Center. Topping the conference agenda will be an observance of the Department's Centennial. The full agenda is under development, with a general emphasis on shipbuilding issues, developments within the Department of Energy, federal sector issues and the upcoming presidential election.

The Department has secured a $165 per night room rate at Bally's. Deadline for room reservations is September 5, 2008.

Watch the Metal Trades website for further information.

Call Bally's directly (800-358-8777) to make reservations. You must request the Metal Trades Group Rate. Other questions regarding the conference, contact Lisa Johnson at the MTD office (202-508-3705).

MTD Urges Summary Judgment Against Coast Guard in Kit Ships Suit

Attorneys for the Metal Trades Department and the Philadelphia Metal Trades Council urged Federal District Court Judge Gene Pratter to issue a summary judgment against the Coast Guard and its administrative order that permits controversial "kit ships" to fly a U.S. flag and engage in coastwise trade. The hearing was held on April 17th. The MTD and the Philadelphia Council filed suit against the Coast Guard in January 2007, asking the Court to rescind the Coast Guard decision.

See 'Kit Ships,' page 7

Pearl Harbor: One of Many Defense Units Dealing with Crumbling Infrastructure

(Excerpts from the Honolulu Advertiser)

Employment at Pearl Harbor Naval Shipyard is expected to grow by 2015 to keep up with workload, but some fear efficiency problems at the yard could lead instead to its restructuring, major repair work being shifted to the mainland and a drastic reduction in jobs for the state's largest industrial employer.

With a new military emphasis on the Pacific, the shipyard's 4,200 civilian workers could grow to 4,350 over the next seven years, officials say.

But tin-roofed, steel-sided structures built for World War I- and II-era requirements are now inefficient for work on nuclear submarines, and $2 billion in improvements are needed.

Overall, however, the strategic location of Pearl Harbor bodes well for the shipyard as it celebrates its 100-year anniversary. The Navy is shifting more submarines — the main source of work for the shipyard — to the Pacific to meet growing threats.

"From now through 2015, which is as far out as we program workload, Pearl Harbor Naval Shipyard's workload goes up," said Capt. Gregory Thomas, shipyard commander.

U.S. Sen. Daniel K. Inouye (D-HA) said Pearl Harbor Naval Shipyard has a proud history dating back a hundred years.

"However, with shrinking defense dollars, we cannot be content to rest solely on our strategic military location," Inouye said. "We must continually raise the bar, improving our efficiencies, and completing our tasks on time and on budget."

Matt Hamilton, president of the Hawaii Federal Employees Metal Trades Council, the bargaining agent for about 2,500 shipyard workers, agrees that efficiency needs to be improved.

"We are in the process now. We are improving," he said.

Hamilton said the Navy finally has acknowledged the "emergent" repair work the shipyard does and is building more time into completion schedules to take that into account.

"Before, what would happen, I believe, is that people would come up with an unreal schedule to try to please Washington," he said. "We'd come up with a schedule, and they'd say, 'That's not good enough, do it faster."

Hamilton added that "it's not a question that the workers aren't efficient." Rather, Hamilton echoed what Thomas, the shipyard commander, says about pulling all the individual efforts together as a whole.

An additional problem for Pearl Harbor is its infrastructure — aging tinroofed, steel-sided buildings that may be historic, but are not suitable for nuclear submarine work. Nor are they located where shipyard workers need them most.

The shipyard has identified the need for $2 billion in improvements over the next 20 years. Where it will come from is a question mark.

There are four U.S. Naval shipyards left in the U.S. At one time there were 12 Naval Shipyards. These are the so-called "public shipyards" as opposed to the "big six" private "for profit" shipyards owned by General Dynamics and Northrop Grumman Corporations. Several years ago, the Navy conducted a study to determine their minimal requirements for emergency voyage/battle damage Naval ship repair facilities, identifying four naval shipyards—one East Coast submarine yard, one East Coast all purpose yard, one West Coast all purpose yard and one all purpose yard in the Pacific.

All of our U.S. shipyards—including the Navy's own and the "for profit" yards—are in pretty sad shape with the exception of Aker Philadelphia (rebuilt with BRAC/public money) and NGS Ingalls (rebuilt after Hurricane Katrina).

In fact, all U.S. military installations, including Army, Air Force, Naval and Marine Corps bases, military hospitals (remember the Walter Reed rat-infested, moldy facilities scandal?) and training facilities have been knowingly neglected to the point they cannot continue to be ignored. Maintenance and operations funds have been consistently diverted to fund the Iraq war adding to the rapid deterioration to the point that their core mission is now threatened. We have robbed Peter to pay Paul to the point there is no money left.

Congress has some tough funding decisions but no really good options. America has disarmed its military by budget, not by peace treaties. Every aspect of our military is at or near the breaking point. Our Naval Shipyards' crumbling infrastructure reported in excerpts from this newspaper article is but one example of the "one more straw on a camel's back" breaking point that we have now reached.

In Solidarity,

Ron Ault
President

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USS New York Launched

Workers from Northrop Grumman's Avondale (New Orleans) and Ingalls (Pascagoula) joined with members of Congress, dignitaries from government and local officials to mark the launch of the USS New York on March 1, 2008. The vessel contains 24 tons of steel recovered from the World Trade Center. Named to honor the victims of the attack on the World Trade Center, the New York is a San Antonio Class amphibious transport, designed to deliver a fully equipped battalion of 700 Marines. Built by union workers represented by the Metal Trades at both Northrop Grumman facilities in the Gulf Coast, the vessel is the not the first Navy ship to carry the name New York. Conicidentally, her predecessor was also built by Metal Trades workers at the Brooklyn Navy Yard in 1911. The keel for that New York, was laid on September 11, 1911. That New York saw service in both World Wars, earning three battle stars for her role in World War II. She was decommissioned and given a burial at sea on July 8, 1948.

Law Failing Needs of Nuclear Workers

'Nuclear Workers,' from page 1

contract physicians to review cases—when it needed a minimum of 500; developed a helter-skelter system for reviewing and processing claims; used an unqualified contractor under a no-bid contract to set up its electronic data system; dismissed its advisory committee of workers' compensation experts after the committee criticized DOE's operations; and overspent on administrative costs fourfold. Initially, DOE told Congress it expected 3,000 claims under the new law. Within two years after enactment, some 40,000 claims had been received and DOE had made only one award.

The report sent to members of Congress outlines a litany of failures and asks that DOE be held accountable for the failures.

"It's shameful to see how the highest ideals of the sponsors of this legislation have been hijacked by a bureaucracy intent on evading responsibility and avoiding justice," declared Ault. "Congress directed that the government should provide equity and relief to the workers who became sick as a result of their service to the nation during a time of national need. Instead, the bureaucracy has built a maze of rules and arbitrary barriers designed to frustrate legitimate claims."

"During the era of the Cold War, thousands of men and women worked selflessly, putting what they were told was the national interest ahead of their personal health and safety. Many of these workers never were told of the dangers they faced. And, because of strict secrecy and classification standards, they never even disclosed to their families what they were doing. We implore Congress to revisit this legislation and take the necessary steps to make sure that these workers are not neglected, and their contributions are not forgotten," Ault said.

Several federal agencies share responsibility for the failures of the EEOICP as it was amended in 2004. NIOSH was assigned to assess radiation exposure claims. It has only recently begun to update biomedical data originally developed from studies of veterans exposed to radiation during atomic tests in the 1940s and 50s and cancer-related deaths among Japanese survivors of Hiroshima and Nagasaki. Even the DOL was appalled by the work NIOSH was doing in processing EEOICP claims. It sent some two-thirds of the claims back to NIOSH for re-work. An audit of NIOSH processes found some 14.5 percent of claims it handled were erroneously rejected.

The union found many survivors who applied for benefits were told that they must produce medical and other records in order to prevail—records from 20 to 30 years ago. Virtually all workers involved with nuclear weapons research and development were sworn to secrecy about their work—forbidden to discuss it with spouses or family members. Consequently, many legitimate survivor claimants may not even know they are eligible, the union said.

Responsibility for administering benefits for former nuclear weapons workers originally had been split between the Department of Energy and the Department of Labor, with DOE assuming responsibility for "toxic illnesses" and DOL handling conditions specifically related to exposure from beryllium, silicosis and radiation. In 2004, the amended act gave NIOSH responsibility for radiation dose reconstruction. The Metal Trades Department has charged that the agencies have adopted processes that shift an impossible burden of proof on many claimants: finding records that were never made or were never accurate, or no longer exist.

Metaletter-5-08.indd 3 5/29/08 11:19:28 AM

Around the Councils

Albuquerque: The Council is preparing for negotiations on an agreement with Lockheed covering Sandia National Labs. The current contract expires September 30, 2008. Negotiations are expected to begin in mid-July. The unit has concerns over pensions, health care and many general provisions. MTD General Rep. Tom Schaffer is working with Council President Bill Sena to develop plans for the talks.

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Amarillo: The unit concluded negotiations with DOE contractor BWXT in February 2008. Although the negotiations were difficult, General Rep. Tom Schaffer, who was the chief negotiator, said relationships had improved from the experience of three years earlier.

The new pact provides for a 21 percent wage increase over five years. Employee share of health care costs rose to 15 percent and will remain at that rate for the duration of the agreement. The change in health care costs generated some complaints. Nevertheless, Schaffer said, the agreement was ratified by a substantial margin.

Schaffer noted that DOE contractor BWXT had acted to replace some supervisory personnel resulting in improved relations both at Amarillo and at Oak Ridge.

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Hanford: Hanford is one of several DOE sites where the government has been splitting up contracts, resulting in complications in collective bargaining. Still, according to Schaffer, the Hanford Council has concluded negotiations with Fluor, CH2MHill, Battelle, Energy Northwest, the Washington Group, Johnson Controls and Parsons over the past two years. The Johnson Controls and Parsons agreements are the most recent.

The Metal Trades is partnering with the Tri-Cities Building Trades to host the fourth annual charity golf tournament at Horn Rapids Golf Course in Richland, Washington, co-sponsored by CH2MHill. Last year the event raised more than $10,000 for the Union Gospel Homeless Center in the region.

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Oak Ridge: Relations between the Council and BWXT have improved with the addition of Darrell Kohlhourst as the BWXT director. Kolhourst has established regular meetings with Council President Garry Whitley and the Council's officers as well as monthly meetings with the chief stewards at the site. Management and the Council are discussing the possibility of an early reopener for limited negotiations on wages and other mutually agreed items in advance of the June 2009 expiration of the current agreement.

An apprenticeship program is gearing up at the site, with plans for placing some 50 apprentices on the job each year for the next 10 years. The program is based within local unions and intended to fill positions vacated by a voluntary reduction-in-force program which offers long-term workers up to 30 weeks of pay, depending on years of service.

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Pacific Coast District Council, Puget Sound & Portland, OR: The state of Washington will order as many as six new ferryboats for its system—creating an upsurge of work throughout the region. Washington's ferryboat fleet is the largest in the nation with a growing need to replace aging vessels.

Simultaneously, the councils in the region are conducting negotiations with a number of shipbuilders in the Puget area—including Todd, the largest of the group.

The Puget Sound Council is conducting training for stewards at Todd.

Negotiations are underway between the Portland Council and Cascade Shipbuilders with Pacific Coast District Council President Mike Grabowski as chief negotiator.

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Coffeyville: The Coffeyville, Kansas refinery is back on line—due in great measure to months of round-the-clock work by Metal Trades members—after devastating floods that hit last August. The refinery has become a highly profitable operation.

Council officers are preparing for negotiations to replace the current agreement that expires in December 2008.

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Idaho Falls: Despite the settlement of a longstanding legal battle, management and the union remain at odds over work jurisdictions. Management and the Eastern Idaho Metal Trades Council had settled more than 100 jurisdictional grievances, but those cases have since been reinstated because the company has reneged on the agreement. The issue is likely to go to arbitration, reports Metal Trades Department General Representative Jim Seidl.

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Columbus, GA—Ft. Benning: President Chip Hughes is assisting affiliates in organizing and has negotiated extensions to several agreements. The Council represents a unit employed by Shaw Industries that provides maintenance work at Ft. Benning. The Council also won a representation election and negotiated a first agreement for employees of a company providing repairs for small arms.

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Tullahoma, TN: The Council won a spate of arbitration cases involving mis-assignment of work, overtime and disciplinary actions resulting in substantial back pay for employees. However, the company has persistently refused to settle cases, even where the disputes involve negligible amounts of money. In one case, the union was forced to arbitrate over $27 in pay for an individual who operated a fork lift for four hours. The contract clearly stipulates that any assignments above an individual's normal pay grade are to be treated as upgrades.

MTD General Rep. Jim Seidl has requested information about the relationship between the company and the attorney representing the Air Force "to find out exactly how much they're getting from the government to defend union busting."

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Navy Consolidations: The Navy has insisted on moving ahead on a number of consolidations which have hindered labor relations at several locations, including China Lake, CA; Portsmouth, NH; Norfolk and smaller units in Washington and Philadelphia.

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Seidl Recovering From Surgery

Metal Trades Department General Representative Jim Seidl is about 95 percent recovered from emergency surgery he underwent earlier in the year.

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International Relations

Puget Sound: Leaders of the Puget Sound Council hosted a delegation of Korean shipbuilders—union leaders, management and government officials—on a tour in Washington State. The group toured ports, the state's ferry repair and operations facility and the Todd Shipyard.

The tour was informative for the host union leaders as well who found that wages for shipbuilding workers in Korea are substantially above those for workers with similar skills in the construction industry.

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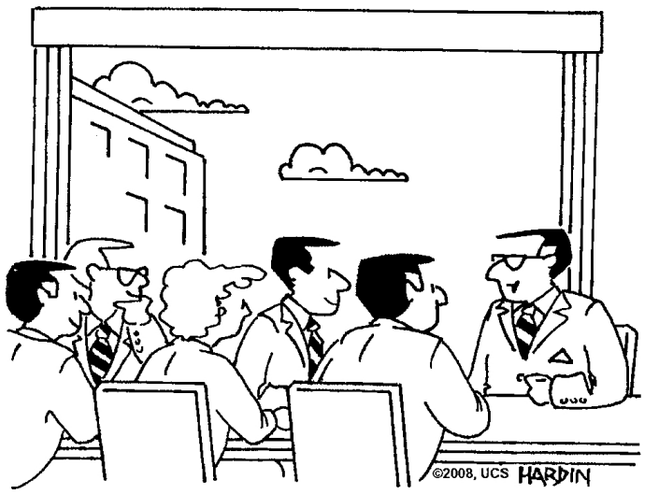
Metal Trades Teams With UK Union Leaders

A continuing information exchange between leaders of unions in the United Kingdom and the leadership of the Metal Trades is improving the outlook for better labor relations and safety training on both sides of the Atlantic, said Metal Trades Department President Ron Ault.

The most recent meetings brought together representatives of two British organizations—Unite the Union and the GMB—and the Metal Trades during a steering committee meeting for HAMMER in Washington in mid-April.

Many of the same contractors that negotiate in the U.S. with the Metal Trades either hold or are bidding for contracts in the UK. The Metal Trades has helped advise UK union leaders on the track records of a number of companies in the running. Interestingly—in the UK, bids for major public projects are decided on the basis of three-way votes—with government, the community and the unions each holding an equal measure of influence.



"Good news from Accounting -- the rich are still getting richer and the poor are still getting poorer."

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GAO to Investigate $40 Billion Tanker Contract

If the Air Force officials who awarded a $40 billion contract to Airbus and EADS (European Aeronautic Defence and Space Co.) were betting the outrage over the deal would die out quickly, they gambled wrong. A formal protest filed by the Boeing Co. will be considered by the Government Accountability Office (GAO) to determine if the multi-billion contract was properly awarded.

GAO will report its findings back to Congress where sentiment is high against the decision. "This is one of the worst decisions I've ever seen," said Rep. Norm Dicks (D-WA), who echoed the sentiments of many lawmakers in the House and Senate who were stunned by the decision to bypass Boeing, a U.S. company that has been supplying the Air Force with refueling tankers for nearly 50 years.

The controversy gained fresh legs when Air Force officials admitted the impact on American jobs was not one of their criteria for awarding the contract, which could eventually be worth as much as $100 billion. Boeing officials also claim the Air Force changed its criteria after the bidding was underway, further favoring Airbus.

Leading the charge to give Airbus a leg up on the historic contract was none other than Republican presidential aspirant John McCain who prodded the Pentagon in 2006 to develop bidding procedures that did not exclude Airbus.

"Awarding this contract to Boeing would support at least 44,000 U.S. jobs in 40 states," said IAM International President Tom Buffenbarger. "Instead, billions in U.S. taxpayer dollars will be used to create jobs in Toulouse, France, and give European countries the potential to influence U.S. foreign policy to an unprecedented degree."

Indian H2B Workers Launch Hunger Strike

Hundreds of workers from India who marched on the White House earlier this year have launched a hunger strike to call attention to their mistreatment at the hands of employers.

Signal Corp. in Pascagoula brought several hundred Indian workers in on H2B visas about a year ago. Those workers reported problems with living conditions and pay, charging that any complaints resulted in the company packing up "troublemakers" and returning them to India.

Problems with H2B visas are nothing new in the Gulf region. Ten years ago, during the height of the organizing campaign at Avondale Shipyards, hundreds of welders were recruited from Mexico accompanied by many of the same complaints.

At Signal, several workers allege that they were lied to by recruiters and that they had to pay a steep fee to the recruiters in order to secure the jobs. After arriving at Signal, they say, wage rates were not what they expected, and they were housed in refitted cargo containers.

Despite the controversy, Signal was awarded a major subcontract to work on the construction of Navy LPD 17 vessels in conjunction with Northrop Grumman.

The Indian workers in Pascagoula are being assisted by the Metal Trades Councils there and in New Orleans, with legal assistance supplied by the Southern Poverty Law Center.

Department of Energy Safety Training New Surge From DOE on Safety?

The Department of Energy has revived its safety training and planning work groups under the leadership of DOE's Safety and Security Chief Glen Podonski. Podonski, who supervises 42 managers, has been credited with making a new effort to reach out to union representatives on DOE task groups.

Obituaries

Saul Stein, Former MTD Ed & Research Director

Saul Stein, retired Education and Research Director for the Metal Trades Department, died in late January. Brother Stein joined the Department in 1968 as a General Representative after having served more than 17 years in various elected posts within the Charleston (SC) Federal Employees Metal Trades Council. He was president of the Charleston (SC) Carpenters Local and president of the East Coast District Council.

Brother Stein was appointed Research and Education Director for MTD in 1978, the post he held until his 1993 retirement. His key assignment during that period was to serve as the MTD's representative on the Federal Wage Survey system which set wage rates for federal blue collar workers.

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Dave Curry, IUOE Trainer

Members from many Metal Trades sites around the country mourned the death of Dave Curry, a member of the Operating Engineers training group. Brother Curry, who was buried on April 4th, was a former trainer at the HAMMER facility in Richland.

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Susanne M. Mitchell, Wife of IBB President

Condolences to International Brotherhood of Boilermakers President Newton Jones whose wife, Susanne M. Mitchell, died on February 18, 2008.

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MTD Challenges Coast Guard Kit Ships Decision

'Kit Ships,' from page 1

The Metal Trades represents some 600 workers in 11 unions at the Aker shipyard.

Judge Pratter entertained arguments from both the Metal Trades and the Coast Guard as well as lawyers representing Aker.

The union contends that the kit ships—assembled by MTD-represented workers at the Aker Philadelphia Shipyard—don't comply with the 80-year-old Jones Act which stipulates that ships carrying cargo between U.S. ports must be U.S.-made. Aker is building a series of ten such ships which include Korean-made major modules and components—from bow and stern assemblies to winches, piping, engines, engine rooms and crew quarters—all supplied by Aker's Korean partners, Hyundai Mipo.

Metal Trades Department President Ron Ault has warned that this construction mode could kill U.S. shipyards. Referring to the Coast Guard's authorization for Aker, Ault said: "If these ill-considered, illogical and unacceptable regulations remain in place, America will lose its shipbuilding industry completely."

Various studies show that U.S. shipbuilders account for less than one percent of the total world output.

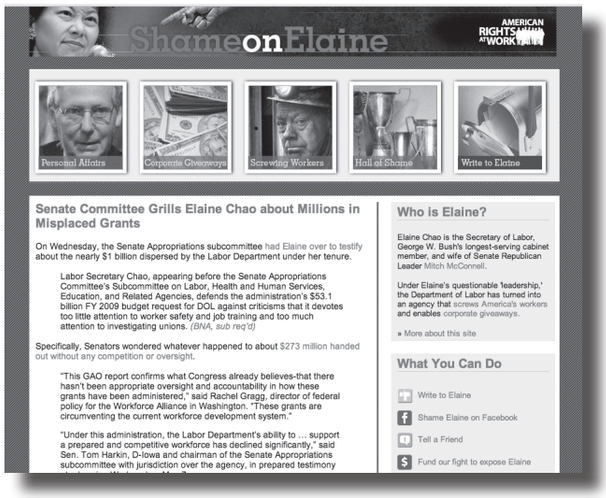
The MTD represents some 55,000 private shipyard workers whose jobs are threatened by continued erosion of work in U.S. shipyards. The Shipbuilders Council of America, which represents the largest U.S. shipbuilders, estimates that the industry also supports more than 250,000 additional jobs at domestic suppliers of ship components and materials—from anchor chain to fabricated pipe and marine steel.

In addition to the Metal Trades suit, Pasha Hawaii Transport sued the Coast Guard over a similar decision that allowed Matson Lines to refit three U.S.-flagged transport vessels in China, substantially rebuilding those vessels. The Coast Guard has allowed Matson to continue to operate those vessels as Jones Act ships. More recently, the Coast Guard waived a made-in-U.S. requirement to allow contractors working on the Oakland to San Francisco Bay Bridge project to use a Chinese-made heavy crane to place girders and decking on the bridge.

Simultaneous with Aker's decision to build kit ships in partnership with Hyundai, NASCO in San Diego entered into a similar arrangement with Daewoo to do the same thing.

http://shameonelaine.org/

Website Highlights DOL Secretary's Ties to Industry



A website sponsored by American Rights at Work, Shameonelaine.org, shows just how anti-worker Labor Secretary Elaine Chao actually is. The website discusses how Chao's own employees have come forward to complain about her cronyism and her tendency to promote her political buddies. She's hired unqualified friends of her husband, Senator Mitch McConnell. For example, Richard E. Stickler, the Assistant Secretary of Labor for Mine Safety and Health, before his appointment, managed mines where several fatalities took place and with injury rates double the national average.

During Chao's tenure, "the Labor Department awarded more than $271 million to groups, Ostensibly to help train workers for high-demand jobs, but a new audit suggests that the agency often failed to ensure the public was getting something for its tax dollars," a May 2 Washington Post article reported, underscoring just how irresponsible her oversight has been.

MTD Applauds Decision in Seabulk Case

The Coast Guard was sharply rebuked by Federal Judge Leonie Brinkema in a April 24 decision ordering a Seabulk ship out of service because the Coast Guard had improperly allowed the ship into coastwise trade after it had been substantially rebuilt in China.

The judge found that the Coast Guard Documentation Center failed to act "reasonably" in issuing authorization to the owner to have the ship refitted with an inner hull and new ballast tanks in 2005 and again when it signed off on a permanent endorsement on the vessel two years later.

"Because the existing record does not support the Coast Guard's issuance of the coastwise endorsement for the Seabulk Trader, the Court will remand this matter to the Coast Guard with instructions to revoke the coastwise endorsement. The agency [Coast Guard], in its discretion, may initiate further proceedings with respect to the Seabulk Trader so long as those proceedings are consistent with this opinion," Brinkema said.

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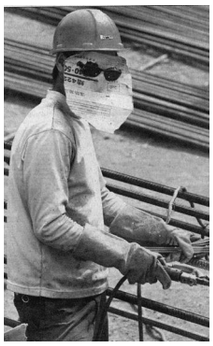

Global Safety Standards

If you ever wondered why safety and environmental issues are vital in free trade agreements, consider the variation in safety standards facing shipyard workers in many European and Asian nations. The Metal Trades Department is increasingly concerned that safety standards such as these could become the norm in the U.S.—(Top): plastic wrap to protect against sandblasting; (Middle): three men on a plank as a counterweight during a grinding procedure; and (Bottom): a cardboard mask for a welder.

Proposed Measure Would Require Govt. Agencies to Use Domestic Steel

A bipartisan measure to require the Departments of Defense, Homeland Security and Transportation to use U.S.-made steel in all projects has been introduced into the House of Representatives. Co-sponsors are Democrat Peter Visclosky (IN) and Republican Phil English (PA).

The American Steel First Act "will combat unfair steel imports, requiring the increased use of domestic steel products in federal projects," Visclosky explained.

Visclosky and English are members of the Congressional Steel Caucus. They said requiring the use of domestic steel is not only a good idea, it would also guard against the use of unsafe and substandard steel imports.

They said that U.S. consumers have learned the hard way that no one can take the integrity or safety of Chinese products for granted.

The proposed bill would provide an exemption that would allow the use of foreign steel if the domestic alternative would add more than 25 percent to the overall cost of a project.

House Transportation and Infrastructure Committee Chairman James Oberstar (D-MN) predicted that the 2009 highway bill might also include such a domestic steel requirement.

Bill Upton, president of Vulcan Threaded Products of Pelham, AL., advised the caucus that his company had independently tested 222 sample steel products from four Chinese importers, finding a 60 percent failure. Steel fasteners and tubing are used in hundreds of critical applications where failure can lead to catastrophic and life-threatening results. Upton charged that many Chinese steel products enter the U.S. under falsified documents, but there is no requirement for testing or verification of quality.

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One plus One Equals Three

Ron Ault, President,
Metal Trades Department

Energy supply and demand is very fragile. Social unrest in Nigeria or a hurricane in the gulf and oil prices hit a new record…some say that America did this to the entire world. They blame America for the oil crisis and the resultant world wide recession. Yep, they believe it was us that did it. And they say we are still doing it. $4.00 a gallon for gas? Yes, they believe America is the cause of the record prices of gasoline.

How can millions of these folks in the free world believe this to be our fault? Remember Iraq? The way they figure it, if the threat of social unrest in Nigeria or a hurricane in the Gulf can cause the world's oil prices to rise dramatically, what would you think a war and foreign occupation of one of the world's largest oil producing countries does to the world's oil prices? They ask us this question: before the U.S. led Iraq war, how much oil did Iraq and Iran produce each year? How much do they produce today? Why is none of this information reported on the U.S. nightly news? Why aren't we getting any "hard" news on the economic issues that affect us? We sure hear plenty about 17 year old, unwed Jamie Spears' having a baby girl on network TV news and the 17 Gloucester high school girls wanting to get pregnant…Our European friends believe and point out that America is being "spoon fed" soft, magazine-style entertainment instead of factual news. No wonder they believe we are out of step with the rest of the world. We are being entertained while the rest of the free world is being informed.

I think all that may be true but other forces are at work, as well…OPEC is NOT our friend. It is an evil empire of nations, oil corporations, and commodity traders all jointly conspiring to artificially inflate and FIX the price of an essential commodity. By doing so OPEC is causing great harm to the rest of the world. Supply and demand has nothing to do with OPEC. OPEC opens or closes the oil supply valves based on the prices they have all agreed that they want us to pay, not on the actual market demand for oil. When you restrict supply, you create demand. Today, OPEC is a far greater threat to world peace than North Korea will ever be. OPEC has declared war on the industrialized nations. OPEC is not fighting this war with guns, tanks or bombs…they are using oil as their weapon. America needs to counter by fighting fire with fire.

If free trade is dead and OPEC style nationalism has taken its place; and if we ever expect this unfair situation to change, the industrial nations need to take action to force change. America and it allies should put OPEC and the rest of the world on notice that we will not go quietly to the slaughter pen while they steal our entire nation's wealth. We should immediately suspend trading, embargo all food shipments to any OPEC nation and void all contracts of any goods and services to OPEC nations. The industrial nations need to demand the total dismantling of price fixing cartels, including breaking up OPEC, as our conditions for reopening negotiations for resuming normal trading relations. We should begin negotiations and sign treaties with individual oil producing nations on how our food shipments would be resumed and under what conditions we would buy their oil. Commodity traders found to be involved in price fixing should be tried and imprisoned to the fullest extent of the law, including mandatory sentencing guidelines equal to those used against drug kingpins.

America, in close consultation and in full cooperation with our closest allies, needs to immediately go on a wartime footing, and craft the highest national priority program like the WWII "Manhattan Project" to utilize all our nation's research and development facilities—including universities, our national weapons labs, our U.S. heavy industrial and auto

production facilities and private industry. The objective: to quickly develop and begin mass production on alternative energy technology that uses no petroleum, whatsoever, to power all of our energy needs. We need to discover and perfect the clean, greenhouse-gas free technology to fully utilize our vast coal reserves. The OPEC oil war on industrial nations could very well trigger the rebirth of a manufacturing economic boom, the likes of which has never been seen in America. Necessity is the Mother of invention.

I find it incredible that President George W. Bush ignores all of this as IF it does not exist. Bush should be taking his life-long OPEC pals and fellow oil men to task for restricting the supply of oil and maintaining the record high prices. Instead, he tries to shift the blame for record high oil prices to Congressional Democrats for not allowing him to break the offshore drilling law his own father signed into law as president and his brother, former Florida Governor Jeb Bush supported. Even IF we did drill for oil offshore and in Alaska's ANWR, and IF it were possible to find the highly specialized offshore, deep water drilling ships to do this, it could be ten years before we could get any of the oil that we think might be there. And IF we found as much oil as the oil company experts predict is there, the total amount of that oil would be just about one month's supply for America.

Is this President Bush's answer to our $4.00 a gallon gasoline and our economic crisis? Remember when he finally got around to touring New Orleans after Hurricane Katrina…his assessment of how things were going was summed up in his support of then FEMA Director Brown…To paraphrase: "You are doing a hell of a job-Bushie."

We need a change!
# # #

Another Broken Corporate Promise

Aker Betrays Philadelphia Compact
Violates Jones Act But Gets Green Light From Coast Guard

By Ronald Ault, President
Metal Trades Department, AFL-CIO

America, we are told, operates under the rule of law. And, we've got laws for all kind of things. Sometimes those laws work, sometimes they don't.

Take the Jones Act—an 80-year-old statute that says, simply: if you're going to move cargo by water between U.S. ports, you've got to use American-built ships, manned by American crews and flying the U.S. flag.

Last month the agency charged with enforcing the Jones Act—the U.S. Coast Guard—"clarified" the meaning of the law a bit, assuring Aker Philadelphia Shipyard Inc. (APSI) that it could essentially bolt together pieces of a Korean-made bow and stern section, use imported piping and modules brought in on 300 containers from Korea and the resultant ship would still qualify for Jones Act service.

Aker sought the interpretation in the face of strenuous objections by the Metal Trades Department and the Philadelphia Metal Trades Council which represents the yard's 600 workers to the company's plans to build 10 double-hulled oil tankers in a partnership with Korea's Hyundai Shipbuilding. Aker plans to build the ships and lease them back to an Aker subsidiary for U.S. coastwise commerce. The department raised its complaints after discovering that hundreds of parts for the line of tankers would be imported from Korea and elsewhere.

The Coast Guard says its interpretation for applying the Jones Act has been "consistent" over the years. They assert that a ship qualifies for Jones Act documentation as long as the gross weight of foreign materials affixed to the ship's hull does not exceed 1.5% of the vessels' overall tonnage. As far as electronics, cabins and other elements of Aker's planned Veteran Class MT-46 Product Tankers, the Coast Guard asserts that those components do not factor into its assessment. The Coast Guard maintains that these components are inconsequential to the U.S.-built consideration.

The Coast Guard did caution Aker that steel sheets that are pre-cut or "drilled, formed or otherwise processed to as to permit assembly with little further preparation" would be considered foreign fabrication. However, they gave the company a back-door escape, noting that as long as those materials don't exceed the 1.5% maximum overall weight, foreign fabrication wouldn't exclude the boats from certification.

Aker's skilled craft workers represented by the Metal Trades Department are appalled at the Coast Guard's tortured logic, and more appalled by Aker's betrayal of its workers and the residents of the Philadelphia region.

About ten years ago the Philadelphia Naval Shipyard closed and 7,000 good skilled craft jobs and hundreds of millions of dollars of federal payroll disappeared. It was part of the initial phase of the so-called Base Realignment and Closure Commission (BRAC) process. A few years before the axe fell on the venerable Philadelphia Naval Shipyard, politicians were assuring the citizenry that there would be an orderly process to develop alternative use for the land and facilities that the Navy was padlocking.

The Philadelphia AFL-CIO Metal Trades Council represented the workers at the old Naval shipyard. The national Metal Trades Department played a central role in the conversion of the facilities and we were deeply involved in the selection process for a new private employer to run what was to be the first new commercial shipyard built in America in fifty years.

Kvaerner was not our first choice, but they were the consensus pick of the regional shipyard consortium that we had joined to restore shipbuilding work to the region. The consortium was made up of government officials from local, state and federal authorities and business leaders.

The consortium opted to bring in a foreign owner to revamp the Philadelphia Naval Shipyard into a state-of-the-art operation. The foreign owner, Kvaerner, said it would establish European shipbuilding production methods at the operation so the U.S. shipbuilding industry could be revived and once again become competitive in the world marketplace.

However, the Metal Trades Department was pressured by the consortium to develop a very different collective bargaining agreement with Kvaerner providing much more relaxed work rules internally, and generous subcontracting rules incorporating European practices.

The trade-off for these unusual terms was that the subcontractors would work under the same union contract terms and conditions, a practice common in European shipyards. The promise again was jobs! Local jobs in the local community, including broader efforts to develop a regional shipbuilding supplier base for all of the specialized materials and parts that the larger yard would need.

Many of our affiliated National and International Union Presidents opposed ratification of the first collective bargaining agreement with Kvaerner. They saw the arrangement as a dangerous precedent that would spread throughout shipbuilding industry. On the other hand, then-Metal Trades Department President John Meese felt that, despite the unorthodox provisions of the agreement, it would be a positive step to restore the shipbuilding industry and bring shipbuilding jobs back to the region—and possibly infuse new energy into the industry nationwide.

In all, the regional consortium leveraged more than a half billion tax dollars worth of subsidies as well as generous work rule concessions by the Metal Trades Department to lure Kvaerner to Philadelphia. In return, Kvaerner pledged to organize, equip and train the workers to operate the newest and most modern shipyard in the world. The taxpayer money was supposed to spur the engine of economic development and bring hundreds of new, good paying jobs to Philadelphia and the entire region. In return for access to this public money, Kvaerner guaranteed a minimum of 600 jobs and an equal number of contractor positions. If Kvaerner failed to maintain minimum number of jobs the company would be held responsible for liquidated damages. Kvaerner and its successor, Aker, have persistently hovered right at the minimum number of guaranteed direct-hire jobs. It has been nearly impossible to monitor Aker's contracting practices.

Aker took over Kvaerner some three years ago and, in the process, accepted the terms of the public-private consortium agreement. Yet, the promises by Kvaerner and Aker to bring back American shipbuilding and ship suppliers and the thousands of good paying jobs with fringe benefits to Philadelphia has never materialized.

Broken promises at a cost of more than a half billion-tax dollars! Once again, the good people of Philadelphia and the surrounding region have been played for suckers.

Instead of the promised jobs, Aker has refined a scheme to outsource more and more of its assembly process to Korea and Europe. Assemblies are stacked into modules and become a section of the hull during the construction of these vessels.

In an oil tanker, the principle components are piping, pumps and valves—by the mile… Aker/Hyundai Mipo Dockyards (Aker/HMD) is building, assembling and testing miles and miles of foreign-made pipe, valves and pumps that will be installed in these product tankers, specifically targeted for U.S. Jones Act commerce even though the company has access to a highly sophisticated (taxpayer-supplied) pipe facility right on the premises.

There ought to be a law, and there is. The "Jones Act", 46USC--App.883 specifically states that a vessel engaged in coastwise trade, must be built in the United States, including the construction of any major components of the hull or superstructure of the vessel. The question is: Where is the sheriff?

The plight of small business owners who invested in the promise of Philadelphia shipbuilding is especially compelling in this situation. Take the case of Philadelphia Marine Fabrication (PMF), a small minority-owned marine fabrication company that has been trying unsuccessfully to become an Aker supplier to provide pipe spools. Aker has told PMF owner Vernon Perry that pipe spool work has been subcontracted out to, yes, South Korea.

Meanwhile, other ship sections are being formed in Germany and made in South Korea. And it is the same story with the masts, antennas, stern tubes, ladders, deck winches, bulbous bow sections and of course, the propellers and rudders.

Why use the American made propeller sitting on a pallet inside Aker Shipyard when you can buy and install a Korean made propeller?

We do not know the full extent of foreign manufactured and assembled components, hull sections and propulsion systems going in these product tankers, but we are discovering additional foreign manufactured and assembled components almost daily.

Based on these unfulfilled promises and the assembly systems used by the APSI management, the MTD believes Aker owes the good people of the region a full refund.

# # #

Ronald Ault is the president of the AFL-CIO Metal Trades Council which represents thousands of shipyard workers as well as privately-employed and government workers engaged in industrial, manufacturing, mining, nuclear and petro chemical operations who are members of the Department's 17 affiliated international unions.

Additional Aker Information:

AFL-CIO Metal Trades Dept. Seeks a Coast Guard Ruling on Aker Shipyard's Failure to Comply with the Jones Act

Thursday May 18, 10:00 am ET

WASHINGTON, May 18 /PRNewswire/ -- The AFL-CIO Metal Trades Department (MTD), representing workers at Aker Shipyard in Philadelphia, has urged the U.S. Coast Guard to investigate the yard's "partnership" with South Korea's Hyundai Mipo Dockyard to determine whether ships Aker is building, specifically a series of ten Veteran Class MT-46 Product Tankers, comply with the requirements of the Jones Act. The Department has also held discussions with key members of Congress to start inquiries on the Hill. Read On >

May 24, 2006 Letter to Aker Lawyer from Coast Guard Attorney Thomas Willis

In a May 24, 2006 letter Coast Guard Lawyer Thomas Willis tells Aker lawyer Jonathan Waldron the Coast Guard will approve Aker's plans for 10 Veteran Class double hull tankers based on the Coast Guard's interpretation of Jones Act regulations. The Metal Trades Department found the Coast Guard's rationale to be "tortured" and "inconsistent" with the intent of the Act. Here's a copy of the Coast Guard letter:

Corporate Recruitment Strategy

US Department of Energy
Office of Human Resources Management
March 2004

Table of Contents

EXECUTIVE SUMMARY 1

INTRODUCTION 4

BACKGROUND AND ENVIRONMENTAL SCAN 4
- Environmental Scan 5
- Projected Retirement Eligibility 6
- DOE's Diversity Demographics 7

KEY CORPORATE RECRUITMENT STRATEGIES
- FOCUS ATTENTION, LEADERSHIP AND RESOURCES 8
  - Secure Commitment 8
  - Establish Council of Excellence 9
  - Expand and Enhance Communication Capabilities 9
- EXPAND THE ENTRY-LEVEL PIPELINE 9
  - Re-centralize CIP Program 10
  - Enhance Use of Student and Recent College Grad Programs 10
  - Increase Use of Hiring Flexibilities 10
- EXPAND AND ENHANCE EFFORTS AT MID-SENIOR LEVELS 10
  - Develop Model Recruitment Strategies 10
  - Develop Vacancy Templates 11
  - Requirement for Workforce Plans to be Linked to Mission 11
- ENHANCE USE OF AUTOMATION 11
  - Re-establish and Enhance Recruitment Website 11
  - Develop and Implement Internet Recruitment Strategy 11
  - Enhance Student Database and Use 11
  - Create CD Rom to Market DOE 12
  - Educate Staff in Use of Internet/Automated Technologies 12
- DEVELOP AND ENHANCE PARTNERSHIPS 12
  - Initiate Consortium with Other Agencies 12
  - Enhance Partnerships with External Groups 12
- EXPAND MARKETING PLAN, COVERAGE, AND BRANDING 12
  - Convene Corporate Outreach and Recruitment Summit 12
  - Seek Out Opportunities to Highlight Successes 12
  - Establish DOE Speaker's Bureau 13
- MAXIMIZE RETURN ON INVESTMENT 13
  - Capture Information on Current DOE-funded Intern/Grant Programs 13
  - Establish and Track Measures 13

Executive Summary

The Department of Energy, like many Federal agencies, is facing growing challenges in recruiting and retaining a highly qualified workforce with the proper skills and abilities for mission accomplishment both now and into the future. Secretary Abraham has described on several occasions that his vision is to make the Department of Energy the "employer of choice and the envy of Federal Government". Yet, we currently face one of the most challenging workforce periods in our history.

There are many factors that contribute to the challenges we face. To highlight a few:

- DOE has an aging workforce and one that is not as reflective of an increasingly diverse US population as it should be;
- The number of graduates in technical areas has been shrinking over the last several years;
- Competition for America's most promising talent is shared with private sector, other government agencies, and non-profits; and
- Many highly skilled candidates find Government hiring procedures quite slow and daunting.

"The President's Management Agenda" (PMA) was issued in Fiscal Year 2002, for the purpose of improving the management and performance of government. Recognizing that these same workforce challenges exist across government, a key initiative, "the Strategic Management of Human Capital", was included in the PMA. A provision of the 2002 Homeland Security Act called for each agency to establish and disseminate a Chief Human Capital Officer (CHCO) to, among other things, oversee the strategic management of its human capital.

One of the first actions of the new Chief Human Capital Officer, was to include a Strategic Human Capital Plan as part of the Department's "Proud To Be" commitments submitted to the Office of Management and Budget, and the Office of Personnel Management. DOE submitted it's plan in 2003, containing a number of initiatives, including the development of a "Corporate Recruitment Strategy". DOE recognized that with increasing workforce challenges and reduced resources, current recruitment/outreach practices must be strengthened and enhanced if we are to be successful in hiring the right people for the right jobs and improving the diversity of our workforce. Key elements of the Strategy include:

- Establishment of a Recruitment and Outreach Council of Excellence
- Enhancing Communication Capabilities
- Expanding the Entry-level Pipeline
- Expanding and Enhancing Recruitment Efforts at mid-senior levels
- Enhancing the Use of Automation
- Initiating New Partnerships
- Expanding Marketing/Branding
- Developing Measures and Tracking Results

If we are to be successful in "becoming the employer of choice," support and commitment must come from senior leadership, and resources must be leveraged to achieve more with less.

Council of Excellence/Measuring and Tracking Results

The Corporate Recruitment and Outreach Council of Excellence will be established to provide a more collaborative DOE-wide approach. In order to develop and enhance processes and methodologies that will address recruitment/outreach needs of the Department as a whole, each primary DOE entity

should be represented. Members would include employees and interns interested in improving outreach and recruitment efforts and those with the authority to dedicate necessary resources to achieve mission goals.

Recently, offices were directed to link employee accomplishment and accountability to mission accomplishment, and submit workforce plans that identify skills gaps in the organization. Rolled-up into a corporate skills needs assessment the information can be used by the Corporate Recruitment Council of Excellence to develop and enhance processes/methodologies that would create a pipeline designed to address specific skills needs. The Council will also analyze organizational and workforce goals, and track progress and results Department-wide.

Enhancing Communication and Use of Technology/Expanding Marketing and Branding/ New Partnerships

The Department has been recognized as a model agency in our recent efforts to expand the use of technology to share information, increase communication capabilities, and market DOE. For example, the DOE "Student Employment Database" was created to provide students we meet at recruitment events with a tool for getting their information to DOE managers. The Corporate Recruitment Calendar web page, established several years ago to provide information on upcoming recruitment activities to DOE managers, is continuously updated and expanded and is used across government. DOE representatives are partnering with other government agencies and groups such as the Office of Personnel Management, Partnership-for-Public Service, the National Association of Colleges and Employers, and others, to establish ways to share resources and develop marketing strategies that attract employees to the Federal government.

Additional websites need to be developed that will:

- market career opportunities and intern programs to candidates,
- provide additional virtual recruitment venues,
- provide useful tools to managers and applicants, and
- increase visibility of DOE achievements.

Entry-Level Pipeline/Expanding Recruitment Efforts at Mid-Senior Levels

As a result of our recent corporate emphasis on entry level hiring identified at the Human Capital Summit in July 2001, DOE has expanded the entry-level pipeline by increasing hiring for professional, scientific, and administrative career fields from 19% of all new hires in 2003, to 29% in the first quarter of 2004. As organizations look more closely at their workforce, recently submitted workforce plans show that there will be an increased interest in hiring at the mid-senior levels, as well as entry-level programs, including the DOE Career Intern Program. This program needs a more centralized approach to ensure that the best possible program is provided and resources are available to support current and future program needs.

Addressing Cultural Diversity

The Department works to increase diversity among its workforce by continuing to recruit at college job fairs held primarily by minority institutions, or at events hosted by minority professional associations. In the "Proud to Be" document submitted to the Office of Personnel Management and the Office of Management and Budget, DOE established a goal to reduce the under representation of Hispanic employment by the third quarter of Fiscal Year 2004. The "Recruit America Campaign", began in 2003 and is designed to increase the number of Hispanics hires in DOE through Hispanic

Serving Institutions. This annual campaign results in hundreds of resumes disseminated to diversity and human resource managers DOE-wide. Since the "Recruit America Campaign" began, Hispanic hires at DOE have risen from 5.5% of all new hires to 6%. Many times there are speaking opportunities at recruitment events such as these and others, with the development of a "Speakers Bureau", DOE can provide information on career opportunities to a wider audience.

Workforce Shaping and Hiring Authorities and Flexibilities

The DOE Human Capital Flexibilities Guide was recently updated and re-issued to provide consolidated information to managers on the necessary flexibilities and tools for managers to recruit top candidates. As organizations are granted workforce-shaping buyout and early out authorities, opportunities are provided to target excess positions or those that can be eliminated, in order to achieve the proper skills mix. Much of our corporate recruitment success over the last tow years is due to the direct involvement and participation of program managers and employees in the recruitment process. Additional efforts will be needed to increase the level of knowledge and involvement of individual managers and the commitment of corporate resources in order to meet the Department's workforce needs as identified in each organization's workforce plans.

Finally, DOE is paving the way for the rest of government in the area of Human Capital Management. Yet, to position the Department to meet future workforce needs, DOE must work together. The Corporate Recruitment Strategy identifies many areas that can be strengthened, and serves as a roadmap to help the program/mission goals of the Department and realize the Secretary's vision for the DOE workforce.

Department of Energy Corporate Recruitment Strategy

The Secretary of Energy has described on several occasions that his vision is to make the Department of Energy the "employer of choice and the envy of the Federal government". He stated that perhaps the most important part of achieving excellence is acquiring and retaining the best people and the best managers. The Department must also be positioned to attract the right people for the right job at the right time with the rights skills.

DOE is facing one of the most challenging workforce periods in the history of the Department and the Federal government. DOE, like many other Federal agencies, has a rapidly aging workforce and skills imbalances in several critical program areas, yet DOE's funding and other resources that support hiring, training and incentive options continue to be limited. Left unaddressed, these problems will grow and adversely impact our mission delivery capability.

The Secretary's remarks, taken together with the gathering momentum of the strategic management of human capital initiative under the President's Management Agenda, provide a strong and dynamic foundation to develop a corporate recruitment strategy and an implementation roadmap that will serve DOE well into the future.

The Department of Energy has submitted its Strategic Human Capital Plan to the Office of Management and Budget and the Office of Personnel Management. This Plan contains a number of initiatives designed to address succession and workforce planning, including a competency assessment and the development of a corporate recruitment strategy. As organizational workforce plans are designed and implemented, attention will quickly shift to effective recruitment and hiring as one of the principal strategies to fulfill management's need for a talented, diverse, skilled, and committed workforce. However, using traditional recruitment methods will no longer be sufficient to meet these workforce needs – rather, innovative strategies that involve collaborative approaches and structured and systematic methods and measures will be called for. Also, consistent with merit system principles, there must be additional efforts to incorporate workforce diversity initiatives into recruitment strategies.

Background and Environmental Scan:

Background: The Department of Energy has been focused on entry-level recruitment for the past 4 - 5 years after several years of inactivity due primarily to an extended period of government-wide downsizing and budget reductions. In anticipation of the looming retirement wave and in acknowledgement of the various processes, mechanisms and in-depth re-education that would be needed to reinvigorate the area of recruitment, a number of activities took place, including:

- A Corporate Outreach and Recruitment Team was formed, comprised of individuals across the Department. The Team was co-championed by the Director, Office of Human Resources Management, an Assistant Secretary for a major program office and a Field Office Manager. This team laid the foundation for a number of activities, including re-establishing the Technical Leadership Development Program.
- The Department began to rebuild and strengthen relationships with colleges, universities and advocacy groups. The Department had maintained continual contact with a few select

diversity groups, but DOE's campus presence had been minimal.

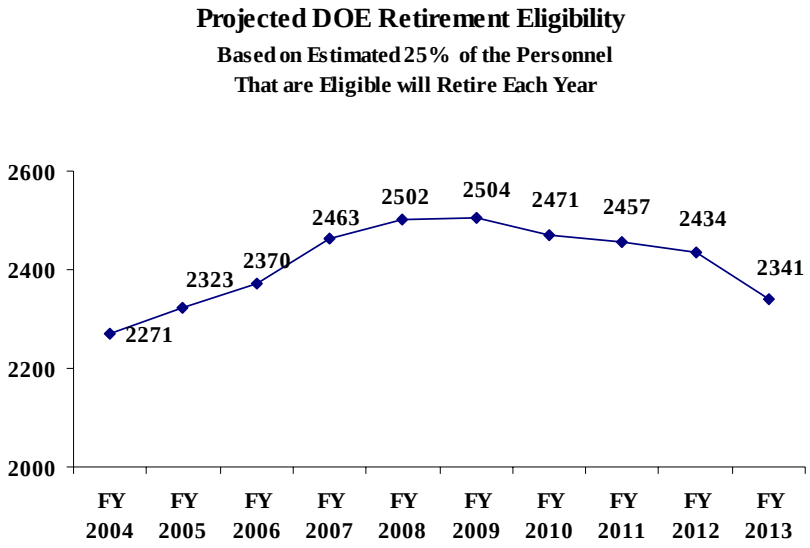
- A number of recruitment goals were established at the Human Capital Summit such as: developing a corporate intern program to address DOE-wide needs for increased hiring and development of highly qualified technical and non-technical entry to mid-level candidates; and establishing an outreach program to educate and inform minority communities about employment opportunities.
- Corporate materials were developed and disseminated, including a slogan, recruitment brochure and newsletter with a "corporate look".
- DOE again participated in strategically selected career and job fairs.
- DOE established special initiatives for targeted groups.
- DOE established a variety of new marketing approaches, including participation in monthly HR Director's conference calls, one-on-one meetings with program officials, periodic memos, publication of guides and tools, etc.
- "Recruit America Campaign" began in 2003 and disseminated hundreds of resumes to managers DOE-wide.

Environmental Scan: DOE's demographics are as follows:

Overall Workforce	Technical Workforce
32% of SES were eligible for optional retirement by December 2003	77% of DOE's workforce is technical, with only 15% under the age of 35 (684)
56% of SES are eligible for optional retirement by December 2007	The average age of DOE's technical workforce is 49 compared to 48 for all DOE
21 % of GS-14 and 15 staff were eligible for optional retirement by December 2003	20% of DOE's technical workforce was eligible for optional retirement by December 2003
42% of GS-14 and 15 staff are eligible for optional retirement by December 2007	41 % of DOE's Technical Workforce is eligible for optional retirement by December 2007

The above information describes a workforce that has one-third of SES, and one-fifth of GS-14/15 and technical workforces eligible to retire now. By December 2007, only 4 years out, between 40 - 56% of employees in these categories will be eligible to retire. Early retirement eligibilities are even more staggering.

Projected DOE Retirement Eligibility, projects the retirement trend using the DOE actual retirement rate of 25% for those eligible for optional retirement. A large number, 2,271 or 14.1 % of the total DOE workforce, are currently eligible for retirement. See next page for graph.



Retirement Eligibility by Occupational Group shows that Program Managers are the highest percentage of employees currently eligible to retire at 26.2%. Other groups over 15% include Safety and Health, Science and Engineering, and Legal.

Category	Retirement Eligible	Retire Eligible End of FY 08
Safety and Health	17.7%	40.3%
Security	10.1%	28.4%
Foreign Affairs and Intell.	9.2%	25.2%
Human Resources	13.6%	37.9%
Administration	12.6%	32.2%
Program Management	26.2%	53.8%
Program and Budget Analysis	12.9%	36.8%
Logistics	10.7%	36.9%
Financial and Accounting	10.6%	28.5%
Science and Engineering	16.1%	34.4%
Legal	18.5%	37.2%
Public Affairs	12.0%	33.7%
Procurement	14.7%	39.0%
Quality Assurance	6.3%	22.8%
Information Technology	9.9%	31.2%
Percentage of the Total	14.1%	34.6%

At the same time, the Federal government as a whole is facing similar numbers:

- By 2010, 600,000 employees will be eligible to retire, including 71 % of senior managers.
- More than half of the Federal workforce is between 45 and 69 years of age. The average age is 46 - up from 42 in 1990.
- Only 5% of the current Federal workforce is younger than 29.
- The last OPM government-wide survey reveals that more than 1/3 of Federal employees are considering leaving their organizations, with 16% planning to retire in the next 3 years.
- At the same time, OPM data shows a 2.7% retirement rate in 2003; 23% lower than OPM's previous predictions.
- 2002 had the lowest quit rate in the last 5 years with about 2.1 % of the workforce separating.

DOE's Diversity Demographics:

Overall National Picture:

- The current downturn in the economy is expected to be short-lived.
- Competition for jobs will increase among private sector, non-profits, academia and other Federal agencies - particularly for highly skilled workers.
- The U.S. labor pool will shift as the baby boom generation ages. The long-term labor shortage continues to be a threat.
- By 2015, there will be a 15% decline in 35-44 year olds, while demand increases 25%.
- New workforce expectations regarding: tenure/mobility; work/life balance and training/development.

The Workforce of the Future:

- The nation's population and workforce will gradually become older and more ethnically diverse.
- By 2005, ethnic minorities are expected to comprise 28% of the workforce.
- More persons with disabilities will enter the workforce in the coming years - currently this group experiences 71 % unemployment.
- By 2020, women will comprise 50% of the workforce.
- Fewer college students are pursuing degrees in technical areas.

There are two areas in need of particular attention government-wide; Hispanic Federal employment, and employment of people with disabilities. Recognizing the crisis in Hispanic Federal employment, President Bush affirmed (July, 2001) Executive Order (E.O.) 13171 (Hispanic Federal Employment). The Executive Order calls for Executive Departments and Agencies to "… *establish and maintain a program for the recruitment and career development of Hispanics in Federal employment. In its program, each agency shall provide a plan for recruiting Hispanics that creates a fully diverse workforce for the agency in the 21st century…"*[1]

[1] Executive Order 13171, Section 2, 2(a) October, 2000 – affirmed, July 2001

In 2000, Hispanics made up 6.6% of the Federal workforce as compared to 11.8% of the Civilian Labor Force.[2] At the Department of Energy in 2000, only 5.6% of the workforce was Hispanic. While the percentage of Hispanics in the DOE workforce has increased slightly in the last 3 years to 6.2%, this does not represent the complete picture. Over the past two years only one Hispanic has been hired for every two that have left DOE.

Also issued in 2000, Executive Order 13163, which remains in effect, directs the Federal government to hire 100,000 new employees with disabilities by July 2005. As of September 2001, people with disabilities made up 6.9 % of the DOE workforce. The Office of Personnel Management set a goal for the Department of 240 new hires to government by 2005. Since 2001, the Department has hired 137 people with disabilities. However, the numbers from 2002 to 2004 show that for every person with a disability that has been hired in DOE, slightly over 18 have left.

As the previous information lays out, the DOE Corporate Recruitment Strategy must address a variety of needs. First, anticipated losses of the current workforce over the next 5 to 10 years will accelerate the number and type of recruitment needs. Second, the general civilian labor pool is shrinking and competition will increase for qualified applicants for mid-level and senior-level positions. Third, the Department must increase its overall diversity, with special attention to two underrepresented groups – Hispanics and persons with disabilities.

To be successful, DOE's Corporate Recruitment Strategy must be visionary and bold. It must encompass a variety of tactics and methods in addressing the complex economic and workforce dynamics that will continue to evolve and impact the marketplace. The Department of Energy must make full use of opportunities such as the "Work for America" career fairs sponsored by the Office of Personnel Management, to capture the right talent. DOE will take an expanded approach to corporate recruitment that includes, where applicable, partnering with DOE Laboratories on key elements of the Strategy. There are a number of opportunities and solutions that, with leadership, commitment and adequate funding, will provide DOE a pool of talent that will be in place to carry out the Department's critical mission areas and provide a substantial return on investment to the American public.

Key Corporate Recruitment Strategies:

1. FOCUS ATTENTION, LEADERSHIP AND RESOURCES TO A CORPORATE APPROACH TO OUTREACH AND RECRUITMENT

- **Secure Commitment From DOE Senior Leadership on DOE's Corporate Recruitment Strategy.** To revamp and enhance what has been done in the past will require new thinking and renewed commitment. A critical first step is securing leadership and commitment from the highest levels of the Department. Steps have been taken to address developing organizational workforce plans in the budget process and program offices are being now being held accountable for strategic human capital management. The time is right for that commitment to be demonstrated by actions and increased accountability in the recruitment arena. As a key piece of workforce planning, each program office should develop its own recruitment strategy that addresses specific

[2]OPM Federal Employment Statistics, September 2000

skills needs/gaps. These unique organizational recruitment strategies can then be supported by the overall DOE corporate strategy with specific occupations and competencies identified. The Corporate Recruitment Strategy including measurable goals, progress and results should be discussed at a Management Council meetings and memoranda and other messages should be signed at least at the Deputy Secretary level, outlining the specific roles, responsibilities and activities that are key to the success of this strategy for each program office, as well as the Department as a whole.

- **Establish a Corporate Recruitment and Outreach Council of Excellence.** Strategic Human Capital Management is much larger than just federal human resources and this Council should reflect that broadened and enhanced standing. The Council should include representation from across the Department, including the laboratories, and include the diversity and training communities, the human resources offices, line managers, current and former interns, and students. There will be a Steering Committee co-chaired by the Chief Human Capital Officer/Director of Human Resources and the Associate Administrator for Management and Administration, NNSA that is comprised of representatives from ME-50, a major HQ Program Office, a major DOE laboratory, NNSA, and Union representatives as appropriate. This Council will be chartered to develop and implement the details of the corporate recruitment strategy and ensure that it addresses the needs of the whole Department. This Council will also develop and implement innovative programs, processes, measures and other activities associated with recruitment that furthers the mission of DOE. The Council would be expected to review the Business Case introducing centralized funding strategies and make enhancements as needed, develop legislative proposals for new or expanded flexibilities that would address program workforce needs, and submit these to the Chief Human Capital Officer for consideration. As workforce plans evolve, the Council will conduct annual reviews and make necessary enhancements to corporate recruitment strategies and goals so they will continue to address workforce needs DOE-wide.

- **Expand and Enhance Recruitment and Outreach Communication Capabilities.** There are currently a variety of systems in place to share corporate outreach and recruitment information, but these need to be expanded and enhanced. Each monthly HR Directors' conference call contains a standing segment on this topic. A network of Career Intern Program Coordinators has been put in place to share information to applicants on this program and to exchange information with one another through periodic conference calls. Additional vehicles need to be put in place to share information on the various initiatives and collaborations in place, including the Call to Serve initiative, National Association of Colleges and Employers (NACE) and other resources. Suggested approaches include quarterly conference calls with recruiters/HR staffs, periodic newsletters describing activities, establishing a network of staff involved with recruitment activities to share information via e-mail, etc. This matter should be addressed by the Corporate Council described above.

2. EXPAND THE ENTRY-LEVEL PIPELINE

It has been many years since DOE has considered students and relationships with colleges and universities in a systematic way as a pipeline for permanent entry-level positions. Opportunities have been lost to integrate these students into the DOE culture and provide them with a meaningful job experience and training opportunity that would help them to prepare to assume the responsibility of a permanent position with DOE. We cannot afford to wait until employees leave to prepare to recruit and fill behind them. It typically takes three to five years of full-time

work experience and training for a student/recent graduate to progress to a full-performance level position (GS-12/13). It is imperative that a critical investment be made now to ensure that there is a cadre of skilled and diverse employees in line to move into critical positions as they become available. DOE must immediately begin to fill more positions at the entry-level to ensure a vibrant and talented pool is available for permanent selection.

- **Re-Centralize the DOE Career Intern Program and Issue New Career Intern Program (CIP) Guide.** It has become increasingly challenging to secure funding and attention to this program in its current decentralized implementation. In order to make it the pipeline vehicle that it was intended, the program should be re-centralized, funded and managed corporately. The program should include rotational development to provide interns with a more comprehensive understanding of DOE operations. Benchmarking shows that successful intern programs are funded, filled and managed centrally and it is time to do that with the CIP. So far there are approximately 30 interns in the program in two classes, but it has been very labor intensive and difficult to arrange adequate training when interns are hired at different times throughout the year.

- **Enhance the Use of Student and Recent College Graduate Programs.** DOE provides a number of opportunities for students to work at DOE facilities and to get to know the Department and its important missions, yet we do not systematically transition students into the permanent workforce. Increased focus must be placed on ways to properly orient students into DOE, maintain continued contact with promising students, to serve as mentors to them, partner with their schools and encourage their interest in DOE as a permanent career choice. Increasing the numbers of students enrolled in these "feeder" programs, including the Student Career Experience Program (SCEP); Student Temporary Employment Program (STEP); Schedule A appointments for persons with disabilities; Student Volunteers; and other time limited appointments, will result in a qualified talent pool from which to draw for permanent employment.

- **Increase use of existing hiring flexibilities.** There are a number of hiring authorities that may be used to facilitate the hiring process for entry-level employees, including:
    - conversion of students working under the SCEP program;
    - Outstanding Scholar authority, when used in conjunction with regular competitive recruitment;
    - appointment of persons with disabilities;
    - the Federal Career Intern authority; and
    - Presidential Management Intern Program.

3. EXPAND AND ENHANCE RECRUITMENT EFFORTS AT MID- AND SENIOR LEVELS

- **Develop model recruitment strategies for use across the organization to link organizational needs with recruitment efforts as part of workforce planning.** Recruitment strategies have been effective at the entry-level and are being expanded to include mid- and senior level positions. Articulating and addressing organizational settings, context and needs as part of corporate recruitment planning achieves a more effective and strategic result. Strategies should address a brief summary of the organization's mission/vision and organizational setting, a brief summary of the basic duties and responsibilities of the position(s), basic qualifications and

any special requirements, recruitment (including internet, diversity, professional and other sources) and marketing strategies, incentives, costs, etc. These model strategies can/should be used organizationally rather than position by position for maximum effectiveness.

- **Develop corporate templates and tools for use in designing attractive, concise, informative vacancy notices that will attract the candidates we seek.** By using the new features connected to RecruitmentOneStop and incorporating those with DOE's internal automated staffing tools, templates/examples of effective corporate vacancy announcements will be developed and shared across the complex. Consideration will be given to the audience being recruited in shaping the DOE message and position setting.

- **Requirement for workforce plans to be linked to organizational mission.** The newly re-chartered Staffing Review Board of the DOE Energy Review Board is focusing on SES allocation management, SES executive workforce plans, and SES recruitment/diversity strategies and initiatives. A memo has been drafted and is about to be signed that will require organizations to link workforce plans to their mission and increase efforts to reach diverse candidates through enhanced recruitment efforts.

4. ENHANCE THE USE OF AUTOMATION IN CORPORATE RECRUITMENT ACTIVITIES

- **Re-establish and Enhance the DOE Corporate Outreach and Recruitment Home Page.** This web page had first been developed under the auspices of the original Corporate Outreach and Recruitment Team, but had been disbanded and its contents housed on various other web sites. A Corporate Recruitment and Outreach Home Page should be re-established and serve as a one-stop directory of information on all recruitment and hiring in DOE. Current tools and guides should be incorporated as well as information on intern programs, career opportunities, DOE's mission, diversity strategies, etc.

- **Develop and Implement a Recruitment Internet Strategy for DOE.** The time is right for DOE to develop and implement a comprehensive internet recruitment strategy that will address the various vendors available for use, tips on how to advertise successfully on internet job sites and how to best access and initiate/maintain contact with applicants using this method. Ideas for corporately funding automated recruitment strategies should also be explored.

- **Enhance Student Database and its use. Revise registration information and shelf life.** Current databases are populated with approximately 1000 registrants jointly and have been active since fall 2002. Focus must turn to making these sites more user friendly for registrants by setting up consistent procedures, including length of time registrations are active, and reviewing current fields to see if additional ones are needed/current ones eliminated/adjusted. These databases have been an excellent source of candidates for Career Intern Program opportunities, as well as student employment and serve as a good repository for information/candidates contacted at career events. Enhanced marketing strategies are needed to educate managers on database availability and proper use.

- **Design and Create a world class CD-ROM that markets DOE and it's career opportunities.** Using largely existing information and video/digital images, create a CD ROM that can be used at various events to market DOE to a wide audience.

- **Educate staff to better utilize internet/automated technologies.** The advent of automated technologies in the recruitment and hiring arenas has been developing at a rapid pace. Steps must be taken internally to educate HR professionals, applicants, managers and other users on ways to develop, access and use these technologies to DOE's best advantage. Sample job announcements, tips on handling volumes of respondents and methods to quickly and periodically contact candidates are key to successful recruitment and are particularly important in an automated setting. Training should be developed for in-person and virtual settings that will assist practitioners in making use of this approach to effective recruitment.

5. DEVELOP AND ENHANCE PARTERSHIPS AND COLLABORATE WITH OTHER FEDERAL AGENCIES, NON-PROFITS AND EDUCATIONAL INSTITUTIONS

- **Initiate a Recruitment Consortium for Technical and Scientific Skills/Occupations With Other Agencies, such as NASA, NRC, DOT and Labor.** Many Federal agencies are competing against each other in recruiting talent and this is particularly true in the science and technical areas. DOE should undertake collaborative efforts with agencies having similar needs to explore ways of working more closely together toward mutual goals rather than competing for talent. Sharing information, resources and best practices will enhance all of our efforts and build a stronger Federal presence.

- **Enhance Partnerships with External Groups, such as Office of Personnel Management, Call to Serve, Partnership for Public Service, and NACE.** DOE will take advantage of opportunities to work closely with OPM and others to improve/enhance the recruitment and on-the-spot hiring results.

6. EXPAND DOE'S MARKETING PLAN, COVERAGE AND BRANDING.

DOE has established a variety of corporate materials with a corporate "look", but a serious effort at branding and corporate marketing of career opportunities is needed. Publicizing the programs and innovations that DOE has undertaken in this area is an essential part of this approach.

- **Convene a Corporate Outreach and Recruitment Mini-Summit.** A mini-summit is essential to bring together a variety of DOE communities, including laboratories, to develop corporate outreach goals and strategies in areas of common interest. Such areas should include a DOE brand, marketing materials, web sites/access, increased use of the "DOE Street" concept at job and recruitment fairs and other ideas that can leverage resources both financial and human. This will also provide a corporate vehicle that will be useful in learning more about DOE's programs, opportunities and successes across the entire complex.

- **Actively seek out forums and opportunities to highlight DOE's successes and build on these successes.** Use the current Call to Serve network and other forums, including IPMA, NAPA, Performance Institute, etc. to brief diverse audiences on DOE's opportunities and innovative recruitment and hiring programs. Prepare standard "press sheets" and other materials

that can be used by any staff member to brief any size audience and serve as a foundation for written articles.

- **Establish an active DOE Speaker's Bureau** that will be comprised of managers, HR professionals, diversity managers, and employees – particularly those in DOE pipeline/feeder programs. Assemble bios and background information/availability and use as method to enhance DOE's presence at various internal and external events.

7. DEVELOP MEASURES AND TRACK RESULTS TO MAXIMIZE RETURN ON INVESTMENT OF CORPORATE OUTREACH AND RECRUITMENT ACTIVITIES

It is often difficult to measure return on investment in Federal recruitment since, unlike in the private sector, there is not a strong link from the recruitment activity through to a successful hire. However, in order to make a strong business case for an active corporate recruitment program, and to make sure that resources are invested wisely where we are most likely to attract the talent that we want, a proactive look at such indicators and measures is important. Two approaches are proposed as initial efforts to begin evaluating return on investment.

- **Capture Information on Current DOE-funded Intern/Grant Programs to Explore Linkages with Federal Employment.** DOE sponsors and funds a variety of scholarships, grants and other mechanisms that assist students and educational institutions in pursuing higher education, particularly in the math, physical sciences and engineering areas. Little has been done to explore opportunities to link these programs with Federal employment so that DOE can capitalize on its investment and encourage these students to consider DOE and the Federal government as "an employer of choice". Active efforts must be made to capture the information on such programs and to work closely with program officials to design and deliver programs that can address a close linkage with Federal employment.

- **Establish and track measures and results to define success.** It is critical that DOE begin to baseline and track costs and measures to get a foundational understanding of the relationship of recruitment investments to the level of success in meeting workforce challenges. Current measuring capabilities include tracking numbers of applications received and from where, impacts of recruitment visits on registrations in student/intern databases, etc. The past two years' recruitment and outreach efforts must be evaluated to capture where DOE has visited corporately and determine the resources (human and financial) that have been invested. A methodology to assess the impact of that investment will need to be developed and should incorporate such measures as numbers of candidates applying for positions, how applicants learned about opportunities, numbers of candidates registering on student/intern databases, use of databases in recruitment efforts, etc. Additional sources of information could be the impact of diversity sources on applicant pools, periodic follow-ups with diversity sources to determine usefulness of recruitment information and numbers referred, etc. A close look should be taken at where physical recruitment takes place (career fairs, etc.) and other methods of developing and maintaining relationships. However, these figures reveal little about the impact of initiaves on skills gaps and improvements in program performance. DOE will begin examining workforce data and defining a limited, balanced set of measures that address areas such as:
    - Reducing skills gaps

- Increased retention
- Improved quality and efficiency of recruitment transactions
- Increased diversity in candidate pool
- Quality of hire

The Corporate Outreach and Recruitment Council will be charged with developing measures that are appropriate to DOE based upon current organizational workforce plans.

Core Team Labor Union Representative

and

Stakeholder Bios

November 6, 2008
HSS/Union Meeting

Erich J. (Pete) Stafford

Director
Safety and Health Department
Building Construction Trades Department AFL-CIO
AND
Executive Director for the Center for Construction and Research Training (CPWR)

Pete Stafford is the Director of the Safety and Health Department, Building and Construction Trades Department, AFL-CIO and is responsible for occupational and safety health issues related to the building and construction industry. In this position, Mr. Stafford also represents the National Building Trades and 15 International Unions on all safety and health matters, including research and training; and provides assistance to state and local councils in developing programs specific to regional needs and policies.

In addition, Mr. Stafford is the Executive Director of the Center for Construction Research and Training (CPWR). The CPWR is a nonprofit research and development institute established by the Building and Construction trades Department of the AFL-CIO. Mr. Stafford also serves as Principal Investigator for the NIOSH Cooperative Agreement for Construction safety and Health Interventions, the NIOSH Centers for Construction Safety and Health, and the NIEHS Cooperative Agreement for EPA and DOE Hazardous Materials Worker Health and Safety Training. Mr. Stafford authors applications for, and currently administers, 17 Federal grant programs. As Executive Director of the CPWR, Mr. Stafford oversees all products/reports preparation and dissemination; direct marketing and public relations; and reports findings to construction union leadership.

Mr. Stafford is currently a member of the following professional affiliations:

- National Safety Management Society
- Building and Construction Trades Department Safety and Health Committee
- Washington Construction Safety Association
- American National Standards Institute
- National Safety Council

Patricia S. Quinn, Program Director
The Center for Construction Research and Training
(Formerly the Center to Protect Workers' Rights)

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
The Catholic University of America, Washington, D.C.	B.A.	1985-89	English

A. Positions.

DOE PROGRAM DIRECTOR
ENERGY EMPLOYEES UNIT 1996- PRESENT
CPWR – The Center for Construction Research and Training, Silver Spring, MD
(Formerly The Center to Protect Workers' Rights)

Coordinate, oversee, and monitor work on The Building Trades National Medical Screening Program that provides screening services to construction workers from 19 U.S. Department of Energy sites. Monitor the work of 3 sub-grantees. Activities include, grant and protocol writing, reporting, program and financial management. CPWR liaison to DOE headquarters, DOE site personnel, and to subgrantees. Work with local institutional review boards to ensure the projects protocols fully protect the rights of the workers.

Manage a contract with the US Department of Labor to find ways to obtain union and union-employer trust fund records that can be used to verify that a construction worker was employed by a DOE contractor at a particular DOE facility during a particular time.

SMALL STUDIES COORDINATOR 1991- PRESENT
CPWR – The Center for Construction Research and Training, Silver Spring, MD
Administers CPWR Small Studies program, including processing proposals, coordinating reviews, monitor funding, and maintain records.

PARALEGAL/HEALTH SCREENING COORDINATOR 1989-91
The Occupational Health Foundation *Washington, D.C.*

Implemented and coordinated nationwide asbestos screening and education programs for high-risk union members on behalf of the various AFL-CIO affiliates. Liaison between union officials and medical providers to ensure adherence to program guidelines and administrative procedures. Other responsibilities include conference coordinating, development of educational materials for union clientele, researching interest of American workers including the fetal protection policies, child labor statutes, and workers' compensation programs.

B. Publications.

Tillett, S, Sullivan (Quinn), P. Asbestos Screening and Education Programs for Building and Construction Trades Unions, *American Journal of Industrial Medicine* 23:143-52, 1993.

Dement JM, Welch LW, Bingham E, Scott J, Cameron B, Rice C, Quinn P, Ringen K. Surveillance of Respiratory Diseases among Construction Workers at Department of Energy Work Sites. Amer. J. Ind. Med. 43(6):559- 573, 2003.

Welch L, Ringen K, Bingham E, Dement J, Takaro T, McGowan W, Chen A, Quinn P. Screening for beryllium disease among construction trade workers at Department of Energy Nuclear Sites, *America Journal of Industrial Medicine* 46:207-218, 2004.

Dement J, Ringen K, Welch L, Bingham E, Quinn P. Surveillance of Hearing loss among older construction and trade workers at Department of Energy Nuclear Sites, American Journal of Industrial Medicine 48:348-358, 2005.

Bingham, E., Ringen, K., Dement, J., Cameron, W., McGowan, W., Welch, L. and Quinn, P. Frequency and Quality of Radiation Monitoring at Two Gaseous Diffusion Plants. New York Academy of Sciences, 2006.

Frank L. Migliaccio, Jr.
Executive Director of Safety and Health
International Association of Bridge, Structural, Ornamental, and Reinforcing Ironworkers

Frank L. Migliaccio is the Executive Director of Safety and Health for the International Association of Bridge, Structural, Ornamental, and Reinforcing Ironworkers. He is a U.S. Department of Labor (DOL) OSHA 500 Master Instructor (Train-the-Trainer), and a (DOL) Mine Safety Health Administration Master Instructor for the Ironworkers Train-the-Trainer classes given at the University of San Diego in California. He is also an instructor for OSHA Hazardous Material, Scaffold, Lead, Confined Space and Subpart R- Steel Erection training, among others. Previously he served as the Director of Safety and Health Training for the Ironworkers National Training Fund and was a member of the Subpart N, Crane and Derrick Negotiated Rule Making Committee.

Mr. Migliaccio chairs the AFL-CIO Building and Construction Trades Departments Safety and Health Committee and sits on the Advisory Committee on Construction Safety and Health. Other committee memberships include the Ironworkers Safety Advisory Committee, the Mine Safety and Health Alliance Committee, Department of Labor Drug Free Workplace Alliance, the National Commission of the Certification of Crane Operators, the Specialized Carriers and Rigging Association's Labor Committee, and the IMPACT Substance Abuse Task Force.

Mr. Migliaccio has been an Ironworker for close to 38 years. He has 17 years of field experience, served as an apprentice coordinator for Local Union 201 in Washington D.C., and has been working at the International Association of Bridge, Structural, Ornamental, and Reinforcing Ironworkers for the past 17 years, with almost 7 years in his current position as Executive Director of Safety and Health.

Frank Migliaccio attended the University of Maryland where he majored in Industrial Arts Education.

International Association of Fire Fighters

Patrick Morrison

Assistant to the General President for Education, Training and Human Relations
International Association of Fire Fighters
1750 New York Avenue, NW
Washington, DC 20006

2003–2007	Director, Occupational Health and Safety Department International Association of Fire Fighters, Washington, DC
2003–2007	Director, IAFF Burn Foundation International Association of Fire Fighters, Washington, DC
1981–2002	Career Fire Fighter, Lieutenant Fairfax County Fire and Rescue Department, Fairfax, VA

International Association of Fire Fighters

Thomas Perkins

President of IAFF Industrial Local 24

Thomas Perkins is a Captain at the Hanford Fire Department. Located in Washington State, the Department is owned and directed by the U. S. Department of Energy and responds to over 560 square miles of land, sagebrush and nuclear reactors. The site is the location of both ongoing and historic nuclear research. Mr. Perkins has been a fire fighter for nearly 20 years.

James R. Tomaseski
International Brotherhood of Electrical Workers
Director - Safety and Health Department

WORK HISTORY

1978 - Graduated from Lineman Development Program, Virginia Electric & Power Company (63 month training program)

1978 – 1993 - Employed as a lineman, Virginia Electric & Power Company, performing work on:

- overhead and underground distribution system construction and maintenance work on voltages up to 34.5 kV utilizing both hot-stick and rubber gloving techniques
- underground distribution system construction and maintenance work on voltages up to 34.5 kV
- all aspects of transmission systems including hot stick work 110 -500 kV, and bare hand work techniques, 230 - 500 kV
- 5 years experience performing trouble shooting/service restoration procedures

1993 – 2001 - Employed by the International Brotherhood of Electrical Workers, Utility Department
Primary responsibilities included:

- Safety and Health issues related to the Electric utility industry
- Coordinating NESC, ASTM, IEEE, ANSI, NFPA and other code work activity for Utility Department staff

Current Position - Director, Safety and Health Department
Primary responsibilities include:

- Safety and Health issues related to all branches of membership in the IBEW
- Broadcasting, Construction, Manufacturing, Railroad, Telephone, Utility
- Representing the IBEW on National Consensus Standards Committees
- ANSI, ASTM, IEEE, NESC, NFPA
- Liaison with OSHA regarding regulation development, compliance, and enforcement

STANDARDS COMMITTEE ACTIVITY

Member of American Society for Testing and Materials (ASTM) Committee F-18 on Electrical Protective Equipment for Workers, holding the following Committee positions:

F-18 Main Committee – IBEW Representative
F-18.65 on Wearing Apparel - Secretary
F-18.35 Task Force on “Hot” ropes - Chairman
Voting Member of F-18.15 on Worker Personal Equipment, 18.25 on Insulating Cover-Up Equipment, 18.35 on Tools & Equipment, 18.45 on Mechanical Apparatus

STANDARDS COMMITTEE ACTIVITY (cont.)

ASTM Committee E34 on Occupational Safety and Health
ASTM Committee E13 on Pedestrian/Walkway Safety and Footwear

Member of the following Committees on the National Electric Safety Code (NESC / ANSI C2):

Main Committee - Vice Chairman
Subcommittee 1 - Purpose, Scope, Application, Definitions, and References
Subcommittee 2 - Grounding Methods
Subcommittee 3 - Electric Supply Stations
Subcommittee 4 - Overhead Lines/Clearances
Subcommittee 7 - Underground Lines
Subcommittee 8 - Work Rules - Chairman
Executive Subcommittee - Voting member
Interpretations Subcommittee - Voting member

Member of Institute of Electrical and Electronic Engineers (IEEE) Power Engineering Society / Electrical Safety and Maintenance of Lines (ESMOL), serving on several Task Forces involved with IEEE Standards development.

Member of American National Standards Institute/Scaffold Industry Association (ANSI/SIA) A92 Committee on Aerial Platforms serving on the following subcommittees:

A92.2 - Vehicle-mounted Elevating and Rotating Aerial Devices

Other ANSI Standard Membership:

A10 - Safety Requirements for Construction and Demolition (Vice-Chairman)
A14 - Ladders
Z133 - Tree Care Operations
Z244 - Control of Hazardous Energy (Lockout/Tagout)

OTHR PROFESSIONAL ACTIVITY

IBEW representative to the National Safety Council
- Member of the Construction Division, Utility Division, and Labor Divisions

IBEW representative to the Electrical Safety Foundation International

Safety Equipment Institute – Board member

International Electro-Technical Commission (IEC) – Deputy Technical Advisor to the United States technical advisory group (TAG) to Technical Committee 78 on Live Working (TC-78)

Biographical Work History
of
William D. "Chico" McGill
Labor Representative & Safety and Health Emphasis

Date of Birth: January 12, 1951

Business Address: I.B.E.W. International Staff
900 Seventh Street N.W.
Washington, D.C. 20001
Work 202-728-6042

Home Address: 23226 Bent Tree Lane
California, MD. 20619
Home 301-862-4274

Titles and Positions currently held, or have held:

International Brotherhood of Electrical Workers (IBEW);

Appointed by International President Edwin Hill as the Director of the Government Employees Department of the IBEW.

Responsibilities are to work in conjunction with other departments as matters may develop with the primary focus being workers with collective bargaining agreements in the federal sector. This includes Department of Homeland Security, Department of Defense, and Department of the Interior, Department of Energy, Bureau of Reclamation, and Government Printing Office. National Aeronautic Space Administration, Army Corp of Engineers, as well as other Executive Agencies, including all federal shipyards and private shipyards in the United States and shipyards and Governmental Agencies in Canada under IBEW jurisdiction. This also includes State, Municipal, Provincial, and County employees.

This covers workers in many areas and classifications from park rangers, to public works employees, first responders and police, utility workers, marine electricians, electronic technicians, maintenance workers etc.

To assist in the organizing of members in the above entities, assist local unions as well as the Districts in the IBEW from safety related topics that may impact federal employees or shipyard workers in conjunction with our Safety Department to contractual matters, including new legislation.

IBEW LOCAL UNION 733;

1- Business Manager/Financial Secretary, 1997 to 2005
2- Assistant Business Manager, 1977 to 1979 & 1988 to 1997
3- Chairman Local Union's Safety Committee 1977 to 1979 & 1987 to 1997
4- State Vice-President AFL-CIO Executive Committee
5- Executive Board Member Mississippi State AFL-CIO
6- President Jackson County Central Labor Council

7- Appointed as Delegate to Maritime Trades Department Convention AFL-CIO by IBEW International President J.J. Barry
8- Vice President Mississippi State Electrical Workers
9- Affiliated Member Pascagoula Metal Trades Council
10- Affiliated with and Executive Board Member New Orleans Metal Trades Council
11- Member Board of Directors South East Mississippi Red Cross
12- Sponsor Electrical Apprenticeships Ingalls Shipbuilding & Avondale Shipyard
13- Member Jackson County Chamber of Commerce
14- Member National Workforce Coalition
15- Chairman of AFL-CIO Committee and Member of a Coalition of Health Care Professionals and Local Chamber of Commerce & Labor Unions on Health Care Reform
16- Chairman of the New Orleans Metal Trades Council Safety Committee

NORTHROP GRUMMUN SHIP SYSTEMS INGALLS SHIPBUILDING DIVISION;

1- Member and Past Co-Chairman, Ingalls Shipbuilding Labor/Management Safety Committee 1987 to 1990
2- Member Steering Committee for Safety Action Teams, 1997 to 1999
3- Member Joint Apprenticeship Training Committee 1997 to 2000

NATIONAL SAFETY COUNCIL LABOR DIVISION

1- Member National Safety Council, Labor Division, 1987 to present, Including Membership and Past Chairmanship of Maritime Safety Committee, and active member of the following committees in the Labor Division: Executive Committee, Program Planning Committee, Welcoming Committee, Government/Labor Agencies and Standards Committee, Promotion of Training and Education in Safety and Health Committee, Bylaws Review Committee Chairman
2- Member Board of Directors, representing the Labor Division 1996 to 1998
3- Appointed to Board of Delegates after redefining structure of Council 1998 to 1999
4- Vice Chairman Labor Division 1997 and 1998
5- Chairman of the Labor Division 1998 to 1999
6- Currently Labor Division Secretary
7- Recently appointed to the Nominating Committee of the Labor Division of the National Safety Council

NSRP/MARITECH;

1- Member and Past Co-Chairman representing the interest of the International Brotherhood of Electrical Workers, at the National Shipbuilding Research Programs, Ship Production Panel 5, Human Resource Innovation Committee

2- Associated with the Society of Naval Architects and Marine Engineers
3- Appointed by IBEW International President J.J. Barry to represent The IBEW in what is now a part of MARITECH, September 1993 to 2005

MARITIME ADVISORY COMMITTEE TO OSHA "MACOSH";

Appointed by former Secretaries of Labor, Robert B. Reich, Alexis Herman as well as present Secretary of Labor Elaine L. Chao as a Consultant representing Labor Committee to OSHA, from 1995 to 2004.

Experience:

The following information is reflective of my experience in the field of safety and health related activities, as they relate to Union and Labor Management Relations. All other qualifications of work or Trade related experience as an electrician is available upon request.

8/77 to 4/79 Titles: a) Assistant Chief Steward, IBEW Local Union 733
b) Assistant Business Manager, IBEW Local Union 733

Duties: Responsible for enforcement of contractual requirements of safety and health language for all Bargaining Unit Employees at Ingalls Shipbuilding Inc., Pascagoula, Mississippi. Participated in the writing of the Local Union Newsletter with safety and health reminders, as well as Educating Local Union stewards in the OSHA requirements for CFR 1915 & 1910, as well as requirements of the NEC.

5/81 to 6/82 Duties: Returned to employment at Ingalls Shipbuilding as A First Class Electrician and was appointed a Craft Inspector for the Tarawa Class ships being built. In this Capacity, was responsible for assuring the safe and proper Installation of all types of electrical equipment and Systems according to IL/SPEC. Was a liaison Between Ingalls Electrical Department and Quality Assurance for Ingalls Shipbuilding as well as Navy QA, resigned for other employment.

6/82 to 10/84 Duties: Employed by a maintenance contractor at Borg Warner Chemicals, in Port Bienville, Mississippi. Responsible for educating new employees in safe application and installation of electrical equipment in hazardous Locations as defined in the National Electrical Code. This was under the Japanese style of Participative Management and Team Concept. Left to be self employed.

10/84 to 1/86 Duties: Subcontracted with American Information Management Systems installing computerized fuel management systems on crew boats and supply boats in the Gulf of Mexico and Inland River waterways. These jobs had to pass Coast Guard Inspection as to safe installation and Operation. I was responsible for up to four workers while on shipboard, and upgrading of safety training and Education of the safe installation of these systems, left to return to employment at Ingalls Shipbuilding Inc.

3/86 to 2005 Title a) Chief Steward, IBEW Local Union 733, 6/87 to 2/88
b) Assistant Business Manager, IBEW Local Union 733, 2/88 to 3/97
c) Business Manager/Financial Secretary IBEW Local Union 733, 3/97 to present
d) Chief Negotiator (Contracts)

Duties: Returned to Ingalls Shipbuilding Inc., as a Marine Combination Electrician, and was once again appointed to Positions in the Local Union representing approximately 1,800 Bargaining Unit employees. Responsible for the Review of Company safety procedures and problems related to safety and health; formulate and suggest programs and procedures for recommendation to management. Appointed Chairman of the Local Union's Safety and Health Committee with the duty of educating the membership on safety and health related topics. Lead spokesman on OSHA Standards up for Public comment affecting the shipbuilding industry, as well as becoming the lead representative for the Local Union during all OSHA inspections, having had party status during inspections and following OSHA proceedings at Ingalls.

Appointed in 1989 as Safety Representative on the Ingalls Labor/Management Safety Committee, served as Co-Chairman of that committee and remain an active member. Was appointed to represent the Local Union at the Shipyard Employment Standards Advisory Committee meetings in the fall of 1992 and attended meetings until the committee was dissolved by Presidential directive.

Appointed in 1987 to represent the Local Union at the Labor Division of the National Safety Council, still an active member and officer in the Labor Division, helped to establish the Maritime Industries Safety Committee, which served the safety and health interest of workers in the maritime trades. As Safety and Health Committee Chairman at the Local Union, I have started a program in CPR and First Aid training as an Agency of the National Safety Council. In January 1995 we became a Training Agency for Levels 1 & 2 First Aid and CPR, (Adult to Infant including Choking Victims)

Education:

Basic: St John Catholic School Grades 1 to 6
Leonardtown Junior High Grades 7 to 8
Chopticon High School Grades 9 to 10
All in St. Mary's County, Maryland

Attained GED at age 16 in the Job Corp at the Breckinridge Job Corp Center in Morganfield, Kentucky.

Attended two semesters at Jeff Davis Junior College and Majored in Radio Broadcasting took mainly academic courses in English, Oral Speech, etc.

Safety Related:

I have pursued Continuing Education courses obtaining CEUs to enhance my ability to train and educate the stewardship and membership in areas of safety and health. These courses have been at the institutions of higher learning listed below:

1) Georgia Institute of Technology, Atlanta, Georgia
   a. OSHA Injury and Illness Reporting (1988)
   b. Principles and Practices of Industrial Hygiene (1990)

2) University of Arkansas, Little Rock, Arkansas
   a. Hazard Communication Standard (1988)
   b. Joint Safety and Health Committees (1989)
   c. Local Union Safety and Health Committees (1989)
   d. Right to Know SARA Title III (1989)
   e. Accident Investigation (1990)
   f. Asbestos in the Work Place (1990)
   g. Train the Trainer Parts 1 & 2 (1990 & 1991)
   h. Basic Industrial Hygiene (1991)

3) Jackson State University, Jackson, Mississippi
   a. OSHA Hazard Communication Training for the Trainer (1991)

4) National Safety Council Safety Training Institute
   a. Selling safety to Management (1989)
   b. Training Concepts for the Safety Trainer (1990)
   c. Compliance with the OSHA Lockout Tag out Standard (1992)
   d. Creating a High Energy Worksite: Collaborative Safety Leadership Techniques and Maximizing Worker Potential (1992)
   e. Executive Leadership in Safety and Health; Putting Safety and Health on senior management's Agenda (1994)
   f. Home Study Course; Protecting Workers Lives, Grade Average 97% (1994)
   g. Joint Safety & Health Safety Committee Course, and follow-up Course to become a course facilitator.
   h. First Aid Level 2 and CPR (adult-child-infant) (1995)

5) OSHA Training Course
   a. OSHA 10 hour construction course with cert. (1995)

Awards Related to Safety:

a. Outstanding Service to Safety Award 1990 - Presented by National Safety Council, Labor Division
b. Distinguished Service to Safety Award 1994 - Presented by National Safety Council, Labor Division
c. Recognition as Chairman, Labor Division National Safety Council, 1998 to 1999
d. Certificate of Appreciation 1997 Air Bag Safety Campaign – MS. State
e. Award of Recognition for Contributions as Board of Directors Member and Member Board of Delegates, National Safety Council

Miscellaneous:

While a member of the Safety Training and Education Committee with the Labor Division of the National Safety Council, I have had the privilege to help rewrite the book and home study course, "Protecting Workers Lives", as well as helping write the labor management course, "Joint Labor/Management Safety Committees". I have at other times been called upon by the National Safety Council to review other training manuals for accuracy, and then make comments. Recommended for membership in American Society of Safety Engineers (June 1995). Helped form and signed as a partner in the Safety Alliance Between two Regions of OSHA, two Metal Trades Councils, and Northrop Grumman Ship Systems, Avondale Operations and Ingalls Operations

My total experience in Safety and Health and Safety/Health, Labor Management Relations, Human Resources, Collective Bargaining, and the Building of Alliances for the betterment of Labor and Industry and related fields is 33 plus years.

Barbara McCabe
Program Manager
National Training Fund/National HAZMAT Program
International Union of Operating Engineers

Positions and Employment

1999-Present Program Manager, IUOE National Training Fund – National HAZMAT Program, Beaver, WV

Program Administrator/Principal Investigator for multi-million dollar cooperative agreements and grants for National Institute for Environmental Health Sciences (NIEHS) Worker Education Training Program, Energy Security and Reliability and OSHA Susan Harwood Disaster Response and Recovery. Manages programs, training, and support personnel. Program Administrator/Principal Investigator for multi-million dollar cooperative agreement completed in 2002, to conduct Human Factors Assessments of emerging environmental restoration, decontamination, and decommissioning technologies. Identifies and develops new areas for training and oversees the administrative functions associated with grant applications, proposal submittals, budget, program reporting, contractor oversight, et cetera. Responsible for all cooperative agreement and grant reports and deliverables. Responsible for budget development and oversight for all programs and facility operation. Consults with staff and local unions on technical safety and health issues.

1995-1999 Industrial Hygienist, IUOE National HAZMAT Program, Beaver, WV
Developed and implemented protocols for human factors assessments and mitigation strategies for health and safety concerns. Managed all hazard analysis to be conducted during the human factors assessment of emerging environmental restoration, decontamination, and decommissioning technologies, including conducting field assessments and development of Technology Safety Data Sheets (TSDA). Provided consultation services on safety and health issues for construction (heavy equipment operators) and stationary (building engineers) local unions.

1991-1995 Industrial Hygienist, EG&G-TSWV, Inc., Morgantown, WV
Developed and managed comprehensive industrial hygiene program and SARA Title III Community Right to Know Program. Industrial Hygiene oversight on construction jobs and clean coal research projects, including air sampling, noise monitoring, recommendations for PPE, and resolution of training issues. Coordinator for the Emergency Medical Response of the DOE FETC site Emergency Response Team. Conducted site monitoring programs for noise, air contaminants, heat stress, respiratory protection program, ergonomic evaluations, etc. Developed, and trained site employees in all aspects of safety and health.

1985-1991 Systems Analyst, EG&G-TSWV, Inc., Morgantown, WV
Managed the medical database, medical emergency services, Hearing Conservation, and Employee CPR Program. Conducted all hearing conservation and CPR/first aid training for on-site personnel.

1982-1987 Industrial Audiologist (consultant), Monongalia General Hospital, Morgantown, WV

Provided contract services for audiometric testing for hearing conservation program for Maintenance Department employees.

1982-1984 Clinical Audiologist, Morgantown ENT Clinic, Inc., Morgantown, WV
Conducted all clinical audiometric testing, lesion site testing, and ENG. Supervised Audiology Graduate Students from West Virginia University

1980-1982 Clinical Audiologist, Charles E. Haislip, M.E., Fairmont, WV
Conducted all clinical audiometric testing, lesion site testing, and Electronstagmography (ENG). Supervised Audiology Graduate Students from West Virginia University

EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
West Virginia University, Morgantown, WV	Bachelors of Science	1973-1977	Speech Pathology/Audiology
West Virginia University, Morgantown, WV	Masters of Science	1977-1979	Audiology
West Virginia University, Morgantown, WV	Masters of Science	1990-1995	Occupational Health and Safety Engineering

Other Experiences and Professional Memberships

1975 to present	Member American Speech-Language-Hearing Association
1979 to present	Certification of Clinical Competence in Audiology
1996 to present	Hazardous Waste Operations and Emergency Response Trainer
1997 to 2006	Member American Industrial Hygiene Association
2002 to 2004	Member of OSHA National Ergonomics Advisory Board (Board was established for two years only)
2007 to present	Member of OSHA National Advisory Committee on Occupational Safety and Health (2 year appointment)

Peer Reviewed Publications

B McCabe and B Lippy, "Long-Term Stewardship of the DOE Workforce: Integrating Safety and Health into the Design and Development of DOE Clean-up Technologies", *Environmental Science and Pollution Research*, Special Issue 1 (2001), pp 62-67, 2001. Internet address: www.scientificjournals.com/webeditions/espr.

B McCabe**, "**Technology Safety Data Sheets: A Tool to Protect Workers from the Hazards of Environmental Clean-up Technologies", TIE Quarterly, Vol. 9, Winter 2001.

RONALD AULT

President, Metal Trades Department AFL-CIO

BIOGRAPHY

Prior to being elected as the Metal Trades Department's President, Mr. Ault served for four years as a General Representative of the Department. A former organizer with the International Union of Operating Engineers and a former business representative for the International Association of Machinists and Aerospace Workers, Ault is a career Labor Representative with more than 30 years experience.

Mr. Ault served a four-year enlistment with the U.S. Navy, including a tour of duty in Vietnam (1968-69). Mr. Ault went to work at the Norfolk Naval Shipyard in 1971; he was hired as an apprentice Inside Machinist. Graduating as a journeyman Inside Machinist with honors four years later, Ault served in various union positions. From 1980 to 1985, he served as president of the Tidewater Virginia Federal Employees Metal Trades Council and the Chairman of the Conference Committee at NNSY in Portsmouth, Virginia. Ault served as Campaign Coordinator in the Metal Trades Department's successful drive for union recognition at the Avondale Shipyard in New Orleans and was the Chief Negotiator for the historic first union contract at the yard.

Tom Schaffer
General Representative
Metal Trades Department AFL-CIO

- Served my apprenticeship for Iron Workers Local 67 in Des Moines, Iowa and graduated to journeyman level in 1974.

- Worked both as an Iron Worker and later in the manufacturing business at Artistic Manufacturing builders of many brands of church ware. I left the company in 1977 as plant manager and went back into construction.

- Moved to San Diego in 1978 and was employed as a journeyman Iron Worker in the construction industry.

- I was hired while in San Diego by Rockwell International who was then the Hanford Site contractor and started working at the Hanford Site in 1980 as an Iron Worker/Rigger.

- Was elected to the position of Secretary Treasurer of the Hanford Atomic Metal Trades Council (HAMTC) in 1994, and later served a dual role as Secretary Treasurer and HAMMER Union Liaison for the training facility for two terms.

- In 1999 I was elected as President of HAMTC and served two and a half terms.

- During my last term I was asked to join the Metal Trades Council's parent organization the Metal Trades Department AFL-CIO. I accepted and have served as a General Representative since September of 2003.

James Seidl
East Coast Representative
Metal Trades Department AFL-CIO

James Seidl is presently the East Coast Representative for the Metal Trades Department AFL-CIO.

- He served his apprenticeship with the US Naval Ordnance Station in Louisville, Kentucky as a Machinist.

- A veteran, served in the United States Army from 1957 to 1962.

- A forty-one year member of the International Association of Machinists and Aerospace Workers AFL-CIO, served as:
  - President,
  - Business Representative,
  - Grand Lodge Representative,
  - Director of the Government Employee's Department and,
  - Administrative Assistant to the Midwest Territory General Vice President.

- Retired from the Machinists Union in 2002, began working for the Metal Trades Department AFL-CIO in his current position as General Representative.

Gerald Ryan

Director, Training, Health & Safety
Operative Plasterers' and Cement Masons' International Association

Gerald Ryan serves as Director of Training, Health & Safety for the Operative Plasterers' and Cement Masons' International Association, where he works to deliver programs that inform, train, and protect workers in the construction industry, particularly cement masons and plasterers.

In his thirty years as a third-generation cement mason, Mr. Ryan witnessed first-hand the hazards of the jobsite. When an on-the-job injury ended his ability to work with the tools of the trade in 1992, he became an instructor at his local, helping other workers prevent the same types of injuries he had seen and experienced. He helped set up the Minnesota, North Dakota, Northwestern Wisconsin Cement Masons' Local 633 Apprenticeship & Training Center, and then managed the expansion of the center's training programs from 1996 to 2002.

Since 2002, he has been Director of Training, Health & Safety for the Plasterers' & Cement Masons' International, where he has led a team of instructors in publishing updated plastering and cement masonry curricula, training publications addressing job hazards specific to cement masons - such as silicosis and contact dermatitis - and myriad other training initiatives designed to reach the both the apprentice and the experienced journeyman, ensuring their safety on the job.

Gerry remains directly involved with Safety and Health for his International's members by offering OSHA 500 training courses to increase the number of OSHA trainers available to his International along with numerous other training programs being conducted across the country for their membership.

He also encourages instructors to network with each other in sharing training information and resources. He has worked closely with his Louisiana and Gulf Coast Locals to help them renew their apprenticeship programs following the devastation of Hurricanes Katrina and Rita.

He recently worked with the National Labor College to create a program that will allow OPCMIA instructors to earn a Certificate in Labor Education. This new program gives instructors the opportunity to earn college credit while improving their teaching skills and - most importantly - while serving their Local members.

Today, Gerry continues to work with Plasterers' and Cement Masons' Locals to set-up, improve, and expand their apprenticeship training programs, journeyman upgrade training opportunities, and safety and health training while administering combined DOE and EPA grant funds.

Gary Batykefer
Administrator
Sheet Metal Occupational Health Institute
Sheet Metal Workers International Association

Gary Batykefer is head of the Sheet Metal Occupational Health Institute (SMOHIT) a joint labor-management health and safety organization serving the sheet metal industry. For the past six years he has led the design and development of health and safety training products and services that promote the reduction of occupational illness and injury. As SMOHIT Administrator, he has directed the development and distribution of more than 28 health and safety products and has met the industry's demand of enhanced medical screening programs.

Gary began his career as a mechanical engineering student at Gannon University and graduated with honors from the Dean Institute of Technology with a specialty in mechanical and tool and die design. For more than 29 years, Gary has served the sheet metal industry by addressing issues of mutual concern between labor and management. His background covers extensive work in designing and initiating journeyman training classes, serving as an active member of Sheet Metal Local 12 in Pittsburgh, PA and serving as a Trustee prior to being appointed SMOHIT Administrator.

Dale P. Hill
International Representative
Sheet Metal Workers International Association

Dale P. Hill was employed by the Sheet Metal Workers International Union (SMWIA) President, Michael J. Sullivan, in December 1999 as International Representative for the Rocky Mountain Region and currently serves in that capacity.

He served as Business Manager for Sheet Metal Workers Local Union # 207 in Casper, Wyoming for 19 years from December 1980 to December 1999. During that period he also served as President of the Wyoming State American Federation of Labor –Congress of Industrial Organizations (AFL-CIO), and President of the Wyoming State Building Trades Council.

In addition to his position as SMWIA International Representative, Mr. Hill currently represents the International Association on the SMWIA Nuclear Hazardous Materials Council, is the Service Specialist for the International Association for the Heating, Ventilation, and Air Conditioning Industry, and continues to serve as President of the Wyoming State AFL-CIO.

Doug Stephens
Project Manager/Coordinator
Grant Health & Safety Field Operations
United Steelworkers International Union/Nashville Office

Employed with Lockheed Martin at the Oak Ridge Gaseous Diffusion Plant for 30 years as a maintenance mechanic, and was also president of Local 3-288 of the Oil Chemical and Atomic Workers International Union (OCAW).

Attended an OCAW/NIEHS Grant sponsored Train the Trainer class in 1993 and began delivering 29 CFR 1910.120 training to the employees of Lockheed Martin in a Department of Energy nuclear facility.

Served as Vice President of the Tennessee AFL-CIO State Labor Council from 1987 to 1997.

Worked with the Oil Chemical and Atomic Workers International Union (OCAW) in Denver, Colorado as Grant Administrator for the Department of Energy Hazardous Waste Operations and Emergency Response Grant from 1997 until the merger in 1999 between the OCAW and the United Paperworkers International Union (UPIU).

Moved to Nashville, TN in 1999 to become the Associate Director of Health and Safety with responsibility of the NIEHS Grants Programs.

Currently, Project Manager and Coordinator of Grant Health and Safety Field Operations for the United Steelworkers International Union's Nashville Office.

Thomas H. McQuiston, Dr.P.H.
Tony Mazzocchi Center for Health, Safety and Environmental Education[1]
117 Balsam Court
Chapel Hill, NC 27514-1609
(919) 929-5878
(919) 932-3728 (FAX)
tmcquiston@usw.org

EDUCATION

Institution and Location	Degree	Date Conferred
University of North Carolina at Chapel Hill Department of Health Behavior and Health Education School of Public Health Chapel Hill, NC	Doctor of Public Health, Health Education and Behavior	2001
University of Cincinnati Department of Environmental Health College of Medicine Cincinnati, OH	Master of Science, Industrial Hygiene	1983
University of Cincinnati Department of Materials Science and Metallurgical Engineering College of Engineering Cincinnati, OH	Bachelor of Science, Metallurgical Engineering	1975

PROFESSIONAL EXPERIENCE

Institution/Organization	Position/Title	Dates
United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union (USW)* Pittsburgh, PA	Senior Associate for Program Research and Development	September 2002 to present

* Prior to merger was Paper, Allied Industrial, Chemical and Energy Workers International Union (PACE)

[1] A joint project of the United Steelworkers and the Labor Institute located at: Health, Safety & Environment Department, USW, Five Gateway Center, Room 902, Pittsburgh, PA 15222

PROFESSIONAL EXPERIENCE

Institution/Organization	Position/Title	Dates
Paper, Allied Industrial, Chemical and Energy Workers International Union (PACE) Nashville, TN	Research and Evaluation Sub-contractor	September 1997 to 2002
Dept. of Health Behavior/Health Education School of Pubic Health University of North Carolina at Chapel Hill Chapel Hill, NC	Co-instructor	1997 & 1998
National Clearinghouse for Worker Health and Safety Education Bethesda, MD	Writer/Subcontractor	May – August 1996
Department of Epidemiology School of Pubic Health University of North Carolina at Chapel Hill Chapel Hill, NC	Research Assistant	May 1996-August 1996
National Institute of Environmental Health Sciences Research Triangle Park, NC	Research Assistant	May-Sept. 1995
United Rubber Workers International Akron, OH	Director of Industrial Hygiene	July 1993 - July 1994
International Chemical Workers Union Akron, OH	Industrial Hygienist and Project Director	July 1983 - July 1993

MANUSCRIPTS/PUBLICATIONS

McQuiston, T.H., Lippin, T.M, Bradley- Bull, K., Frederick, J., Wright, M. (2007) Beyond Texas City: The State of Process Safety in the Unionized U.S. Oil Refining Industry. Pittsburgh : USW. Participatory research project conducted with Anderson, J., Beach, J, Beevers, G., Frederic, R., Greene, T., Hoffman, T., Lefton, J., Motter, J., Nibarger, K., Renner, P., Ricks, B., Seymour, T., Taylor, R.

T., Cook, L., Gill, M.L., Howard D., Seymour, T.A., Stephens, D., Williams B.K. (2006) Chemical Plants Remain Vulnerable to Terrorists: A Call to Action, Environmental Health Perspectives, 114, 1307-1311.

Lippin, T.M, McQuiston, T.H., Bradley- Bull, K., Burns-Johnson, T., Cook, L., Gill, M.L., Howard D., Seymour, T.A., Stephens, D., Williams B.K. (2006) Chemical Plants Remain Vulnerable to Terrorists: A Call to Action, Environmental Health Perspectives, 114, 1307-1311.

McQuiston, T. H. (2000). Empowerment evaluation of worker safety and health education programs. American Journal of Industrial Medicine, 38, 584-597.

McQuiston, T. H. (2000). Empowerment evaluation of worker safety and health education programs. Doctoral Dissertation, School of Public Health, Department of Health Education and Health Behavior, University of North Carolina at Chapel Hill.

Dissertation Manuscripts:

McQuiston, T. H. (2000). A Process Evaluation of the Self-Sufficiency Research and Evaluation Pilot Project (UNC-CH, Dissertation: 37-68)

McQuiston, T. H. (2000). The Self-Sufficiency Research and Evaluation Pilot Project: A Case Study of One Union's Experience (UNC-CH, Dissertation: 69-109, 2000)

McQuiston, T. H. (2000). What SREPP Tells Us About a Theory of Participatory and Empowering Evaluation (UNC-CH, Dissertation: 113-125, 2000)

McQuiston, T. H. (2000). Participatory and Empowering Evaluation as a Disruptive Innovation (UNC-CH, Dissertation: 126-129, 2000)

Lippin, T. M., Eckman, A, Rubanowice-Calkin, K, McQuiston, T. H. (2000) Empowerment-based health and safety training: Evidence of workplace change from four industrial sectors. American Journal of Industrial Medicine, 39.

McQuiston, T. H., Zakocs, and R., Loomis, D., (1998). The case for stronger OSHA enforcement: Evidence from evaluation research. American Journal of Public Health, 88(7), 1022-1024.

McQuiston, T. H., Coleman, P., Wallerstein, N.B., Marcus, A. C., Morawetz, J. S., Ortlieb, D. W., and Hecker, S. (1997). Evaluating health and safety training: A case study in chemical workers' hazardous waste worker education. In J. Stellman (ed.), ILO Encyclopedia of Occupational Health and Safety. Brussels, Belgium:, International Labour Organization (18.12-18.13).

McQuiston, T. H. (1996). Multi-program Evaluation: A Descriptive Review of the National Institute of Environmental Health Sciences Hazardous Waste Worker Training Program. Research Triangle Park, NC: National Institute of Environmental Health Sciences.

McQuiston, T. H., Coleman, P., Wallerstein, N.B., Marcus, A. C., Morawetz, J. S., and Ortlieb, D. W., (1994). Hazardous waste worker education: Long term effects. Journal of Occupational Medicine, 36(12) 1310-1323.

Brown, E. R., McCarthy, W. J., Marcus, A. C., Froines, J. R., Baker, D. B., Dellenbaugh, C., & McQuiston, T. H. (1988). Workplace smoking policies: attitudes of union members in a high-risk industry. Journal of Occupational Medicine, 30(4).

Beaumont, J. J., Leveton, J., Goldsmith, R., Bloom, T. & McQuiston, T. H., (1987). Lung

cancer mortality and other causes of death among sulfuric acid exposed workers in the steel industry. Journal of the National Cancer Institute, 79(5) 911-921.

Brown, E. R., McCarthy, W. J., Marcus, A. C., Froines, J. R., Baker, D. B., Dellenbaugh, C., & McQuiston, T. H. (1986). Workplace smoking policies - worker's attitudes and the roles of management and unions. Sociologie et Sociétés, October.

Marcus, A. C., Baker, D. B., Froines, J. R., Brown, E. R., McQuiston, T. H., & Herman, N. A. (1986). ICWU Cancer Control Education and Evaluation Program - Research design and needs assessment. Journal of Occupational Medicine, 28(3) 227-236.

McQuiston, T. H., Que Hee, S. S., & Saltzman, B. E. (1985). Lead exposure during the segments of the ladling cycle at a nonferrous foundry. Annals of Occupational Hygiene, 30(1), 41-49.

McQuiston, T. H., (1983). Characterization of Airborne Lead Exposure to a Ladle Operator in a Nonferrous Foundry. Unpublished master's thesis, University of Cincinnati, College of Medicine, Department of Environmental Health, OH.

PAPERS/PRESENTATIONS/COMMENTS

Cantrell, B., Catlin, M., McQuiston, T., Mock, A. (2004). Workers' roles in prevention, preparedness and response to intentional acts of terrorism and unintentional disasters. 132nd Annual Meeting of American Public Health Association, Washington, DC.

McQuiston, T. H., Lippin, T. M., Siqueira, E., Tornow, D. Thomason, D., Vazquez, L., Zamora, C. (1999). Worker Participation in Evaluation and Planning for Safety and Health Training. 127th Annual Meeting of American Public Health Association, Chicago, IL

Lippin, T. M., McQuiston, T. H., Westmoreland, R., Thomason, H., Orlando, S., Kirkpatrick, P. (1999). Introduction to a Participatory Evaluation Model: Building Your Program's Capacity to Learn. National Conference on Workplace Safety and Health Training. October 1999. St. Louis, MO.

George Meany Center for Labor Studies and the National Institute of Environmental Health Sciences' National Clearinghouse for Worker Health and Safety Education. (1998). Resource Guide for Evaluating Worker Training. (McQuiston, T. H. contributor). Bethesda, MD: George Meany Center.

McQuiston, T. H., (1996). Multi-program Evaluation: A Descriptive Review , National Institute of Environmental Health Sciences, Hazardous Waste Worker Training Program (Unpublished paper), Research Triangle Park, NC.

McQuiston, T. H., Marcus, A. C., Coleman, P., and Morawetz, J. November 1991. Preliminary Findings from a Twelve-month Follow-up Survey of Hazardous Waste Worker Trainees . Paper presented at the 119th Annual Meeting of American Public Health Association, Atlanta, GA.

Wallerstein, N. B., Cohen, J., Sullivan, C., Weinger, M., & McQuiston. (1989). Skill Building Workshop on Popular Education/Empowerment Education. Presented at the 117th annual meeting of American Public Health Association, Chicago, IL.

Marcus, A. C., McQuiston, T. H., Brown, E. R., Herman, N. A., & Froines, J. R., (1987). Final results from ICWU Cancer Control Education and Evaluation Program. Paper presented at the 115th annual meeting of the American Public Health Association, New Orleans, LA.

Mooser, S., and McQuiston, T. H., (October 1987). Worker Education for Safety and Health: Train the Trainers Program, Roundtable at the at the 115th annual meeting of the American Public Health Association, New Orleans, LA.

COMMENTS ON FEDERAL STANDARDS.

OSHA - Revision of the Air Contaminants - Permissible Exposure Limits (1910.1000)

OSHA - Hazardous Waste Operations and Emergency Response (1910.120)

OSHA - Proposed Rule: Accreditation of Training Programs for Hazardous Waste Operations (1910.121)

OSHA - Process Safety Management of Highly Hazardous Chemicals (1910.119)

MEMBERSHIPS/BOARDS/COMMITTEES

2001 to present	Member Delta Omega (Public Health Honor Society)
1987 to present	Member, Occupational Health Section, American Public Health Association
1992 to present	United Association for Labor Education, Workers Education (Local 189), Communication Workers of America
1996 to 1998	Member, Advisory Board, Partnership Effort for the Advancement of Children's Health, North Carolina Central University and North East Central Durham Community
1992	National Institute of Environmental Health Sciences, Committee on Prevention Research
1990 to 1993	Executive Committee Member, National Clearinghouse on Occupational and Environmental Health

Karen A. McGinnis
Director
HAMMER Training and Education Center

Karen McGinnis is the only director the Volpentest HAMMER Training and Education Center has ever known. Since 1991, Karen has guided HAMMER to its status as an industry-recognized leader in industrial training featuring one of the most multi-faceted training facilities in the world. Karen's crowning achievement is her oversight in establishing the many partnerships forged through HAMMER. These relationships – made up of organized labor, federal and state agencies, tribes, safety professionals and community leaders – prompted AFL-CIO Chairman John Sweeney to remark that HAMMER represents "one of the most important partnerships in the country." Under Karen's leadership, HAMMER has gained recognition as one of the premier training centers in the world while also achieving the top federal safety award of Voluntary Protection Program (VPP) Star Status. Karen also received a "Special Achievement Award" for outstanding Performance Leadership in furthering the US DOE VPP program. Karen has a Master of Arts, Agriculture and Natural Resource Economics, Washington State University (February 1980) and a Bachelor of Science, Agriculture and Natural Resource Economics, Oregon State University (June 1974).

Department of Energy
Pacific Northwest Site Office
P.O. Box 350, K8-50
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BIOGRAPHY

James L. Spracklen
Program Manager
Richland Operations Office
U.S. Department of Energy

James L. Spracklen is currently the DOE Program Manager for the HAMMER Training and Education Center at Hanford. Previously, Jim served as Senior Program Advisor to the Managers of the DOE Richland Operations Office and the Pacific Northwest Site Office. Jim served as the Director of Security and Emergency Services for the Department of Energy's (DOE), Richland Operations Office (RL) for 12 years, beginning in 1991. In his current capacity, Jim oversees the operation of the Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Training and Education Center, which provides hands-on worker safety training to the Hanford workforce, as well as providing emergency response training to other federal agencies, including the National Guard Bureau, the Federal Law Enforcement Training Center, the Department of Defense, the Department of State, and the DOE Office of Electricity Delivery and Energy Reliability.

Jim has been in numerous positions within the safeguards and security organization since joining DOE in June 1983. Prior to that, from 1978 until 1981, he served on the Kennewick Police Department in Kennewick, Washington.

Jim holds a Bachelor of Science Degree in Sociology from Montana State University and a Master's Degree in Criminal Justice/Public Administration from Washington State University.

# # #

Joseph Thomas (Chip) Hughes, Jr.
Director, Worker Education and Training Program
DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health

EDUCATION: 1974, B.A., College of the Holy Cross, Worcester, Massachusetts
1982, M.P.H., School of Public Health, University of North Carolina, Chapel Hill, North Carolina

EXPERIENCE:

1998-present	Director and Branch Chief, Worker Education and Training Program, National Institute of Environmental Health Sciences
1990-1998	Program Administrator, Worker Education and Training Program, National Institute of Environmental Health Sciences
1988-1989	Research Director, Clean Water Fund of North Carolina
1987-1988	Coordinator, Utilities Campaign, North Carolina Fair Share
1984-1987	Executive Director, East Coast Farmworker Support Network
1981-1982	Pesticides Project Coordinator, Farmworkers Legal Services Corporation
1980-1981	Consultant, Center for Work and Mental Health, National Institute of Mental Health
1979-1981	Researcher, US Department of Labor, Division for Policy, Evaluation and Research
1977-1979	Director of Education & Training, Carolina Brown Lung Association (CBLA)
1975-1977	Fellow, John Hay Whitney Foundation Research Director, Institute for Southern Studies

HONORS AND AWARDS:

NIH Quality of Worklife Award, 1999

NIH Director's Award, 2000, 2001, 2003, 2004, and 2006

HHS Secretary's Award for Heroism and Exceptional Service, 2001

HHS Secretary's Award for Distinguished Service, 2002 (World Trade Center disaster response)

HHS Secretary's Award for Distinguished Service, 2006 (Katrina disaster response)

Deborah Weinstock

Director, National Clearinghouse for Worker Safety and Health Training

National Institute of Environmental Health Sciences
Worker Education and Training Program [NIEHS WETP]

Deborah Weinstock joined MDB, Inc. in 2005 as the Director for the NIEHS National Clearinghouse for Worker Safety and Health Training. Deborah comes to MDB, Inc. with twelve years of experience in the safety and health field. Prior to joining MDB, she spent seven years as an Occupational Safety and Health Specialist in the AFL-CIO Department of Occupational Safety and Health. Deborah has experience working with a variety of government agencies and departments, including, the Department of Energy, the Environmental Protection Agency and the National Institute of Environmental Health Sciences. Deborah holds a B.A. degree in Art History from the University of Maryland and an M.S. in Applied Behavioral Sciences from Johns Hopkins University.

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HSS /Labor Union
2008 Topical and Union Related
Meeting Schedule

2008 Legislative Conference of BCTD - Wash DC April 13 - 16

HAMMER Labor Sub-committee April 17

HAMMER Conference Wash DC April 18

APRIL 30

Training

SMWIA (L)
Metal Trades Dept AFL-CIO
BCTD CPWR
IAFF
IGUA
IUOE
OPCMIA
USW
DOE HSS

MAY

NCSP National Conference /Guard Union Forum [Wash DC May 6 – 8]

Hanford H&S Expo: Hanford May 20 - 21

JULY 17

851 Rule

Safety Standards

USW (L)
BCTD CPWR
IABSORIW
IGUA
IUOE
DOE HSS

Metal Trades Dept AFL-CIO (L)
IBEW
OPCMIA
DOE HSS

SEPTEMBER 16

FWP/Energy Compensation Program /CAIRS Reporting

Central Worker Data Tracking

BCTD CPWR (L)
Metal Trades Dept. AFL-CIO
IABSORIW
USW
DOE HSS

BCTD CPWR (L)
IUOE
OPCMIA
SMWIA
DOE HSS

NOVEMBER 3

Initial Meeting w/ Laborers'-AGC

HSS Focus Group
Laborers'-AGC

NOVEMBER 6

Aging Workforce

Strategic Initiatives

IBEW (L)
IAFF
IGUA
IUOE
SMWIA
DOE HSS

Metal Trades Dept. AFL-CIO (L)
IABSORIW
IBEW
USW
DOE HSS

DECEMBER 4

Topical Wrap Up Meeting

<u>Union/HSS Topical Leads:</u>
BCTD CPWR
Metal Trades Dept. AFL-CIO
IBEW
SMWIA
USW
DOE HSS

10-01-08 Revised