



## Acquisition Research Program: Creating Synergy for Informed Change

# Determining the Appropriate Size of the Contracting Workforce: Yes We Can!

Timothy Reed, Ph. D.  
Naval Postgraduate School

# Research Overview

- Army Contracting Command sponsored research to investigate workload assessment and staffing
- Goal: identify methods used to assess workload and staffing in Army contracting organizations, as well as DoD, Federal Civilian, and other commercial contracting organizations
  - Identify opportunities to adopt share most effective methods



# How Much Work do We Need to Accomplish?

- Most industry organizations have a process to determine workload and staff appropriately for the work anticipated
  - Fast-food restaurants
  - Consulting
  - Education
  - Manufacturing plants
  - Airlines
- Some use less exact estimates than others
  - Snow removal
  - Utilities
  - Contracting



# Techniques Used to Manage Difficult-to-Predict Work

- Multi-skill workforce for surge (landscapers drive snowplows)
- Prioritize types of work (emergency routes, bus lines first, residences last)
- Regional/Cooperative resource sharing (electric storm damage repair)
- Prepare organic core capability and surge with contractor/labor surplus/temporary support
- Find a better prediction model



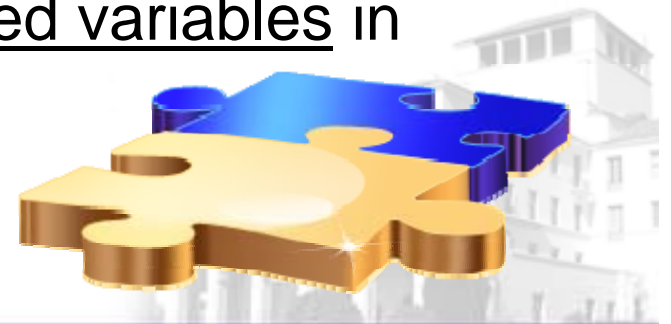
# What's the Problem?

- Contracting organizations are staffed to authorizations, rather than workload
- Leader's need method(s) to
  - Determine workload
  - Staff according to workload
- Case in point: if DoD proceeds with plans to hire 10K additional AW personnel...how do we know where to place them if workload assessments are not conducted?



# Puzzle Pieces

- “What size should my contracting organization be?” is just a part of the full question...
- Appropriate size and competency are required to meet mission requirements with an acceptable level of risk
- BOTH measures are necessary but not in themselves sufficient
- A great deal of other research is related to competency assessments, not the focus of this study
- Keep in mind the two most overlooked variables in workload assessments:
  - the complexity of the work and
  - the quality of the outputs



# Methodology

- Literature review
  - Workforce planning
  - Workload assessment
  - Manpower modeling
  - Included defense acquisition workload measurement reports, workforce studies, Federal Government workforce studies and reports, and human capital research and reports



# Methodology (continued)

- Then, a review of the models currently in use and used in the past by
  - DoD organizations,
  - Civilian contracting agencies, and
  - Industry best practices
  - Assessed the strengths and weaknesses of existing models, and the options for implementation
  - Findings apply to organizations that conduct contracting activities in the operational, systems acquisition, and contingency environments





# WORKLOAD MODEL EXAMPLES



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Naval Postgraduate School  
Monterey, CA

# Army – AMSAA Model

CMD STD Application Tool- Encl 2b [Compatibility Mode] - Microsoft Excel

	B	C	D	E	J	K	L	M	N
53	Number of Contract Actions Completed.	<b>WLF</b>	<b>Comp</b>	<b>Non-Comp</b>	<b>Total Adj WLF</b>				
54		2901.00	75.00%	25.00%	5439.38				
55		2615.00	83.00%	17.00%	4170.93				
56									
57									
58		321.00	73.00%	27.00%	624.35				
59									
60									
61		2385.00	77.00%	23.00%	4304.93				
62		2567.00	82.00%	18.00%	4184.21				
63		886.00	80.00%	20.00%	1506.20				
64		1945.00	70.00%	30.00%	3987.25				
65									
66									
67									
68	Number of PWDs Assigned.	<b>WLF</b>	<b>Comp</b>	<b>Non-Comp</b>	<b>Total Adj WLF</b>				
69		5806.00	75.00%	25.00%	10886.25				
70		2615.00	83.00%	17.00%	4170.93				
71		3244.00	80.00%	20.00%	5514.80				
72									
73									
74		441.00	73.00%	27.00%	857.75				
75									
76									
77		2077.00	77.00%	23.00%	3748.99				

Tab A - Workload Input | Tab B - SBCCOM Appl | Tab C - MSC Appl | Tab D - Total TDA REQs



# Air Force Operational Model 12AO Manpower Standard

Air Force Model Sample [Compatibility Mode] - Microsoft Excel

Step Number	Workload Factor	Step Title	DATA	With Specialized	Centralized Dollars	Inflation Factor	(Adjusted to FY98 Dollar)
2		Determine Acquisition Man-hours (RE: AFMS 12A0, PG 12)					
2a	X5	Centralized Contract Dollars	41,850,355.43	62,155,839.85	65,823,034.40	1.059	
2b	X6	Centralized Contract Actions Less than or Equal to \$100K	449	483.00			
2c	X7	Centralized Contract Actions Greater than \$100K	141	148.00			
		<b>Total Acquisition Man-hours (Y2)</b>	<b>4965.10</b>	<b>6104.54</b>			<b>-3,007,194.55</b>
3		Identify Variances: Determined in Man-hours (See AFMS 12A0, ATCH 4)		0 Zero for all AETC Bases			
		Step 1 Total	525.20	525.20			
		Step 2 Total	4965.10	6184.54			
		Step 3 Total	0	0			
4		Add Man-hours from Steps 1 - 3	5490.30	6709.74			
		<b>Current Personnel</b>	<b>Current Number of Employees</b>	<b>Employees Represent What % of Workforce</b>	<b>Multiply Total Man-hours by Percent of Workforce</b>		
		-- Civilian Personnel (Funded Authorized Positions on UMD)	23	39.66%	2177.187411		
		-- Military Personnel (Funded Authorized Positions on UMD)	35	60.34%	3313.111278		
		<b>Totals</b>	<b>58</b>	<b>100.00%</b>			
		<b>Fractional Manpower</b>					
		-- Civilian Personnel: Civ Man-hour Availability Factor = 143.3	15.19	18.57	2660.757763		
		-- Military Personnel: Mil Man-hour Availability Factor= 161.1	20.57	25.13	4048.979205		
4		Fractional Manpower Determined in Step 4 above	35.76	43.70			
5		A-76 (AFMS 12A0, Table 2, pg 6)	0.00	0.00			
6		Government Purchase Card (AFMS 12A0, Table 3, pg 7)	2.50	2.50			
7		Constant Manpower - Plans and Programs (AFMS 12A0, Para 2.3.4) (Y=2)	2.00	2.00			
8		Constant Manpower: Commander (Y=1)	1.00	1.00			
9		Electronic Business (SPS and EC) (AFMS 12A0, Table 3, pg 7)	5.00	5.00			
10		Director of Business Operations and Superintendent	2.00	2.00			
11		Fixed Variances (See AFMS 12A0, Attachment 4)	5.50	5.50			
12		Sub-Total of Steps 4 - 11	53.76	61.70			
13		Information Management Personnel (Table 1, Pg 5)	1.00	1.00			
14		Specialized Flight Personnel (Applies to Tyndall, Randolph, Sheppard, Lackland)	11	0			
14		Add Results of Steps 12 and 13	65.76	62.70			
15	Step 14 Rounded	<b>Manpower Earned</b>	<b>66</b>	<b>63</b>			
		CURRENT UMD FUNDED POSITIONS	58	64			
		Straightlined positions:	1	1 BOS			
		CURRENT FUNDED POSITIONS - Straightlined Positions	57	63			
		<b>Projected Impact to Current Manpower</b>	<b>9</b>	<b>0</b>			



# Air Force Systems Contracting Model

## WAM

ASC manpower model WAM Oct 2008 unlocked - Microsoft Excel

Home Insert Page Layout Formulas Data Review View

Normal Page Layout Page Break Preview Custom Views Full Screen

Workbook Views

Ruler Formula Bar Gridlines Headings Message Bar Show/Hide

Zoom 100% Zoom to Selection

New Window Arrange All Freeze Panes Hide Split View Side by Side Synchronous Scrolling Save Workspace Switch Windows

Window

D235

	A	B	C	D	E
226					
227				1	
228		<b>Contract and Modification Number</b>			
229		<b>Action Name</b>			
230		<b>Estimated/Established Award Date</b>			
231					
232					
233		<b>Contract Action</b>			
234		A New Sole Source Contract			
235		B New Competitive Contract			
236		C New Services Contract			
237		D Delivery/Task Order			
238		E Contract Modification			
239		F Undefined Contract Issue			
240		G Definitization			
241		H Miscellaneous			
242					
243					
244					
245		<b>Contracting Milestone at Beginning of Period</b>			
246		A New Sole Source Contract			
247		B New Competitive Contract			

>\$0 - Simplified Acquisition Threshold  
 > Simplified Acquisition Threshold, <\$1 MIL  
 >\$1 MIL, <\$5 MIL  
 >\$5 MIL, <\$5.5 MIL  
 >\$5.5 MIL, <\$10 MIL  
 >\$10 MIL, <\$25 MIL  
 >\$25 MIL, <\$50 MIL  
 >\$50 MIL, <\$100 MIL

Ready

WAM 2008

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200%

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# Navy Time-to-Produce Model

FY2009 OCONUS TTP\_Corrected PALT Codes\_2-2-2010 [Compatibility Mode] - Microsoft Excel

Home Insert Page Layout Formulas Data Review View

Normal Page Layout Page Break Preview Custom Views Full Screen

Workbook Views Show/Hide

Ruler Gridlines Message Bar

Formula Bar

Zoom 100% Zoom to Selection

New Window Arrange All Freeze Panes Unhide

Split Hide

View Side by Side Synchronous Scrolling Reset Window Position

Save Workspace Switch Windows

Macros

A1 OCONUS FISCs

**OCONUS FISCs**

**LCPWG Time To Produce (TTP) Standard Hours and Associated Full Time Equivalent Personnel**

1  
2 **COMFISC**  
3 **FISCAL YEAR 2009**  
4

BUCKET	LE \$2500		\$2501-\$25K		\$25001-\$100K		\$100K-\$500K		\$500K-\$1M		\$1M-10M		
	TTP Hours	# of Actions	TTP Hours	# of Actions	TTP Hours	# of Actions	TTP Hours	# of Actions	TTP Hours	# of Actions	TTP Hours	# of Actions	
5 <b>CATEGORY I SAP</b>	<b>LIGHT Blue is SAP Yellow is LP Light Green for LP coding e</b>												
6 <b>OTHER THAN FAR SUBPART 13.5</b>													
7 <b>SERVICES</b>	1	3.25	428	4.5	659	4.5	285	263	2	263	0	263	0
8 <b>SUPPLIES</b>	2	2.25	267	3.5	1,712	3.5	231	159	0	159	0	159	0
9													
10 <b>PURSUANT TO FAR SUBPART 13.5</b>													
11 <b>SERVICES</b>													
12 <b>COMPETED</b>	3	0	0	0	0	263	0	263	48	263	3	263	0
13 <b>NON-COMPETED</b>	4	0	0	0	0	159	0	159	12	159	5	159	4
14													
15 <b>SUPPLIES</b>													
16 <b>COMPETED*</b>	5	0	0	0	0	0	0	150	32	150	1	150	5
17 <b>NON-COMPETED</b>	6	0	0	0	0	0	0	97	4	97	0	97	0
18													
19 <b>CATEGORY II ORDERS UNDER CONTRACT</b>													

Ready Average: 83.88027215 Count: 433 Sum: 29358.09525 150%

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# Civilian Agency Models - FAI

- Project-based Combined Model - Department of Energy
  - Uses annual value of project work to be executed, the type of project, the project complexity, the manner of execution, the project phase, the level of regulatory involvement, and the degree of external influence
- Multidimensional Model - Department of Veterans Affairs
  - Focuses on tasks in acquisition planning; pre-award and post-award activities.
- Program-based Model - Department of Transportation–Federal Aviation Administration.
  - Uses historical program data to derive recommended staffing levels for major acquisition programs.
- Regression Model that provides two options to the user.
  - Option one is to baseline agency spend to FY 2000. The model indicates that one contract specialist is required for each \$5 million in spend.
  - Option two, the regression model indicates that for each 45 contracts awarded, one additional GS-1102 FTE is required.
- Volume-based Surge Tool developed for use as a result of the American Recovery and Reinvestment Act. The model allows the use of agency work volume growth from a baseline spend year
- Transaction Model based on agency procurement spend and contract manager staff counts from 2000–2008.
  - Requires input of actual spend and workforce for each year. An average productivity per contract manager over the eight-year period is computed and divided into current FY projected spend
- Conceptual Combination Model developed by the FAI.
  - Requires agencies to identify complexity, risk, workforce productivity, and other elements. Agencies can adjust weights ratios and factors to better represent the agency operating environment. The model uses a baseline workforce factor of \$15.8 million for the average productivity of contract managers.

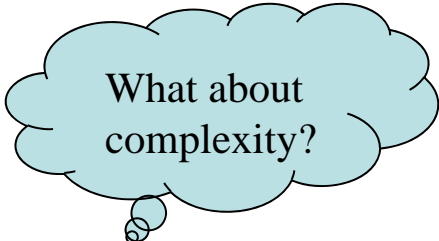


# Center for Advanced Purchasing Studies (CAPS) Measures and Baselines

- Eleven of 20 CAPS measures apply to both industry and government sectors
  - The total dollars spent by a procurement organization as a percent of total firm budget (how much of an organization's needs are acquired via contract and what is procurement's relative impact/importance to the total organization);
  - Supply management operating expense as a percent of total spend (how much does it cost to spend each dollar of supplies or services that the organization procures); aka CPDO
  - Supply management operating expense per supply management employee (the total cost—pay, training, benefits, etc.—of the average member of the workforce);
  - Total spend per supply management employee (contract dollars awarded by the average procurement specialist);
- Annual spend on professional training per supply management employee;
- Professional training hours completed per supply management employee;
- Supply management group retention rate;
- Cost reduction savings as a percent of total spend;
- Cost avoidance savings as a percent of total spend;
- Average order/action processing cost; and
- Average cycle-time (in days) from requirement approval to issuance of order/contract. (Institute of Supply Management, 2010)



# Procurement Unit Cost Calculation



Procurement  
Cost

- Cost to procure should be as complete as possible

Calculation Example

$$\begin{aligned} & \underline{\$100,000 \text{ cost}} \\ & 100 \text{ units} \times .86 \text{ Q} \\ & = \\ & \$1162 \text{ PUC} \end{aligned}$$

Output Units  
x  
Quality Index

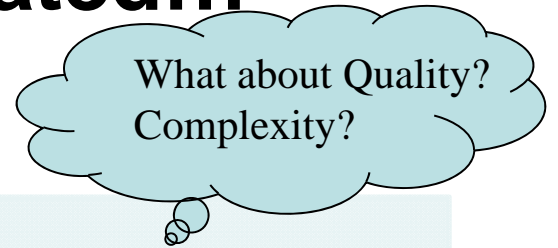
- Number of contracting units completed
- Index of weighted internal/external quality measures

- Quality Measure Examples
- Internal: competition/ socioeconomic goals; corrective actions required; FPDS-NG accuracy
  - External: timely award /delivery; fair/reasonable cost





# CPDO: Cost per Dollar Obligated... or Cost to Spend



Procurement  
Cost



Total Spend  
Executed by  
Organization

- Cost to procure should be consistently calculated (ideally total cost, salary, infrastructure, IT, training)
- NOTE: total cost calculation may not always be possible, salary may be useful proxy)

- Total spend should include all actions, not just net spend
- Consistent application for all organizations is essential

Calculation Example  
\$8,000,000 cost  
\$900,000,000 spend  
=  
.88%  
(less than \$.01 CPDO)



# Seven First Steps for Your Organization

1. Define your strategic intent, identify quality measures that reflect your intent (timely award, timely delivery, fair and reasonable prices, customer satisfaction, corrective actions, etc.)
2. Conduct a cost-per-dollar-obligated (CPDO) analysis
3. Conduct a similar CPDO analysis for the past three years to determine the trend for your organization, and to establish an average CPDO
4. Measure the quality of your outputs (consistent with your strategic intent) now and over time to determine trends and averages.
5. Compare your organization to industry benchmarks, and to similar organizations in your Service or Department
6. Set CPDO and quality goals for your organization
7. Estimate your future work
  - Budget proposals, Future Years Defense Program (FYDP), Program Objective Memorandum (POM), etc for rough order estimates on either the total amount or departure trend from previous year obligations that your organization may experience.
  - Develop complexity and risk assessment weights based on the type of monetary obligations, and product/service mix that your organization is projected to procure.



# Want More?

- **“Determining the Appropriate Size of the Contracting Workforce: Yes We Can!”**
  - 2011 available in the proceedings
- **Full report: “Army Contracting Command Workforce Model Analysis”**
  - NPS-CM-10-179 , 4 October 2010, available on the ARP site



# QUESTIONS?



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