

# Creating a Framework for a New Shore Manpower Requirements Determination Process

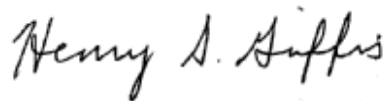
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Approved for distribution:

January 2008

A handwritten signature in black ink that reads "Henry S. Griffis". The signature is written in a cursive style with a large initial 'H'.

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# Executive summary

## The Navy's broken shore manpower requirements determination process

Most people employed by the Navy are part of the Navy's shore establishment. More than half of officers and enlisted are stationed on shore, and almost all Navy civilians and contractors are shore based. The large size and cost of the Navy's shore establishment make it imperative that the Navy have an effective and efficient shore manpower requirements determination process (SMRDP). Such an SMRDP implies having both the right number of shore personnel and the right personnel mix (i.e., active military, reservists, civilians, and contractors). N12 asked CNA to develop recommendations for how to make the Navy's SMRDP more effective and efficient.

The Navy's current SMRDP is broken. It has several problems:

- Poor management oversight and lack of accountability
- Little to no standardization between (and possibly within) Budget Submitting Offices (BSOs)
- Unqualified staff with major roles in SMRDP
- Overstaffing and staffing with incorrect personnel
- Failure to give good incentives to BSOs.

Overall, the Navy is doing a poor job setting manpower requirements at shore commands. Even worse, the process for setting manpower requirements is not conducive to improvements. The systemic problems with SMRDP need to be fixed before the Navy can get the right number and right mix of personnel at its shore commands.

## Options for setting manpower requirements

The Navy has three options for setting its manpower requirements.

1. Industrial engineering
2. Workforce planning
3. Competition.

The Navy will likely use a combination of methods to determine manpower requirements.

The Navy uses industrial engineering (which includes operations research) to set its requirements at sea. Industrial engineering implies a complete understanding of all the factors driving workload, such as in a factory assembly line or a teller line at a bank. Most shore work cannot be broken down so completely. Therefore, the Navy's SMRDP should look very different from the Navy's *sea* manpower requirements determination process and use a mix of workforce planning and competition to set requirements.

Competition is the ideal way to set shore requirements for work that is eligible for competition. For work that is not eligible for competition, the Navy should set requirements through workforce planning. Workforce planning uses past, current, and future conditions to make incremental changes in manpower requirements.

## Fixing the Navy's SMRDP

The Navy's SMRDP needs to be fixed to inject more competition and transparency into the process. To do this, we make several recommendations:

- Build a set of SMRDP guidelines for all BSOs to follow
  - Regularly updated list of activities from each BSO
  - Actual (not estimated) cost of each activity
  - Productivity measures for each activity
  - Activities that are ineligible for competition and why

- Mapping of personnel (or contracts) to activities and activities to customers
- Regulations for process improvement (if ineligible for competition)
- Regulations for measuring workload and skills capture
- Do not apply the sea requirements process to shore requirements
  - Industrial engineering is usually inappropriate for SMRDP
- Make all “Rotation” and “Career Progression” billets subject to cost analysis and review
- Take a harder look at all billets ineligible for competition by tradition or DoD decision
- Align incentives of BSOs and Navy for use of military manpower
  - Make budgets fungible for Military Personnel, Navy (MPN) and other inputs
  - Have BSOs purchase MPN from N1 or another central agency
- Use activity-based costing or similar methodology to calculate actual (not estimated) cost of activities
- Train staff both in central location and at BSOs in:
  - Cost analysis
  - Process improvement
  - Workload and skills capture.

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# Introduction

## The Navy's shore establishment

Most people employed by the Navy are part of the Navy's shore establishment. The majority of officers and enlisted are stationed on shore, and almost all Navy civilians and contractors are shore based.<sup>1</sup> Because of the large size and cost of the Navy's shore establishment, the Navy *must* have an effective and efficient shore manpower requirements determination process (SMRDP). Such a process implies having both:

- The right number of shore personnel
- The right mix of active military personnel, reservists, civilians, and contractors.

Table 1 shows the FY05 count of military, civilians, and contractors<sup>2</sup> at sea and at shore. In absolute numbers, about three-fourths of the Navy's total force (active, reserve, civilian, and contractor) is at shore. This information is part of the Department of Defense's (DoD's) Inherently Governmental and Commercial Activities (IGCA) data and is compiled in ongoing CNA work [1].

The comparatively large size of the Navy's shore establishment makes the SMRDP extremely important to the Navy's financial health. Furthermore, much of the Navy's shore establishment is not directly dependent on the number of personnel at sea, meaning that SMRDP cannot be directly linked to the Navy manpower requirements at sea. Even shore requirements related to sea requirements (such as student billets) can be difficult to set and execute correctly [2].

- 
1. The exceptions are civilian mariners from Military Sealift Command (MSC) and technical representatives from contractors on Navy ships.
  2. In this paper, "contractors" are Navy service contracts only and are quantified as Contract Work-Year Equivalent (CWYEs).

Table 1. FY05 count of military, civilians, and contractors

Type of personnel	Sea	Shore
Officer	17,275	32,710
Enlisted	161,269	137,703
Full-Time Support	5,265	8,538
Selected Reserves	35,251	27,362
Civil Service	4,832	163,107
Foreign Direct Hire		2,975
Foreign Indirect Hire		6,703
Contractor		323,845
Total	223,892	702,943

The large number of contractors is especially noteworthy. The Navy contractor base is so large that excluding it greatly underestimates the size of the Navy's shore workforce. Contractors are harder to count because they aren't paid directly by the government and, therefore, aren't part of the Navy's personnel databases. However, contractors are an essential part of the Navy's shore establishment.

Table 2 shows how the total number of Navy contractors and money spent on Navy contracts have increased over time. The number of Navy contractors (expressed as CWYEs) is calculated from Navy contracting information [1].

Table 2. Changes in contractor employment over time<sup>a</sup>

Fiscal year	Contractors	Spending (billions of dollars)	Percentage of Total Obligated Authority (TOA)
FY02	245,815	25.590	25.1
FY03	254,706	31.852	25.7
FY04	282,079	30.136	24.7
FY05	323,845	34.934	26.1

a. Taken from [1].

The number of Navy contractors and the amount of money spent on them is large and increasing. In 2002, the Navy spent \$25.590 billion on 245,815 CWYEs (about \$104,000 per CWYE). This increased to

\$34.934 billion for 323,845 CWYE (over \$107,000 per CWYE) in FY05, which is the latest year available. The fraction of overall Navy Total Obligated Authority (TOA, or total budget) spent on contractors is nearly constant at about 25 percent (see table 2).

## The current Navy SMRDP and its place in the Navy's manpower process

### Definition of "manpower requirement"

According to Navy regulations [3]:

Manpower requirements shall reflect the minimum quality and quantity of manpower required for peacetime and war-time to efficiently and effectively accomplish the activity's mission.

Reference [3] also states:

The zero-based concept is basic to determining manpower requirements. Under this concept, the Navy determines multi-year requirements without consideration of funds, availability of personnel, or organization.

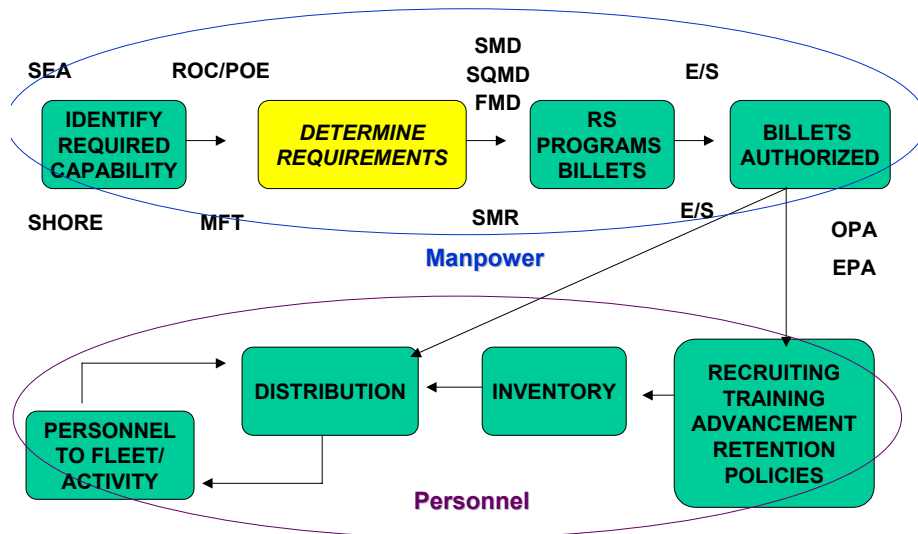
This means the current SMRDP is a two-stage process:

1. In the first stage, sea and shore commands determine billet requirements through industrial engineering or other means.
2. In the second stage, the Navy decides which billets to fund through the Planning, Programming, Budgeting, and Execution System (PPBES).

### PPBES and the Navy's manpower process

The Navy's manpower process is detailed in figure 1. The Navy's SMRDP begins with the Navy's strategic planning process. This process begins with the National Security Strategy written by the National Security Council and continues through the defense establishment. The planning process ends with Joint Programming Guidance issued by the Office of the Secretary of Defense (OSD). This is the final document of the planning process and contains fiscally constrained programmatic guidance.

Figure 1. Navy manpower process



As part of this process, the Navy identifies needed capabilities. For shore activities, these identified capabilities are reflected in a Mission, Functions, Tasks (MFT) statement from each of the Budget Submitting Offices (BSOs). These MFT statements detail the responsibilities of each shore command. The statements are then combined with workload measurements and efficiency reviews to develop shore manpower requirements. According to [3], these efficiency reviews and workload measurements can be performed using industrial engineering or any other defensible criteria. These requirements are used as a baseline to define mobilization requirements, and those are reflected in Mobilization Shore Manpower Requirements (MSMRs). This completes the first stage of SMRDP where manpower requirements are determined.

Navy employment (military, civilian, and contractor) is divided among more than 40 BSOs, though most employment is concentrated in about 20. This produces a very fragmented Navy SMRDP, where each BSO gets to determine its requirements however it wishes. The Navy Manpower Analysis Center (NAVMAC) produces a Total Force Manpower Requirements Handbook [4] for those BSOs who wish to use it.

The decentralized SMRDP stands in sharp contrast to how sea requirements are determined. Sea requirements are centrally determined and validated by NAVMAC using the Required Operating Capability/Projected Operating Environment (ROC/POE) statements approved by the various warfare sponsors. NAVMAC uses a well-defined industrial engineering process to determine sea requirements. This process is imperfect [5, 6] but consistent and auditable.

After each BSO determines its shore manpower requirements, OPNAV N1 programs the billets as the Single Resource Sponsor (SRS) for manpower. At this point, SMRDP has entered the PPBES. The SRS then uses the overall projected Navy budget to decide which billets (military and civilian) will be authorized and which contracts will be funded. For military requirements, authorized billets are expressed as Officer Planned Authorizations (OPAs) or Enlisted Planned Authorizations (EPAs). Funded requirements then serve as the demand signal for the Navy's personnel and contracting systems.

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# The Navy's broken SMRDP

## Problems with the Navy's SMRDP

Past studies have pointed out three main problems with the Navy's SMRDP:

- *Nonconformity with auditing standards.* The Navy's current SMRDP does not conform with generally accepted auditing standards. This has been shown in several studies by the Government Accountability Office (GAO) and other auditing agencies.
- *Inefficiency, especially compared with competed functions.* Many tasks currently performed by government incumbents (military and civilian) cost more compared with performance of the same tasks exposed to competition. This is true whether the competed activities are contracted out or kept in-house. This suggests that SMRDP is seriously flawed because large savings from competition would not be available if shore requirements were correct.
- *Poor incentives.* The Navy's current SMRDP gives few incentives for the BSOs to use their military manpower efficiently. It is difficult for BSOs to increase efficiency by trading in military manpower for civilians, contractors, or technological improvements.

### Navy SMRDP not up to auditing standards

The Navy's SMRDP has been audited and examined by GAO and other audit agencies several times over the last 35 years [7–12]. Every time, the auditing agencies come up with the same conclusion: the Navy's SMRDP is broken.

The latest GAO study, completed in 1997 [12], states the following:

The Navy has had a long-standing problem quantifying the size of its shore infrastructure needed to support its operating forces. Despite concerns raised by Congress and various audit organizations for more than 20 years, many of the same problems continue with the current program. Problems continue primarily because of the low priority the Navy has traditionally given to managing the shore establishment and the ineffective oversight of the shore requirements program. Without an effective requirements program, the Navy has little assurance that resources directed at personnel requirements are being used in the most efficient way possible and that its shore establishment is appropriately sized. Having an effective program is particularly important as the Navy looks for savings and inefficiencies to modernize and recapitalize its operating forces.

Unfortunately, the Navy's SMRDP hasn't changed much since 1997. GAO audits have found that the MFT statements for each command are often out of date, and efficiency reviews and workload measurements are poorly done, if at all. Also, the BSOs and shore commands usually don't have the personnel to correctly perform efficiency reviews and workload measurements [11]. This dates from the decentralization of shore requirements in 1987 when requirements for personnel at the shore commands went unfunded [11]. In practice, the quality of each BSO's SMRDP varies greatly.

In [12], GAO made four recommendations for improvements in the Navy's SMRDP. These recommendations are necessary, but not sufficient, for fixing the Navy's SMRDP. GAO's recommendations follow:

1. Improve management oversight and accountability of the personnel requirements determination process at all levels.
2. Increasingly use standardization and competitive analysis of like activities as part of the requirements process.
3. Improve staff training and ensure that only technically qualified staff conduct efficiency reviews.
4. Establish a link between the Navy's SMRDP and the Navy's various activities to reduce its shore infrastructure.

We cannot understate GAO's concerns about the Navy's broken SMRDP. In [12], GAO said the Navy's SMRDP was so poor that it was



a violation of the Federal Manager's Financial Integrity Act (FMFIA), meaning that internal accounting and administration of the Navy's SMRDP was so inadequate that it needed to be reported to Congress.

## **Navy shore activities are often inefficient**

The main evidence for the current inefficiency of Navy shore activities is the large savings that come from competing Navy functions. If overall activities were efficient, savings would be much smaller or nonexistent.

There is a growing literature on competition, military-to-civilian conversion, and privatization of Navy work. Much of this literature concerns the results of A-76 competitions, which determine whether the Navy or private agencies can provide the Navy a service at the lowest price and greatest quality.

CNA has done over a decade of research on public-private competitions and outsourcing [13]. This research covers DoD's A-76 program from 1978 to 2005. Over that time, the Navy average percentage savings from A-76 competitions is 35 percent, with the savings from A-76 competitions increasing over time.

Studies have found that the main factors affecting the amount saved are the size of the competition (number of billets), the number of military billets competed, and the number of bidders. Savings increase with the number of military billets, and greater bidding competition increases savings. There are additional savings after recompetition [13]. Competing functions with mostly military billets leads to expected savings of 46 percent [13].

This literature strongly suggests that all available commercial activities should be competed and that, without the pressure of competition driving costs down, many commercial shore activities may be inefficient.

## **Little to no standardization**

GAO found widely differing manpower requirements for similar tasks around the Navy [12]. There are no standards to compare similar activities either between or within commands.

Inconsistency between (and possibly even within) BSOs suggests that the Navy's SMRDP leads to inefficient requirements. The Navy needs greater consistency and efficiency in its shore manpower requirements.

GAO also found that the quality and consistency of reviews varied greatly between and within activities [12]. The lack of standardization within the program led the GAO to conclude that the current SMRDP was designed to justify current resource allocations, rather than trying to find the most efficient allocation of resources for a particular activity [12]. This is clearly inefficient and shows that the current SMRDP seriously needs reform.

## **BSOs have poor incentives to reduce military manpower**

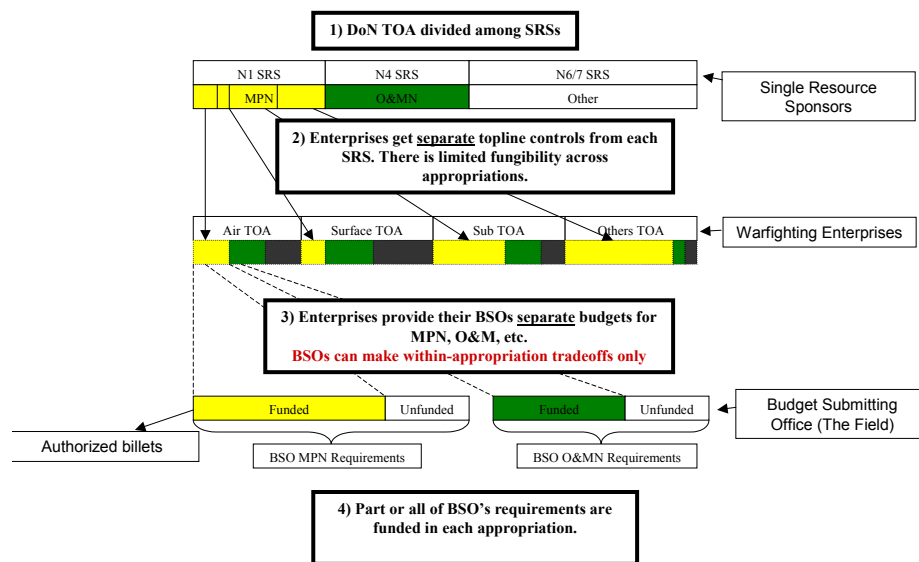
The Navy's budget process gives BSOs poor incentives to reduce military manpower in shore activities. Figure 2, taken from [14], shows the budget process, which is summarized below:

1. The Navy's TOA is divided among the SRSs.
2. The Enterprises (Air, Surface, Sub, etc.) then get separate topline controls from each SRS. There is limited fungibility across appropriations.
3. Enterprises provide their BSOs separate budgets for MPN, Operations and Maintenance, Navy (OMN), etc. The BSOs can only make within-appropriation tradeoffs.
4. Part or all of each BSO's requirements are funded.

Currently, OPNAV N1 is the Single Resource Sponsor for Navy manpower. As of FY10, N1 will be the SRS for Navy-employed civilians as well. Contractors will still be funded from each BSO's OMN account, but will be managed by N1 as part of the Total Force. As a result:

- The entire military personnel budget has been transferred to N1 from the BSOs.
- N1 can streamline the manpower process and can make tradeoffs between different types of manpower.
- The BSOs cannot trade off manpower for other resources. This could be a big problem if the BSOs have more information about their operations than N1, which is likely.

Figure 2. Navy's military manpower budget process



For the BSOs, military manpower is effectively free. Military billets are rationed to them, and the BSOs don't pay the cost of those billets. Changes in military billets are credited to the MPN account. They are not traced back to the BSO with the increase or decrease in billets. Therefore, the BSOs don't have an incentive to reduce military billets. In fact, the current system gives BSOs disincentives to convert military billets to civilian or to compete billets because BSOs often don't receive adequate OMN funding to maintain their capability after giving up MPN. Therefore, BSOs may not use information they have on how to raise efficiency by civilianizing billets.

We illustrate the poor incentives faced by Navy BSOs in figure 3. This diagram shows the manpower requirements determination problem in terms of tradeoffs between MPN and OMN funding (which includes civilians, contractors, and readiness funding). For a given budget level, there is a level of MPN and OMN funding that maximizes readiness, keeping everything else constant (including Ship Construction, Navy (SCN), and other spending).

Figure 3. Budget process gives poor incentives to BSOs

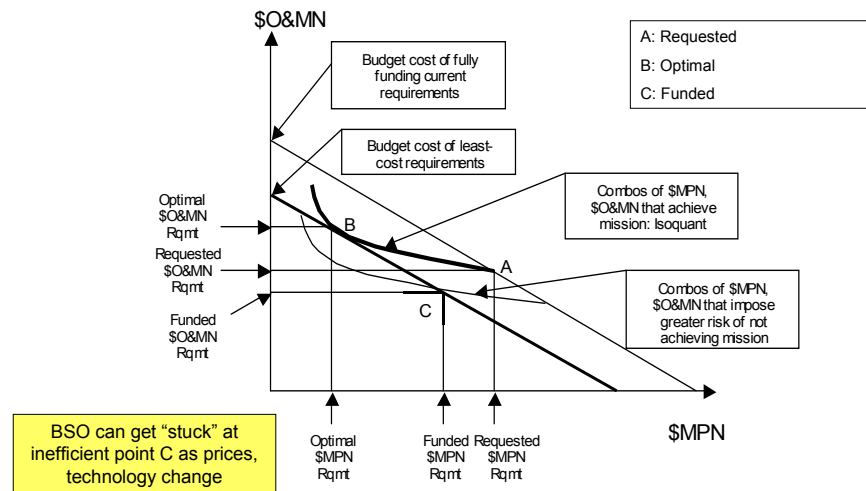


Figure 3 shows how the Navy can use inefficient levels of manpower and other resources as prices and technology change. A BSO requests an inefficient combination of MPN and OMN (shown in point A). It likely does this because requesting an efficient combination of MPN and OMN would require giving up MPN to gain OMN funding. But, since MPN is costless to the BSO, the BSO wants to retain as much MPN as possible, while trying to gain more OMN to fund its activities. The actual funded amount of MPN and OMN is given by point C. The Navy could gain readiness by moving to point B (more OMN and less MPN), but the BSOs are unwilling to give up MPN because MPN is costless to the BSO. So, in general, the Navy uses too much military manpower in its shore activities.

The lack of incentives for BSOs to cut military billets affects Navy efficiency. The Navy has maintained too many military shore billets, and has reduced other billets instead. Over time:

- Sea/shore ratio for military personnel has decreased [15]. This suggests that the Navy has done a better job reducing sea billets than shore billets.
- The Navy has reduced civilian billets faster than military billets. Since civilian billets are part of OMN and substitutable with technology and with contractors, the BSOs have had both the incentive and the ability to reduce their civilian billets [14].
- The Navy has done a better job of reducing military billets funded by the Navy Working Capital Fund (NWCF) than other military billets, which is expected because BSOs pay the full cost of military billets within the NWCF [14].

Overall, military manpower requirements would be more efficient if those making military manpower decisions had the same resource tradeoffs as the Navy. This is especially true for shore activities because very few shore billets are restricted to military incumbents by law (as opposed to sea billets). There are three main ways to give the users of military manpower better incentives to use such manpower efficiently:

1. Give end users of military manpower more financial fungibility and ability to exchange funds in one appropriation for another.
2. Charge end users for military manpower they use.
3. Make prices reflect the cost to the Navy of military billets.

Until the Navy gives the BSOs the right incentives to be efficient in their use of military manpower, the Navy will do a poor job at determining shore requirements.

## Summary

To summarize, past studies have shown five main problems with the Navy's SMRDP:

- Poor management oversight and lack of accountability
- Little to no standardization between (and possibly within) BSOs
- Unqualified staff with major roles in SMRDP
- Overstaffing and staffing with incorrect personnel (inefficiency)
- SMRDP gives BSOs poor incentives.

# Options for setting manpower requirements

The last section laid out a summary of problems with the Navy's SMRDP. In order to suggest methods for solving these problems and improving the Navy's SMRDP, we need to describe how other organizations set manpower requirements and how those methods might be applicable to the Navy.

## Methods for setting manpower requirements

Manpower requirements can be broken up into three main methods:

- Industrial engineering
- Workforce planning
- Competition.

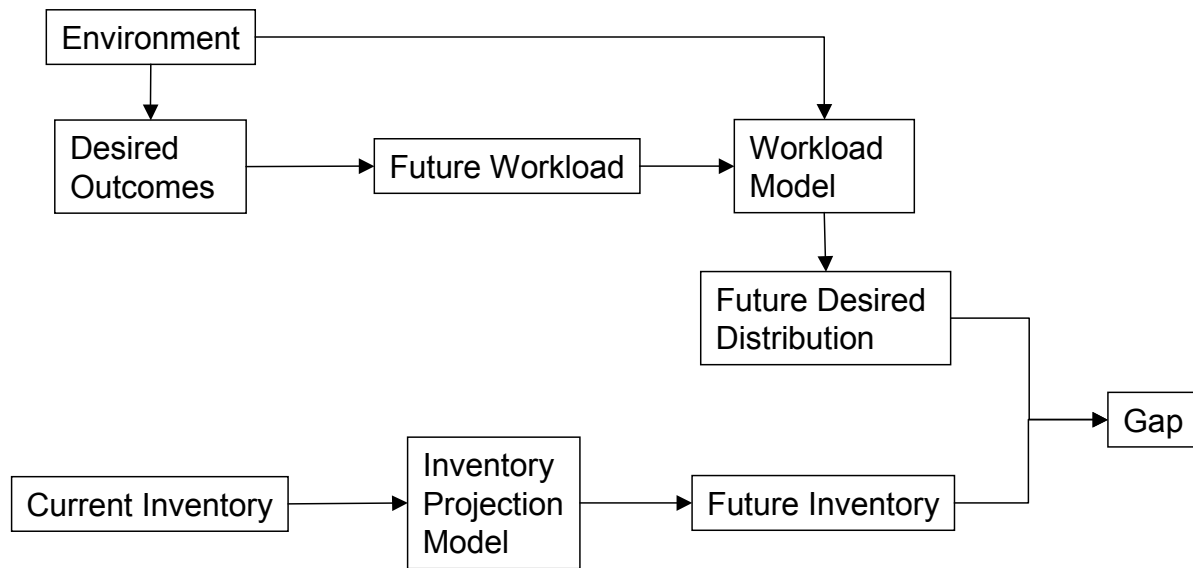
In practice, many organizations use more than one method to determine their manpower requirements. We will discuss each separately to get an idea of what types of manpower requirements determination might be appropriate for the Navy's SMRDP.

### Industrial engineering

An industrial engineering approach is shown in figure 4, taken from [16, 17].

Manpower requirements determination by industrial engineering starts with the current environment and works toward desired outcomes. In the Navy's SMRDP, desired outcomes are tasks described in the shore commands' MFT statements. These MFT statements imply a level of workload, and an industrial engineering (or operations research) workload model is then used to compute the manpower requirements. These manpower requirements serve as a demand signal for labor needed to fulfill the mission.

Figure 4. Industrial engineering approach to requirements determination



Industrial engineering is currently used to determine Navy and Coast Guard sea requirements. The process is managed by NAVMAC.

Determination of sea requirements starts with a ROC/POE statement, which gives the purpose and capability of the military asset and is the foundation from which manpower requirements are determined. If the statement is wrong or not up to date, the military asset:

- May not be able to complete the mission, and/or
- May use resources to fulfill unneeded or obsolete missions.

NAVMAC uses the ROC/POE statement to determine projected wartime workload. Workload is determined as wartime steaming (Condition III), where Sailors are fully prepared for battle but are not in battle (Condition I). Data are then taken on the amount of workload necessary to fulfill the ship's mission. Workload is divided into:

- Operational manning of watch stations
- Maintenance
  - Planned



- Corrective
- Facilities (cleaning, painting, etc.)
- Support
  - Administrative
  - Command
  - Supply
  - Medical
- Utility tasks, evolutions, miscellaneous (such as replenishment-at-sea).

Workload analysts gather data from each of the work stations and support functions. They use these data to compute a total number of hours needed for all the ship's functions. This number of hours is then divided by the Navy Standard Work Week to determine the number of Navy personnel needed [6].

Similarly, the Army and Air Force use industrial engineering techniques to determine requirements for both deployed and non-deployed manpower and have an internal centralized group to determine manpower requirements. The Army and Air Force then use industrial engineering to develop staffing standards for deployed and nondeployed (Navy shore equivalent) work [18, 19].

### **Advantages**

For the Navy, using industrial engineering for SMRDP would have several advantages:

- *Standardization*: industrial engineering would allow for consistent requirements for similar work across the Navy. This would allow for a much more auditable process than the current SMRDP.
- *Amenable to centralization*: Industrial engineering requirements are centralized and the same model would be used by the entire Navy. This would eliminate inconsistencies between (and within) BSOs.

- *Navy has long experience with industrial engineering:* The Navy and the rest of the military have a long experience with industrial engineering. This experience would be valuable in applying industrial engineering to shore requirements.

### **Disadvantage**

The significant disadvantage of using industrial engineering for SMRDP is that *the Navy doesn't have a comprehensive understanding of all factors for shore jobs*. The basis of industrial engineering is full knowledge of all workload drivers and how those drivers translate into requirements. In the civilian world, many jobs are amenable to industrial engineering or operations research. Industrial engineering is appropriate when the Navy has an exhaustive understanding of all factors that influence workload. Businesses use industrial engineering for predictable service and manufacturing processes that can be fully (or near fully) described. Manufacturing firms use industrial engineering to determine manpower requirements for assembly lines. Service firms also use industrial engineering for processes that can be broken down into predictable steps.

Two prominent examples would be package delivery and grocery store checkouts [20]. Package delivery can be broken down into steps from when the package is picked up to its transportation to routing to delivery. Every actor in this chain has clear and consistent tasking that can be written down and modeled. A grocery store checkout line is similar in that there are clear and consistent steps that can be observed and modeled. Most Navy shore work cannot be broken down in this way.

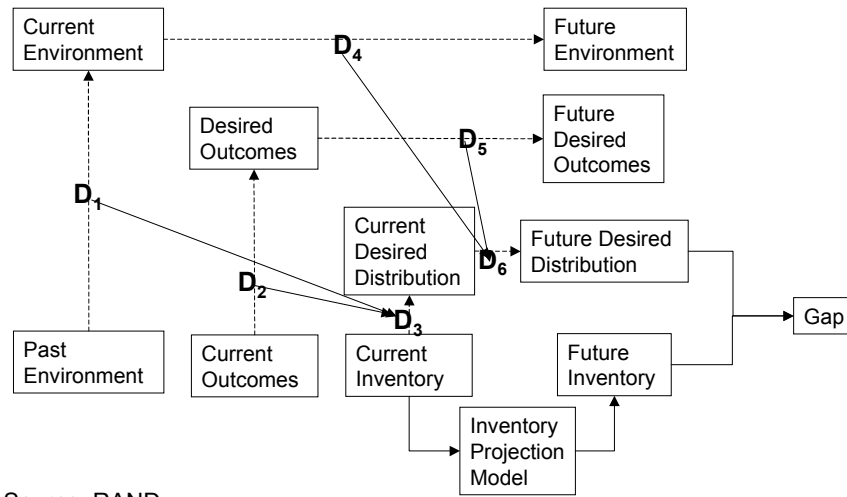
### **Workforce planning**

In the absence of a workload model, a workforce planning approach is used to calculate manpower requirements. Figure 5 depicts this approach.

For a workforce planning approach, the policy-maker looks at the past, present, and future, estimating how changes in the future environment will affect workload. These differences feed into differences between the current and future desired distributions of skills in the

workforce. Differences between the current and past environment and current and desired outcomes feed into the difference between current inventory and the desired distribution of workforce skills.

Figure 5. Workforce planning approach to requirements determination



This approach is used by many, if not most, workplaces. Many workplaces do not have a formal manpower requirements process. Instead, they look at their environment and current workforce, project into the future, and estimate the workforce they will need, making small changes to meet the businesses' needs.

The manpower requirements determination processes of both the Marine Corps and Military Sealift Command can be characterized as workforce planning processes [5, 21]. Neither the Marine Corps nor MSC uses an industrial engineering process to determine their manpower requirements. In fact, the Marine Corps used to have staffing standards for nondeployed work, but these were discarded due to technological changes. Instead, doctrine and subject matter experts determine the needs of both enterprises. Similar units have similar requirements, and these change slowly over time as the environment and desired outcomes change.

For shore positions not subject to competition, workforce planning setting of manpower requirements is generally appropriate. This is true for most government policy, of which Navy manpower requirements is a subset [22, 23]. The Navy does not have enough information, and the workload and workload drivers are not predictable enough to set requirements through industrial engineering. In fact, an industrial engineering approach to staffing standards could do more harm than good, especially as technology changes. Staffing standards would be especially problematic for staffs whose functions vary greatly depending on leadership and circumstances, such as Joint staffs.

Using workforce planning to set manpower requirements has several advantages:

- Workforce planning makes it easier to change manpower requirements as prices and technology change.
- Workforce planning can be applied to inherently governmental work.

Disadvantages of workforce planning follow:

- *Harder to standardize:* Because workforce planning relies on analysis of each situation and projections of the future, it translates into (usually) incremental changes in requirements. Since each BSO is different, it can be harder to generate standardized requirements with workforce planning.
- *Significant data requirements:* Workforce planning requires a large number of data. Data are needed on both what the workforce is currently doing and what is driving that workload. Data are also needed on the costs of performing current activities. These data requirements are substantial, and lack of suitable data can derail a workforce planning effort. In order to get a better understanding of current workforce activities, a workforce planning approach may involve selected industrial engineering techniques. While workforce planning will not use motion and time studies or predetermined time measurement protocols, those involved in workforce planning might use such industrial engineering techniques as work sampling,

operational audits, benchmarking, and historical referencing to understand work currently being performed.

- *Need for BSO incentives:* A workforce planning effort would need strong BSO involvement since the BSOs understand their current work and work drivers better than anyone else. However, if they don't have incentives to economize on military manpower, they won't.

## Competition

The last method of determining manpower requirements is through competition. The Navy, like other organizations, has to decide what goods and services it should produce in-house and which it should purchase elsewhere. Currently, the Navy purchases all of its goods from outside companies. Some of its services are provided in-house, while others are provided via contract. The United States Government conducts this process according to the A-76 Circular [24]. Once an activity is provided via contract, the Navy no longer has to explicitly determine manpower requirements. Instead, the Navy monitors overall performance over the length of the contract.

### **Inventory of Governmental and Commercial Activities (IGCA)**

The A-76 process starts with the annual IGCA. This is a listing of all activities performed by DoD personnel, their functions, and a classification of whether the activity is commercial or inherently governmental. This classification can be broken down as shown in figure 6. These classifications divide civilian and military authorizations into different categories. Groups P through X are eligible for competition, and the rest of the authorizations are categorized as ineligible. If an authorization fits into more than one category, it is assigned the category that is closer to the top ("A") of the table. The Navy uses the IGCA as a basis for determining what activities can be competed.

Figure 6. Manpower classification (inherently governmental to commercial)

<b>ORDER OF PRECEDENCE FOR CODING MANPOWER MIX CRITERIA</b>	
<b>A</b> Military Operations	
<b>B</b> Military Support Elements in Op. Forces	<b>C</b> Civilian Support Elements in Op. Forces
<b>D</b> Exemptions for Military & Civilian Wartime Designations (Dual Status)	
<b>E</b> Civilian Authority Direction & Control	<b>F</b> Military-Unique Knowledge & Skills
<b>G</b> Exemptions for Esprit de Corps and Military Support	
<b>H</b> Continuity of Infrastructure Operations	<b>I</b> Military Augm. of Infrastructure During War
<b>J</b> Civilian & Military Rotation	<b>K</b> Civilian & Military Career Progression
<b>L</b> Restricted by Law, Executive Order, Treaty or International Agreement	
<b>M</b> Restricted by DoD Management Decision	
<b>P</b> Pending Restructuring Decision	
<b>R</b> Subject to Review	
<b>W</b> Nonpackageable Commercial Activity	
<b>X</b> Alternative Candidates to A-76	

### A-76 competitions

At this point, all inherently governmental work remains with the government and is not eligible for competition through the A-76 process. The A-76 Circular [24] defines inherently governmental activities as those that are “so intimately related to the public interest as to mandate performance by government personnel.” According to [24], inherently governmental activities involve:

1. Binding the United States to take or not to take some action by contract, policy, regulation, authorization, order, or otherwise
2. Determining, protecting, and advancing economic, political, territorial, property, or other interests by military or diplomatic action, civil or criminal judicial proceedings, contract management, or otherwise
3. Significantly affecting the life, liberty, or property of private persons
4. Exerting ultimate control over the acquisition, use, or disposition of United States property (real or personal, tangible or intangible), including establishing policies or procedures for the collection, control, or disbursement of appropriated and other federal funds.

Reference [24] also states:

While inherently governmental activities require the exercise of substantial discretion, not every exercise of discretion is evidence that an activity is inherently governmental. Rather, the use of discretion shall be deemed inherently governmental if it commits the government to a course of action when two or more alternative courses of action exist and decision making is not already limited or guided by existing policies, procedures, directions, orders, and other guidance that (1) identify specified ranges of acceptable decisions or conduct and (2) subject the discretionary authority to final approval or regular oversight by agency officials.

In other words, inherently governmental work involves making decisions for the government or exercising government control.

If an activity is not inherently governmental, a determination is made about whether the activity is eligible for competition. The various exceptions in figure 6 are in light green. If an activity does not fit into these exceptions, it is a commercial activity and is eligible for competition. All such activities are eligible to be competed through the A-76 process, either through a streamlined competition (any number of military and/or ten or fewer civilians) or standard competition (no military and more than ten civilians).

A standard competition involves the following:

- A public announcement (start date)
- A cost estimate for both in-house and outside performance of the activity
- A decision about who is to perform the activity (end date)
- A contract or issue agreement
- Post-competition accountability to make sure that the agreement or contract is being fulfilled.

The competition (start date to end date) takes a maximum of a year (18 months with waiver). If the private sector (or other governmental organization) is more efficient than the Most Efficient Organization

(MEO) currently performing the work, a contract or fee-for-service agreement is signed and the activity is contracted out. If the MEO wins the competition, the government retains the activity and an agreement is signed with the MEO, keeping the activity in-house.

A streamlined competition is similar to a standard competition, but allows less time (90 days, 135 days with waiver) to generate more bids and develop better cost estimates. Streamlined competitions are designed to accommodate smaller competitions; they also result in either the award of a contract to an outside organization or an agreement with the current government MEO.

Manpower requirements are implicitly determined by this process because the government awards the contract to the organization that wins the competition, and that organization (government or private) determines how to most efficiently fulfill the contract.

### **Advantages and disadvantages of competition**

There are three advantages of competition:

- *Efficiency.* If you get enough bidders, competition gives efficient outcomes because all sides have an incentive to provide the service at the lowest price possible.
- *Implicit determination of manpower requirements.* Competition means that the Navy doesn't have to spend time and money figuring out what the correct manpower requirements should be. The market determines the most efficient method of providing a service.
- *Experience.* The Navy has long experience with competition through the A-76 process.

Using competition to determine manpower requirements, however, has the following disadvantages:

- *Cannot employ in all cases.* It is not appropriate for work exempt from competition.
- *Need enough bidders to get efficient outcomes.* Past work has shown that efficiency increases with the number of bidders [13]. If



there aren't enough bidders, competition won't lead to efficient manpower requirements.

- *Need accurate cost information to make good decisions about what to contract out.* Without accurate cost information, the Navy can't make correct decisions about what work to contract out and what work should remain in-house.

## Manpower requirements options summary

We can make several conclusions from the foregoing discussion on manpower requirements options:

- *Industrial engineering is not appropriate for most Navy shore work.* Unlike Navy sea requirements, which are determined by industrial engineering, most shore work that is amenable to industrial engineering involves commercial activities and should be competed.
- *The Navy should find greater opportunities to expand competitive sourcing.* However, this requires enough bidders to get efficient outcomes and accurate cost data to make good decisions.
- *Workforce planning is suitable for work not eligible for competition.* However, requirements set by workforce planning are more difficult to standardize and require accurate cost data, as well as data on current workload and workload drivers.
- *Most shore jobs that are suitable for industrial engineering are commercial activities and should be competed.* The Navy does some shore tasks that are amenable to industrial engineering. An example would be aircraft maintenance. The Navy has strict regulations for how and when aircraft must be maintained and relatively accurate models for how often aircraft must be repaired. However, aircraft repair is a commercial activity. As such, much of the aircraft repair in the military at shore is performed by contractors. Some aircraft maintenance is performed by Sailors, but much of this is for sea-shore rotation. It might be less expensive to give Sailors bonuses to stay out at sea longer and have contractors perform the work that Sailors now perform. The same is true for ship maintenance and other maintenance

tasks, as well as other routine shore activities, such as base operating support.

- *Without competition, the Navy can get locked into fixed labor/capital ratios as prices and technology change.* Getting locked into fixed labor/capital ratios is a significant problem with Navy sea requirements [5]. There is no reason for the Navy to maintain outdated workforce requirements.

# Fixing the Navy's SMRDP

## Prerequisites for an effective SMRDP

To have an effective SMRDP, the Navy needs to foster both more competition and more transparency. More competition and transparency need to be the backbone of a new Navy SMRDP. More competition includes:

- An effective process for determining what work is eligible for competition
- Incentives for BSOs to use manpower efficiently.

More transparency includes:

- Accurate cost data
- Accurate data on current and future workload drivers
- Effective management oversight and accountability
- Well-trained and qualified staff.

In this section, we discuss each of these in turn.

## Building an effective process for determining which work is eligible for competition

Let's go back to the figure we showed earlier detailing the IGCA manpower classification. For convenience, we present it on the next page as figure 7.

Figure 7. IGCA manpower classification

ORDER OF PRECEDENCE FOR CODING MANPOWER MIX CRITERIA	
(A) Military Operations	
(B) Military Support Elements in Op. Forces	(C) Civilian Support Elements in Op. Forces
(D) Exemptions for Military & Civilian Wartime Designations (Dual Status)	
(E) Civilian Authority Direction & Control	(F) Military-Unique Knowledge & Skills
(G) Exemptions for Esprit de Corps and Military Support	
(H) Continuity of Infrastructure Operations	(I) Military Augm. of Infrastructure During War
(J) Civilian & Military Rotation	(K) Civilian & Military Career Progression
(L) Restricted by Law, Executive Order, Treaty or International Agreement	
(M) Restricted by DoD Management Decision	
(P) Pending Restructuring Decision	
(R) Subject to Review	
(W) Nonpackageable Commercial Activity	
(X) Alternative Candidates to A-76	

To help identify additional opportunities for competition, one approach is to regroup the manpower mix criteria. Navy IGCA manpower classifications are currently divided into three groups:

1. Inherently governmental (dark green)
2. Commercial but exempt from competition (light green)
3. Commercial activities (yellow).

At present, the Navy exempts billets from competition that should be competed. An alternative grouping would be:

- Ineligible for competition by law
  - Military (A) or Military (B) or Civilian (C) Support of Operating Forces
  - Dual status (D) or Continuity of Infrastructure (H/I)
  - Civilian Authority, Direction, and Control (E)
  - Other Law, Treaty, or International Agreement (L)
- Ineligible for competition by tradition or DoD decision
  - Military Unique Knowledge and Skills (F)

- Exemption for Esprit de Corps and Other Military Support (G)
- Restricted by DoD Management Decision (M)
- Competition eligibility based on cost and readiness
  - Rotation (J)
  - Career Progression (K)
- Commercial activities not exempt from competition
  - Pending Restructuring Decision (P)
  - Subject to Review (R)
  - Nonpackageable Commercial Activity (W)
  - Alternative Candidates to A-76 (X).

Billets that are ineligible for competition by law should remain ineligible for competition. The law is beyond the purview of the Navy, and the Navy should enforce the law.

However, billets that are ineligible for competition by tradition or DoD decision need to be more closely examined for billets that might be competed. A number of Navy billets classified as “Military Unique” might be eligible for competition if the Navy changed either its instruction for determining military-unique billets<sup>3</sup> or how that instruction is applied. It is often difficult to know which billets require military-unique knowledge and skills, especially when many billets can be satisfactorily filled by those with past Navy experience, rather than just recent Navy experience (as specified in Navy instructions).

The decision to categorize “Rotation” and “Career Progression” billets as exempt from competition should be a cost (and readiness) decision. This is not the case today. The costs of Rotation and Career Progression billets need to be considered. In the case of Rotation billets, it might be less expensive to give bonuses to Sailors to stay out at sea longer and compete the jobs they are performing at shore. For

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3. DoD Instruction 1100.22.

Career Progression billets, it might be less expensive to conduct work differently so that the Navy would not need a large number of Career Progression billets (i.e., the Navy either would not have such billets or would expose to competition). The Navy controls the conditions over which shore billets are needed for career progression and rotation. Changes in sea-shore rotation or the types of jobs filled by those who earlier in their careers serve in Career Progression billets might eliminate the need for Career Progression and/or Rotation billets to be exempt from competition.

## Getting the incentives right

BSOs have poor incentives with regard to military manpower. BSOs have every incentive to hoard military billets because they do not pay for them.<sup>4</sup> So, BSOs try to military billets that have any value at all.

The way to fix this is to have the BSOs pay the real cost for the manpower they need. To do this, BSOs need the ability to spend their budgets as necessary to most efficiently accomplish the mission. Current budget processes treat MPN differently from other types of manpower. In essence, MPN is free to the BSO.

For sea billets, this isn't as much of a problem. At-sea billets aren't eligible for competition and sea hardware is more fixed, so having a strict separation between MPN and other spending isn't as big a problem. However, shore commands need to have more flexibility in how they determine their requirements so that they can find efficiencies.

The closed nature of the Navy's personnel system makes it harder for the Navy to manage its shore billets. By closed, we mean that the Navy can't create an E-7 or an O-5 without that person first being an E-6 or an O-4, respectively. As a result, some central agency has to manage military personnel and match the number of personnel to the numbers and types of billets. This is especially important because the number of different types of military personnel changes slowly; mistakes in military personnel management persist over time.

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4. BSOs actually do pay for billets paid for by the Navy Working Capital Fund.

OPNAV N1 is currently the Single Manpower Resource Sponsor (SMRS). In that capacity, it both pays for and manages all military manpower. N1 will pay for and manage Navy civilian manpower as well as that of POM-10. This means that all manpower except for contractors will be paid for and managed by N1, as the central agency responsible for manpower.

In the current system, N1 has trouble allocating manpower efficiently. Sea and shore commands own the requirements and have more visibility into possible efficiencies. N1 allots manpower to requirements within budget constraints (MPN and OMN). Since BSOs have little incentive to have efficient MPN requirements, however, N1 has little ability to fill military billets efficiently.

Instead of the current system, N1 (or another central agency) should act as a human resource agency for manpower. In such a scenario, BSOs would be given a fully fungible budget topline that they could spend however they needed to fulfill the mission. BSOs would then purchase manpower from N1 or the Enterprises, and N1 would match supply and demand to fill orders from the BSOs (or Enterprises). Purchasing all manpower from a central agency would give BSOs incentives to use MPN efficiently.

## **The importance of accurate cost and productivity data**

The Navy's shore requirements determination problem is similar to the manpower requirements determination problem of other federal, state, and local government agencies. How does one determine what types and how many workers are needed to best accomplish a set of government services at the least cost? How does one measure efficiency in the absence of the profit motive? Fortunately, these problems have been considered by government and other nonprofit agencies, both here and around the world.

The Navy's shore manpower requirements problem is slightly different from that of other government agencies. Whereas both other government agencies have to determine whether to outsource parts of their functions, the Navy has to both decide what it will outsource and what functions will be filled by military. This problem is different

from that faced by other governmental agencies—but only slightly. The Navy just needs additional information to determine whether a billet should be filled by civilians or military. The rest of the process is similar to that of other government agencies.

## Lessons from state and local competition efforts

A 1997 GAO review [25] of state and local privatization efforts listed several lessons learned:

- Privatization can best be introduced and sustained when a political leader champions it.
- Government leaders need to establish an organizational and analytical structure to ensure effective implementation.
- Governments may need to enact legislative changes and/or reduce governmental resources to encourage greater use of privatization.
- Reliable cost data on government activities are needed to support informed privatization decisions and to assess overall performance.
- Governments need strategies to manage workforce transition.
- More sophisticated monitoring and oversight are needed to protect the government's interests when its role in the delivery of services is reduced through privatization.

All of these lessons are applicable to the Navy's competition efforts, especially since many, if not most, public competition or privatization efforts resemble the Navy's A-76 process, with government competing against private entities for government service contracts.

The City of Indianapolis took several actions that correspond to these lessons. To ensure effective implementation of its competition efforts, the City of Indianapolis paid for 75 city employees to receive 2 days of training in activity-based costing (ABC) that would allow them to better understand budgetary and costing processes [26]. After the workshop, the city employees studied how the city performed its work and determined that there were too many supervisors—one for every



four employees. These supervisors were non-union members and Republican political appointees. To make themselves more competitive with private bidders, the union asked that excess supervisors be laid off. Indianapolis mayor Stephen Goldsmith agreed, and the competition process took off.

In 1993, Mayor Goldsmith started the Reengineering Task Force (RTF), which was made up of a total of 12 people from both labor and management. [26] The RTF reduced job classifications from 100 to 12 and retrained workers to do more job tasks. There was also more middle manager downsizing to make government workers more competitive with the private sector.

The next step to implementing competition was using ABC to understand job-related costs [26]. When Goldsmith took office, no one could tell him how much it took to fill a pothole. Eventually, they found out that it cost \$425/ton of asphalt to fill a pothole, which the city decided was too high. The City's Department of Public Works (DPW) was able to maintain the bid by getting the cost down to \$307/ton of asphalt, and the DPW eventually beat that price.

## **Using state and local lessons learned to improve competition in the Navy**

The Navy follows OMB's A-76 process when it determines that billets are eligible for competition. This process is standard for the U.S. Government (not just DoD). The A-76 process has worked well, but is severely hampered by government accounting systems that force decisions to be made using estimated, and not actual, costs. Federal government budget and accounting procedures do not allow decision-makers to know the actual cost of an activity. This is in sharp contrast to best practices in state and local government, which use ABC to measure actual costs [26]. For example, in the A-76 process, General and Administrative (G&A) costs are assumed by rule to be 12 percent and are not actually measured [27]. Other assumptions about overhead are also made in order to estimate costs. The costs coming from these assumptions are clearly wrong, but including these rules for estimates make the estimates better than if these rules did not exist. Both the GAO and the DoD Inspector General have questioned using

the 12-percent rate, but this rate and other means to estimate costs are used in place of actual costs because federal government accounting systems don't support the use of actual costs [27].

In contrast, private-sector companies usually don't have a standard rate for overhead in the private sector because these companies track actual costs and overhead varies on the specific activity or business unit. Private-sector accounting practices are designed to elicit better estimates of overhead costs while recovering total costs. The Navy, and the rest of the U.S. Government, should adopt these practices.

Also, the Navy lacks adequate productivity measures for shore activities. For sea activities, the Navy has several measures of readiness. While these measures are imperfect, at least they are generally agreed-on measures. Some shore activities, such as maintenance, are amenable to the same standards used at sea. For many other shore activities, however, there are no productivity standards whatsoever [28]. Other productivity standards are ad hoc within individual Navy contracts. How can the Navy measure how effective its shore activities are without productivity measures?

The Navy currently uses price/productivity models to match readiness to budgets for large parts of its budget, especially for OMN spending. However, these models are often insufficient for decision-making. Many models don't count all MPN or OMN needed to complete a task or series of tasks [29]. Also, these models usually don't separate activities that are and are not eligible for competition. Therefore, to conform with governmental best practices, the Navy needs another way to track actual costs and productivity measures.

### **Activity-based costing**

The Navy's lack of knowledge about costs is a serious problem. If sourcing decisions are based on cost, and the Navy doesn't know how much its activities cost, how can it make good decisions?

Poor cost information causes a host of problems, including:

- Setting the wrong priorities
- Focusing on the wrong problems

- Cutting costs, but failing to reduce costs
- Failing to control spending
- Making incorrect sourcing decisions [30, 31].

Accounting systems are good for external reporting, but they can be misleading or dangerous for internal decision-making. Conventional cost systems do little to promote cost efficiencies.

Cost information is used to:

- Manage the production of products and services
- Manage the cost of internal processes
- Make decisions about outsourcing [30, 31].

Conventional cost systems use direct material and labor charges as the primary means of apportioning overhead. This is a serious problem since overhead can be large, and the misappropriation of such overhead can distort the true prices of activities.

ABC is a different costing method that tracks costs by activities and cost objects, which correspond to the what and why of what happens in an organization. Activities are descriptions of work that goes on in an organization, such as:

- Entering details of a customer order at a computer terminal
- Setting up a machine
- Inspecting a part
- Helping a welfare client
- Issuing a driver's license
- Shipping a product.

Cost objects are reasons for performing an activity. They include the following:

- Products, services, customers, clients
- Other strategic factors.

So, in activity-based costing, entering the details of a customer order at a computer terminal (activity) is done because the customer (cost object) wants to place an order [30, 31].

ABC accomplishes the following:

- Allows an organization to know the full costs of its activities
- Provides useful information about activities.

### **Information about activities**

ABC also allows one to find nonfinancial information about activities. This could include:

- Core and other activities
- Regulated and unregulated activities
- Useful information for continuous improvement programs
  - Cost drivers
  - Performance measures
  - Non-value-added activities.

ABC is used for some activities by the Army and Marine Corps. It is also used in naval shipyards, the Fleet Industrial Supply Center, Naval Aviation Depots, and the Defense Finance and Accounting Service (DFAS) [32, 33].

For service and government activities, information includes:

- What are high-cost activities?
- What are the opportunities to improving product and service design to reduce cost?
- What are the opportunities to shift focus toward more profitable products, services, or customers?

ABC can also provide information about an activity's work and its relationship to other activities, along with cost drivers and performance measures. This information can be used to benchmark performance

in similar processes and provides operational business intelligence, including the following:

- What triggers the performance of an activity?
- What factors regularly affect performance?
- How effectively, how fast, and with what quality is work produced?

As stated earlier, using actual costs is central to making accurate decisions about competition. Accurately identifying overhead and actual costs would change many decisions about whether an activity should remain in-house. Using actual costs and accurate productivity measures is also crucial to workforce planning efforts. It is impossible to evaluate the current environment without understanding the actual costs (and productivity) of one's activities. Currently, the Navy doesn't have the data it needs to properly analyze alternatives.

Similarly, the Navy has little understanding of its current workload or its drivers. The Navy can't evaluate its current environment without understanding what work is currently done. This means that the Navy needs a system to survey current workload in civilian and military shore positions. The Navy also needs a skills-capture process for shore billets so that the Navy knows what skills are needed for each shore position. The Navy currently has a skills-capture process for sea requirements but none for shore requirements. Some BSOs likely have their own process, but there is no standardization. This is especially important for billets that are not eligible for competition because competition helps to define requirements.

### **Increasing management oversight and accountability**

The Navy needs a set of SMRDP guidelines to follow. There are no guidelines at present—only suggestions from NAVMAC that are largely irrelevant to how the BSOs should do business. These guidelines need to be enforced by N1, or whatever central agency is in charge of billet management.

The guidelines should include:

- *A list of activities performed by each of the BSOs.* This would be similar to the current MFT statements, except that the activities would correspond to what people actually do and would have costs attached to them through ABC.
- *Which portions of activities are ineligible for competition.* This is necessary to determine what activities are eligible for competition.
- *Mapping of personnel (or contracts) to activities and activities to customers.* This is necessary in order to connect activities to costs.
- *Regulations for process improvement (if ineligible for competition).* If activities are eligible for competition, process improvement regulations aren't needed because competition will drive requirements. However, process improvement regulations are needed for ineligible activities in order to drive productivity gains.
- *Measures for workload and skills capture.*

BSOs need to link activities to actual costs and there needs to be regulatory changes to make this happen. Also, following the example of Indianapolis, the Navy will have to train central and BSO staff in:

- Cost analysis
- Process improvement
- Workload and skills capture.

Overall, the foregoing suggestions would give the Navy the capability to manage an improved SMRDP.

## Recommendations

We offer the following seven recommendations to the Navy:

- Build a set of SMRDP guidelines for all BSOs to follow, consisting of:
  - Regularly updated list of activities from each BSO
  - Actual (not estimated) cost of each activity
  - Productivity measures for each activity
  - Activities that are ineligible for competition and why
  - Mapping of personnel (or contracts) to activities and activities to customers
  - Regulations for process improvement (if ineligible for competition)
  - Regulations for measuring workload and skills capture.
- Don't apply sea requirements process to shore requirements; in general, industrial engineering is inappropriate for SMRDP.
- Make all "Rotation" and "Career Progression" billets subject to cost analysis and review.
- Take a harder look at all billets ineligible for competition by tradition or DoD decision.
- Align incentives of BSOs and the Navy for use of military manpower:
  - Make budgets fungible for MPN and other inputs.
  - Have BSOs purchase MPN from N1 or another central agency.

- Use ABC or similar methodology to calculate actual (not estimated) cost of activities.
- Train staff both in central location and at BSOs in:
  - Cost analysis
  - Process improvement
  - Workload and skills capture.



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