

# CBO

## Models Used by the Military Services to Develop Budgets for Activities Associated with Operational Readiness

Miscellaneous  
(\$4.1 billion)

Not Modeled  
(\$26.3 billion)

Facilities  
(\$18.1 billion)

Maintenance  
(\$11.3 billion)

Operating  
Tempo and Training  
(\$19.0 billion)



FEBRUARY 2012





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February 2012

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## Notes

Unless otherwise indicated, all years referred to in this study are fiscal years, and all dollar amounts are in 2012 dollars.

Numbers in the text and tables may not add up to totals because of rounding.

The cover shows the following images (clockwise from bottom right): F/A-18F Super Hornet, photo by Communication Specialist 1st Class Jose Lopez Jr.; maintenance soldiers from Troop E, 2nd Squadron, 6th Cavalry Regiment, photo by Sgt. 1st Class Tyrone C. Marshall Jr., Task Force Wings Public Affairs; Marines in the Marine Corps Air Station Futenma mess hall, photo by Lance Cpl. Courtney G. White; and the 50th Anniversary Air Force Sergeants Association forum in San Antonio, Texas, photo by Tech. Sgt. Rey Ramon.

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## Preface

The military services (the Army, Navy, Air Force, and Marine Corps) use modeling techniques to inform parts of their annual budget requests. As directed by the Congress in the 2011 National Defense Authorization Act, this Congressional Budget Office (CBO) report provides information on the models used to develop budgets for activities that help to achieve operational readiness. In consultation with staff from the House and Senate Armed Services Committees, CBO focused on identifying models used in the operating forces category within the services' operation and maintenance accounts. In keeping with CBO's mandate to provide objective, impartial analysis, this report makes no recommendations.

The report was prepared by Adebayo Adedeji, Daniel Frisk, and Derek Trunkey of CBO's National Security Division under the supervision of Matthew Goldberg and David Mosher. CBO staff members Elizabeth Cove Delisle, Jason Wheelock, and William Ma provided helpful comments.

Jeanine Rees edited the document, with assistance from John Skeen. Maureen Costantino designed the cover, and Jeanine Rees prepared the document for publication. Monte Ruffin produced the initial printed copies, and Linda Schimmel handled the print distribution. The report is available on the agency's Web site ([www.cbo.gov](http://www.cbo.gov)).

Douglas W. Elmendorf  
Director

February 2012





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# Models Used by the Military Services to Develop Budgets for Activities Associated with Operational Readiness

When developing their annual budgets, the military services (the Army, Navy, Air Force, and Marine Corps) use models to estimate the quantities and costs of resources needed to carry out their missions.<sup>1</sup> As directed by the Congress in the 2011 National Defense Authorization Act (Public Law 111-383, sec. 356), the Congressional Budget Office (CBO) has examined the modeling techniques the military services use to inform parts of their annual budget requests, specifically, the models used “to determine funding levels for operational readiness requirements.” Operational readiness refers to the services’ ability to conduct military operations and meet the demands of the National Military Strategy—an annual report by the Chairman of the Joint Chiefs of Staff that outlines how the military will meet the strategic goals of the President and the Congress (and required under 10 U.S.C. section 153).

The Department of Defense’s (DoD’s) total budget request for fiscal year 2012 was \$671 billion, of which \$554 billion was for the base budget (which

funds the department’s normal activities) and \$118 billion was for funding overseas contingency operations in Afghanistan, Iraq, and elsewhere.<sup>2</sup> CBO focused its analysis on the operating forces portion of services’ base budgets. In the 2012 request, that portion of the services’ base budgets totaled \$79 billion. The budget for operating forces is the part of the operation and maintenance (O&M) budget most closely linked to operational readiness. Funds provided for operating forces pay for the training of combat and support units, as well as the operation of most service installations. CBO found that:

- Models informed about \$53 billion, or two-thirds, of the \$79 billion request for funding for operating forces in 2012;
- Depending on the military service, models informed anywhere from roughly 45 percent to roughly 80 percent of the total request for funding for operating forces; and

- Within the category of operating forces, all of the services used models in forming all or almost all of their requests for funding for maintenance of equipment conducted at the depot level, and the services varied widely in the degree to which they used models to generate their requests for funding for peacetime operations and training and for day-to-day operations and repairs at facilities and bases.

## CBO’s Analytic Approach

To fulfill the Congress’s mandate, CBO examined the operation and maintenance budget for each of the military services. The O&M budget amounts to just over one-third of the total base budget. It pays for most of the day-to-day expenses of running the military, including the costs of training, fuel and power, operating facilities, maintaining equipment, and civilian salaries and benefits.<sup>3</sup> The O&M budget also pays for Defense-wide agencies and activities such as the Defense Finance and Accounting Service and the Defense Health

Program.<sup>4</sup> CBO excluded the Defense-wide part of the O&M budget from this analysis.

3. The remainder of the base budget pays for military personnel, which represents about one-quarter of the total budget; procurement, which is about one-fifth of the total; and research, development, test, and evaluation (RDT&E), military construction, and family housing, which together account for about one-sixth of the total.

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1. The services develop their budgets using the planning, programming, budgeting, and execution process. That process is a mechanism for preparing the Department of Defense’s budget request for the Congress as well as for “creating a long-range financial plan that relates defense spending to assessments of potential military threats, as summarized in the President’s National Security Strategy and the Quadrennial Defense Review.” For details, see <http://comptroller.defense.gov/legislativeprocess.html>.

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2. CBO’s analysis in this report is based on DoD’s submission requesting its budget for fiscal year 2012. The document providing the subsequent funding—title II of the Department of Defense Appropriations Act, 2012 (Division A of the Military Construction and Veterans Affairs and Related Agencies Appropriations Act, 2012, P.L. 112-74)—contains insufficient detail for analysis. For example, the law gives the total appropriation amounts for operation and maintenance by military service but offers no additional detail on the constituent budget activities and subactivities.

Within the services' O&M budgets, CBO concentrated on the category covering operating forces, labeled in budget justification materials as budget activity 01.<sup>5</sup> The budget for operating forces is the largest piece of O&M, making up about two-thirds of the services' O&M costs (excluding Defense-wide O&M funding). CBO considered only the components of the base budget used for active-duty forces and not the components used for the National Guard and reserves.

Because of the breadth of the O&M budget, CBO did not attempt to independently identify models used in the formation of budget requests regarding operating forces. Instead, CBO relied on the services themselves to identify and characterize any models used for that purpose. As a result, this analysis omits any models that the services did not report. In addition, because the services were not able to identify any specific models used at lower organizational levels, CBO included only models that are used at the headquarters levels of the services. Therefore, although the services might build some budget requests by aggregating the results of models used at organizational levels below headquarters, such as individual commands or installations, such models do not appear in this analysis. Furthermore, CBO did not compare,

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4. Agencies and activities within the Department of Defense that are outside of the military services are contained within the Defense-wide budget.
  5. There are four budget activities in the services' O&M budgets: budget activity 01 is operating forces, budget activity 02 is mobilization, budget activity 03 is training and recruiting, and budget activity 04 is administration and servicewide activities.

audit, or validate the services' models or attempt to identify any deficiencies in them.<sup>6</sup> In many cases, the methodologies are sufficiently complex and data-intensive that a thorough analysis would require a separate study for each major model.

The large assortment of activities covered in the O&M budget leads to a variety of budgeting methods—including modeling—across the services and across specific activities. For the purposes of this report, CBO defines a model as a set of mathematical relationships or similar logical expressions that link the amount of certain activities, such as training and maintenance, to the cost of those activities. For example, military training policy dictates the number of training hours that a pilot must fly in order to be ready to perform various tasks. Budget models for flying hours calculate the quantities of fuel, spare parts, and other resources required per hour of flight, and then apply historical cost factors to each of those resources to estimate the total cost per flying hour. In this report, CBO does not consider simple projections of historical budgets—which often involve simply applying inflation factors (or other assumed scaling factors) to the prior year's budget—to be models.

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6. In 2003, the Navy formally instituted a process to review and evaluate its models used to develop budget requests. That process involves verification (whether the mathematical equations for representing processes include all relevant cost components and are correctly implemented in software algorithms), validation (whether outputs from the model accurately represent reality), and accreditation (whether the model meets established criteria and is certified as useful for a specified purpose). See Chief of Naval Operations Instruction *OPNAVINST 5200.35*, October 26, 2006, for more details.

CBO attempted to link the services' models to specific budgetary line items, known as subactivity groups (SAGs), within O&M accounts. In many cases, a model is used to inform the budget request for a single SAG, although in some cases, models (such as the Army's training model) are used to inform the budget requests for multiple SAGs. CBO classified the SAGs and their corresponding models into four groups on the basis of the type of activity funded: operating tempo (optempo) and training, facilities, maintenance, and miscellaneous.<sup>7</sup> The optempo and training SAGs support units' training activities such as steaming days for Navy ships and flying hours for the services' aviation units.<sup>8</sup> The facilities SAGs provide for the day-to-day operations of installations and repairs to facilities. The maintenance SAGs support depot-level maintenance of equipment and weapon systems. CBO categorized as miscellaneous any SAGs that are not clearly related to optempo and training, facilities, or maintenance.

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7. DoD adopted the phrase "operations tempo" to refer to the pace of operations in terms of equipment usage, such as aircraft flying hours or tank driving miles. As is common in the military, the term became jargon: optempo. See Jim Garamone, "Optempo, Perstempo: What They Mean," *American Forces Press Service*, August 18, 1999. More recently, DoD has switched to the term "operating tempo," still shortened to optempo. See *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02, November 8, 2010, as amended through October 15, 2011.
  8. Actual military operations in a conflict are not included here because they are funded through separate requests, not through the base budget.

## CBO's Findings

CBO found that the share of the budget requests for operating forces in 2012 that was informed by models varied considerably across the services, from about 45 percent to about 80 percent. In total, models informed roughly two-thirds, or \$53 billion, of the \$79 billion in that portion of the services' base budget requests. The services handle the different types of SAGs in different ways:

- To estimate costs for optempo and training, all four services model some portion of their requests for funding. For 2012, the Air Force's modeled portion of that function was the smallest, 41 percent, and the Army's was the largest, 100 percent. The Navy and the Marine Corps' portions are 74 percent and 79 percent, respectively.
- All four services use models to determine budget requests for depot-level maintenance and to generate detailed schedules of the depots' workload.
- Spending on facilities falls into three categories: base operating support (the day-to-day expenses of facilities), facilities sustainment (periodic and preventative upkeep of facilities), and the restoration and modernizing of facilities that have not been adequately sustained or that need reconfiguration. The costs of base operating support are modeled by the Navy and the Army but not by the Air Force or the Marine Corps at

the headquarters level.<sup>9</sup> All of the services model the costs of facilities sustainment, and they all use the model created by the Office of the Secretary of Defense (OSD). The costs of restoring and modernizing facilities are modeled only by the Navy.

CBO also found that the results of models are just one of many inputs to the budgeting process. Other inputs include guidance from the Office of Management and Budget (OMB), the National Military Strategy, individual program requirements, and initiatives directed by the leadership of the military departments and DoD. DoD's program and budget review process attempts to allocate the fixed overall funding amount that the President and OMB set for the Department. Models inform decisions regarding resource allocation between competing areas of the budget, but they generally do not produce the final budget requests. Rather, the services often adjust the budget amounts generated by models in order to address programmatic trade-offs, budget constraints, and other factors not included in the models.

CBO did not attempt to determine if budget requests informed by the results of models are superior to budget requests that do not involve any modeling input. Modeling can be a poor budget-

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9. While the Air Force and the Marine Corps do not have base operating support models, they do use models to inform their budget requests regarding civilian pay, which makes up more than one-third of their budgets for base operating support.

ing technique if the input data are inaccurate or the mathematical relationships are not well understood. Moreover, there are portions of the services' budgets where modeling is unnecessary, impractical, or of limited benefit. For example, there is usually little reason to model the amounts to be used for contracted services, as those costs are largely dictated by the structure of the contracts and the bidding process rather than by DoD's internal costs.

## About This Document

Exhibits 1 through 4 of this document summarize CBO's findings. This section includes an overview of the services' budgeting methods for operating forces and a breakdown of modeling by type of activity modeled.

Exhibits 5 through 8 examine the models each service uses and the budget subactivity groups each model influences.

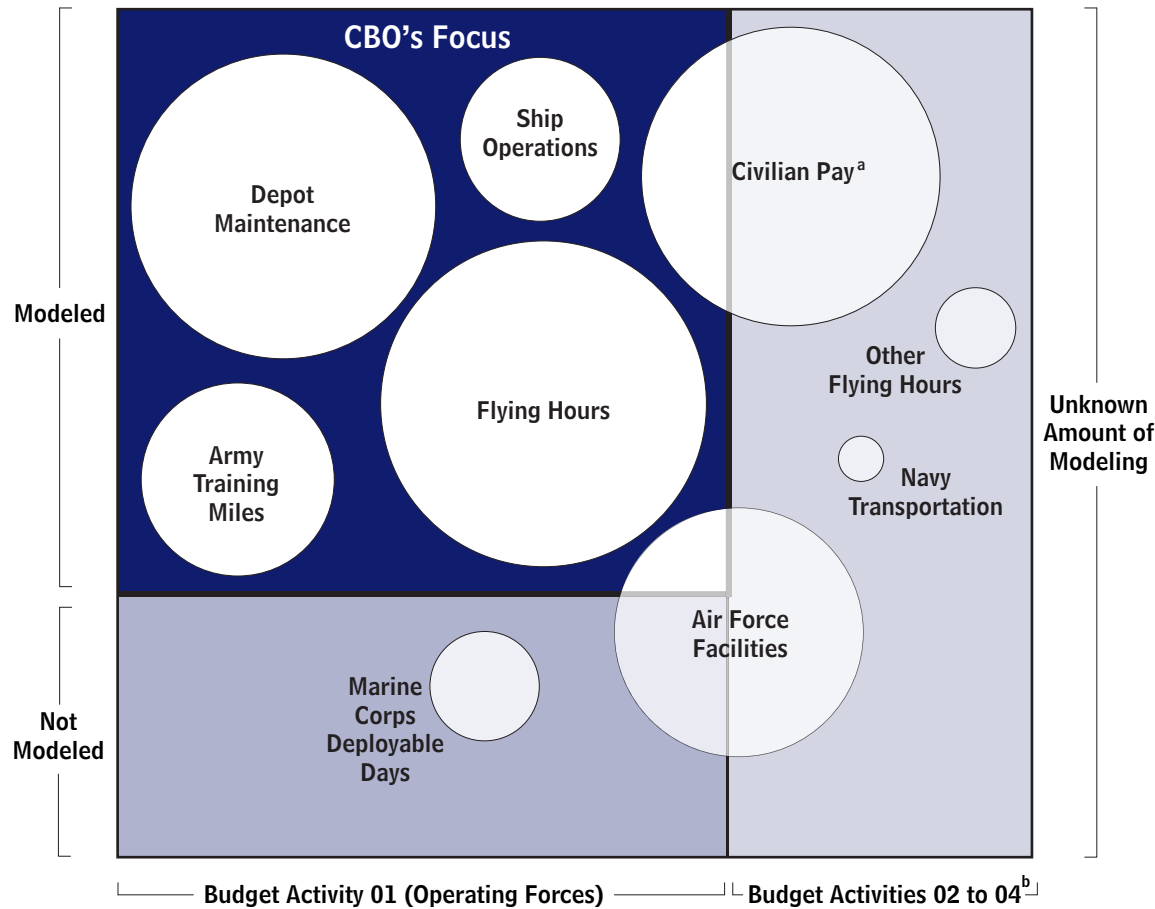
Exhibits 9 through 18 provide a brief overview of the models the services use to estimate the cost of optempo and training for their operational units. The discussion includes the processes the Navy and the Army use to prepare their units for possible deployment.

Exhibits 19 through 22 provide a brief description of the models the services use to estimate the cost of maintaining equipment and weapons and the cost of operating and repairing facilities. ♦



**Exhibit 1.**

**Modeled and Unmodeled Activities Within the Military Services’ Operation and Maintenance Budget**



In consultation with staff from the House and Senate Armed Services Committees, the Congressional Budget Office (CBO) focused on identifying budget models within the category of operating forces in the military services’ operation and maintenance (O&M) budgets. The services’ total 2012 budget request for O&M, excluding funding for Defense-wide activities, was about \$116 billion. About two-thirds—\$79 billion—of that request was for budget activity 01 (operating forces), with the remaining one-third covering budget activities 02, 03, and 04 (mobilization, training and recruiting, and administrative and servicewide activities, respectively). CBO’s focus in this report is on the portion of budget activity 01 that uses models at the headquarters level. That portion, represented by the dark shaded section in the illustration, was about \$53 billion in 2012 and represented roughly two-thirds of the request for budget activity 01 and just under half of the total request for O&M excluding Defense-wide funding.

The circles represent selected budget models, including those mentioned in the Congress’s tasking for this report from CBO in section 356 of the 2011 National Defense Authorization Act. Most models that CBO identified are specific to budgets for operating forces, but some models, such as those for civilian pay, span multiple O&M budget activities. The services also use models for other appropriations that CBO did not address. For example, the services use models in formulating budget requests for their accounts for procurement and military personnel, but those models fall outside of the scope of this analysis. ♦

Source: Congressional Budget Office.

Note: Not all modeled activities are shown. Areas are roughly proportional to the dollar amounts they represent.

- a. Amounts not already included in other models.
- b. Budget activities 02, 03, and 04 cover mobilization, training and recruiting, and administration and servicewide activities, respectively. CBO did not examine those activities and therefore did not determine how much of those activities are modeled.

**Exhibit 2.**

**Selected Methods Used by the Services to Develop Their Budgets for Operating Forces**

Budgeting Method	Description	Examples
Models for Operating Tempo and Training	Models of services’ major training and peacetime deployment activities. Usually contain a readiness goal for deployable units. Model outputs such as flying hours are multiplied by a projected unit cost.	Flying hours (all services); ship operations (Navy); training miles (Army)
Detailed Projection Models	Detailed estimates of demands for products, services, or resources are multiplied by a projected unit cost.	Depot maintenance (all services); facilities sustainment (all services); base operating support (Army, Navy); civilian pay (all services)
Not Modeled, or Modeled Below the Headquarters Level	Projections of historical budgets into the current budget year, or projections built at a level below headquarters and aggregated.	Base operating support (Air Force, Marine Corps); facility restoration and modernization (Army, Air Force, Marine Corps)

Source: Congressional Budget Office.

CBO grouped the methods that the services use to develop their budgets for operating forces into three categories. The first category consists of models for operating tempo (optempo) and training. The services use those models to estimate the cost of operating military units, such as the costs of ships’ steaming days, miles driven by ground units, and hours flown by aviation units. Those models explicitly account for the activities that units must perform in order to be ready for deployment and therefore help to assess the cost of achieving certain readiness goals.

The second category comprises various models that CBO classified as detailed projection models. Those models include estimates of the requirements for specific products, services, or resources, such as labor, spare parts, or maintenance. The military services multiply those requirements by the expected costs per product, service, or resource to obtain the total estimated cost of the activity.

The third category includes methods of estimating costs that CBO did not consider to be models. Instead, those methods project historical budgets into the current budget year. The task is generally accomplished by adjusting past budgets for inflation or by making adjustments proportional to increases or decreases in the total budget. This category also includes budgeting methods that do not use headquarters-level models but may involve an aggregation of models from lower organizational levels. ♦

**Exhibit 3.**

**Modeling of Budget Requests for Operating Forces, by Service and Function**

(Billions of dollars)

	Operating Tempo and Training	Facilities	Maintenance	Miscellaneous	All Functions
<b>By Service</b>					
<b>Navy</b>					
Modeled Amount	7.3 <sup>a</sup>	5.9	7.4 <sup>a</sup>	0.6	21.1
Budget Request	9.9 <sup>a</sup>	6.6	8.1 <sup>a</sup>	5.0	29.5
Percentage Modeled	74	89	91	12	72
<b>Army</b>					
Modeled Amount	5.6	8.8	1.2	1.9	17.4
Budget Request	5.6	10.1	1.2	4.4	21.3
Percentage Modeled	100	87	100	41	82
<b>Air Force</b>					
Modeled Amount	3.8	2.0	2.2	1.4	9.4
Budget Request	9.1	4.2	2.2	5.1	20.6
Percentage Modeled	41	48	100	27	45
<b>Marine Corps</b>					
Modeled Amount	2.4 <sup>a</sup>	1.4	0.6 <sup>a</sup>	0.3	4.6
Budget Request	3.0 <sup>a</sup>	3.0	0.6 <sup>a</sup>	0.8	7.4
Percentage Modeled	79	46	100	33	63
<b>All Services</b>					
Modeled Amount	19.0	18.1	11.3	4.1	52.5
Budget Request	27.6	23.9	12.0	15.3	78.8
Percentage Modeled	69	76	94	26	67

Source: Congressional Budget Office.

- a. For the purposes of this study, the Marine Corps’ flying hours and aviation depot-level maintenance were moved from the Navy’s budget to the Marine Corps’ budget to reflect which service actually performs those activities.

Depending on the service, models informed roughly 45 percent to 80 percent of the budget requests for operating forces. CBO categorized the models by function: optempo and training, maintenance, facilities, and miscellaneous. Of the four functions, optempo and training had the largest dollar amount of the budget request that is modeled, and the maintenance function had the highest percentage of the budget request that is modeled.

The optempo and training function supports activities such as steaming days for ships and flying hours for aviation units. The services modeled between 41 percent and 100 percent of the optempo and training function, amounting to roughly \$19 billion in total.

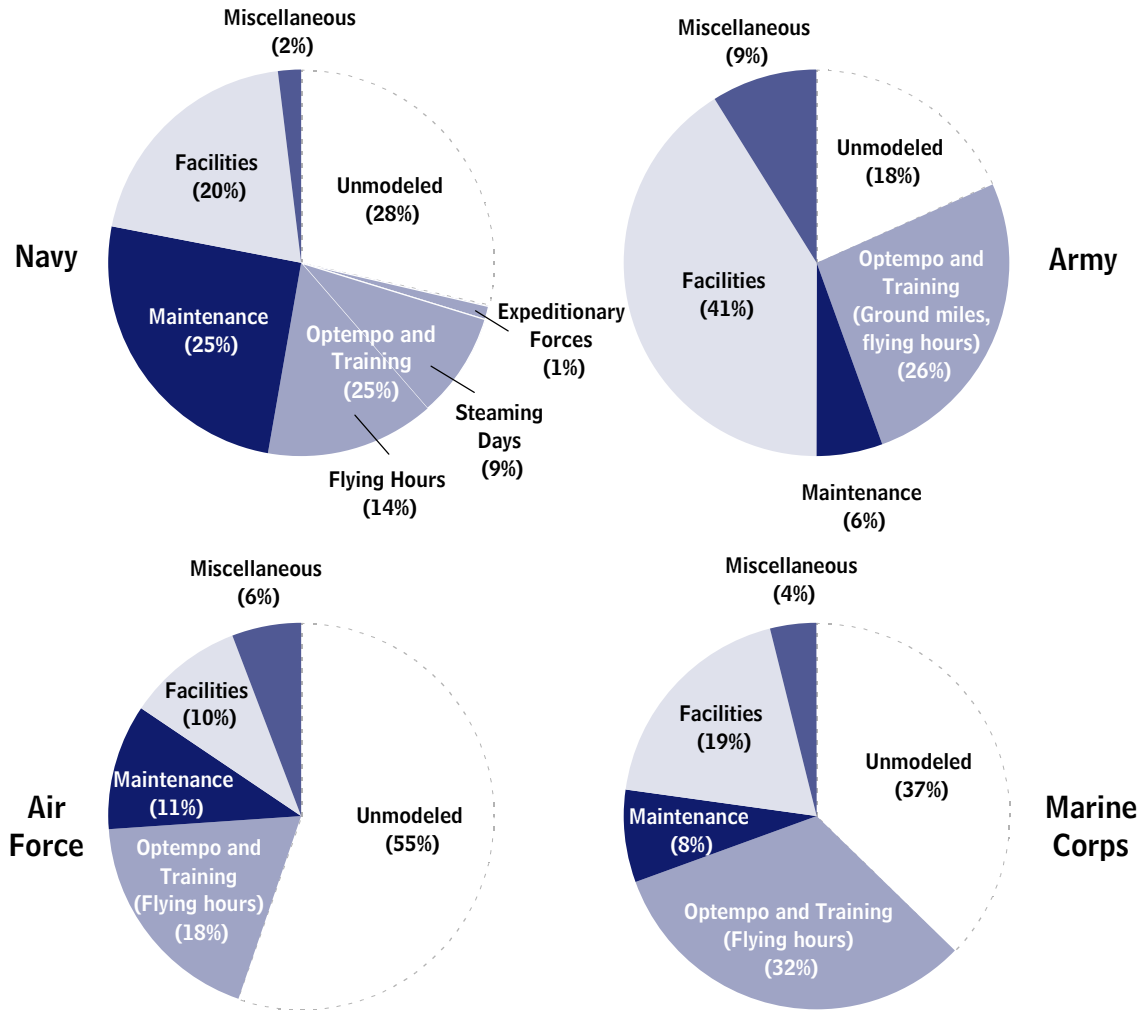
The facilities function provides for day-to-day operations of and repairs to facilities. CBO found that the services vary in their budgeting approaches to that function. The Air Force and the Marine Corps do minimal modeling, while the Navy and the Army model large portions of their budget requests for base operating support—the part of the facilities budget that pays for day-to-day operations. All of the services have been directed to use the Office of the Secretary of Defense’s (OSD’s) model to build their facilities sustainment budgets.

The maintenance function supports depot-level maintenance of equipment and weapon systems. Each of the services modeled all or almost all of its budget request for maintenance functions, representing over \$11 billion in total.

Miscellaneous activities are those not included in the other three functions. The largest modeled category within the miscellaneous function is for civilian pay; each service projects in detail the number of and costs for its civilian personnel. (Civilian pay also appears in the other three functions, either modeled by itself or included in other models.) ♦

**Exhibit 4.**

**Modeled Percentage of Operating Forces Budgets, by Service and Function**



The pie charts show the same data as the previous exhibit but emphasize the variations in modeling among the services. That variation reflects differences in the services' organizational structures and in their approaches to building budgets.

The Navy and the Army have central commands at the headquarters level that manage facilities and model their associated costs. In contrast, the Air Force and the Marine Corps do not have central facilities commands; they generate their budgets for facilities operations and services at the installation level (which CBO does not cover in this report) rather than the headquarters level, aggregating those estimates to determine their total budget requests.

In addition, some services emphasize modeling more than others. In recent years, the Navy and the Army in particular have expanded their modeling efforts for budgeting and have both developed new models for optempo and training. The Marine Corps currently does not model its budget request for ground unit training, but it plans to begin modeling for that purpose in fiscal year 2013.

CBO's focus on only the operating forces budget (budget activity 01) led to the exclusion of some services' modeling of related activities that are categorized differently. For example, about 13 percent of the Air Force's O&M budget request for 2012 (including model-informed budgets for some flying hours and depot-level maintenance) fell into budget activity 02, mobilization, while each of the other services had less than 2 percent of its O&M request in that budget activity. Because CBO did not include budget activity 02 in its analysis, that additional modeling by the Air Force is not counted here. ♦

Source: Congressional Budget Office.

Notes: For the purposes of this study, the Marine Corps' flying hours and aviation depot-level maintenance were moved from the Navy's budget to the Marine Corps' budget to reflect which service actually performs those activities.

Optempo = operating tempo.





## **Models Used by Each Service**



**Exhibit 5.**

**Modeled Amounts of the Navy’s Budget Request for Operating Forces**

Function	Model	SAG Number	SAG Name	Modeled Amount of the 2012 Request (Millions of dollars)
Operating Tempo and Training	Flying Hour Requirements	1A1A	Mission and other flight operations	2,963 <sup>b</sup>
		1A2A	Fleet air training	1,272 <sup>b</sup>
	Ship Operations	1B1B	Mission and other ship operations	2,369
	Navy Expeditionary Combat Enterprise	1C6C	Combat support forces not assigned to ships	447
	Fleet Ordnance Support	1B2B	Ship operations support and training	116
	Civilian Pay <sup>a</sup>	1B2B	Ship operations support and training	114
Facilities	Base Operations Support (15 models)	BSS1	Base operating support	3,919
		BSM1	Sustainment, restoration, and modernization	1,355
		BSM1	Sustainment, restoration, and modernization	592
Maintenance	Ship Depot Maintenance	1B4B	Ship depot maintenance	4,973
		1B5B	Ship depot operations support	1,304
	Aviation Depot Maintenance	1A5A	Aircraft depot maintenance	597 <sup>b</sup>
		1A6A	Aircraft depot operations support	37
	Optimization Performance (Ordnance maintenance)	1D1D,	Cruise missiles; weapons maintenance	425
		1D4D		
Navy Expeditionary Combat Enterprise	1D3D,	In-service weapon systems support; weapons maintenance	42	
	1D4D			
Miscellaneous	Civilian Pay <sup>a</sup>	Multiple	Multiple subactivity groups	576
Total Modeled Amount of the Request				21,101
Total Request				29,482

Source: Congressional Budget Office.

Note: SAG = subactivity group; OSD = Office of the Secretary of Defense.

a. Amounts not already included in other models.

b. Excludes money budgeted for the Marine Corps.

According to CBO’s analysis, models informed \$21.1 billion, or 72 percent, of the Navy’s \$29.5 billion request for operating forces in 2012. About one-third of that modeled amount occurred in the Navy’s optempo and training function. The Flying Hour Requirements model is used to estimate the costs of operating aviation forces and training student aircrews. Flying hour costs for the Marine Corps are included in the Navy’s budget; for this report, CBO reassigned those costs to the Marines. The Ship Operations model is used to estimate the costs of preparing ships, training their crews, and deploying ships on routine patrols, and the Navy Expeditionary Combat Enterprise model is used to estimate portions of the costs of training combat support forces not assigned to ships, such as construction battalions.

Slightly less than one-third of the Navy’s operating forces budget pays for the operation, upkeep, and repair of facilities. The Navy used 15 separate models to estimate about 85 percent of the various day-to-day costs of operating and providing services at installations. The Navy uses OSD’s Facilities Sustainment model to estimate the cost of periodic repairs to facilities. It also models its facility restoration and modernization requirements to repair facilities that have not been adequately sustained or that need reconfiguration.

Maintenance of ships, aircraft, and weapon systems constituted an additional one-third of the Navy’s modeled amount. The Ship Depot Maintenance model and Aviation Depot Maintenance model are used to estimate the costs of engineering and maintenance work on ships and aircraft at the depot level. The Navy budget also includes aviation maintenance costs for the Marine Corps, but CBO reassigned those costs to the Marine Corps for this report. ♦

**Exhibit 6.**

**Modeled Amounts of the Army’s Budget Request for Operating Forces**

Function	Model	SAG Number	SAG Name	Modeled Amount of the 2012 Request (Millions of dollars)
Operating Tempo and Training	Training Resource (Includes full-spectrum miles and flying hours) <sup>a</sup>	111	Maneuver units	1,400
		112	Modular support brigades	105
		113	Echelons above brigade	816
		114	Theater-level assets	826
		115	Land forces operations support	1,245
		116	Aviation assets	1,199
Facilities	Base Operations Requirements	131	Base operations support modernization	6,491
		132	Sustainment, restoration, and modernization	2,303
		132	Sustainment, restoration, and modernization	13
Maintenance	Depot Maintenance	123	Land forces depot-level maintenance	1,180
Miscellaneous	Civilian Pay <sup>b</sup>	Multiple	Multiple subactivity groups	1,810
		122	Land forces systems readiness	54
Total Modeled Amount of the Request				17,442
Total Request				21,322

Source: Congressional Budget Office.

Note: SAG = subactivity group; OSD = Office of the Secretary of Defense.

- a. A full-spectrum mile is a composite measure of miles driven by tanks, trucks, and other vehicles.
- b. Amounts not already included in other models.

According to CBO’s analysis, models informed \$17.4 billion, or 82 percent, of the Army’s \$21.3 billion request for operating forces in 2012. About one-third of that modeled amount was in the optempo and training function. The Army’s Training Resource model is used to estimate the costs of driving combat vehicles (presented as a cost per full-spectrum mile, which is a composite measure of miles driven by tanks, trucks, and other vehicles) and flying aircraft during training activities. The model also estimates the costs of functional support such as engineering brigades, units above the brigade level such as air defense battalions, units that directly support worldwide operations such as intelligence units, and the Army’s Combat Training Centers.

The facilities function made up the largest portion of the Army’s budget request for operating forces, with models influencing nearly \$9 billion. The Army uses its Base Operations Requirements model to estimate about 85 percent of the requirements for operating and providing services on bases. To generate its budget request for facilities sustainment, the Army uses OSD’s Facilities Sustainment model.

The Army also uses a model to determine its requirement for depot-level maintenance of vehicles, aircraft, and weapon systems. All civilian pay in the Army’s operating forces budget was associated with a model. For civilian pay not already included in other models, the Army’s request was \$1.8 billion. ♦

**Exhibit 7.**

**Modeled Amounts of the Air Force’s Budget Request for Operating Forces**

Function	Model	SAG Number	SAG Name	Modeled Amount of the 2012 Request (Millions of dollars)
Operating Tempo and Training	Flying Hour	11A	Primary combat forces	2,167
		11C	Combat enhancement forces	324
		11D	Air operations training	817
	Civilian Pay <sup>a</sup>	11A, 11C, 11D	Multiple subactivity groups	476
Facilities	OSD Facilities Sustainment	11R	Sustainment, restoration, and modernization	972
	Civilian Pay <sup>a</sup>	11Z, 11R	Base operations support; Sustainment, restoration, and modernization	1,041
Maintenance	Depot Maintenance	11M	Depot-level maintenance	2,204
Miscellaneous	Flying Hour	12A	Global C3I and early warning	29
		12C	Other combat operations support programs	95
	Civilian Pay <sup>a</sup>	Multiple	Multiple subactivity groups	1,228
Total Modeled Amount of the Request				9,351
Total Request				20,585

Source: Congressional Budget Office.

Notes: Unique among the services, the Air Force includes a portion of its flying hour, depot maintenance, and facilities sustainment budgets in subactivity groups outside of budget activity 01.

SAG = subactivity group; OSD = Office of the Secretary of Defense; C3I = command, control, communications, and intelligence.

a. Amounts not already included in other models.

According to CBO’s analysis, models informed \$9.4 billion, or 45 percent, of the Air Force’s \$20.6 billion request for operating forces in 2012. More than one-third of that modeled amount was in the optempo and training function. The Air Force uses the Flying Hour model to estimate the operational costs of combat forces such as fighters and bombers, combat enhancement forces such as electronic warfare aircraft, flight training programs, and combat support programs such as opposition air forces used to develop and evaluate combat skills.

For facilities, the only headquarters-level model that the Air Force uses is OSD’s Facilities Sustainment model; unlike the Navy and the Army, the Air Force does not use headquarters-level models to inform its budget request for base operating support. The Air Force, however, does model all of its depot-level maintenance of aircraft and weapon systems. The Air Force also models civilian pay, which, aside from civilian pay already included in other models, made up \$2.7 billion of the operating forces 2012 budget request.

The modeled portion of the Air Force’s operating forces budget is less than that of the Navy and Army for two reasons. First, the Air Force lacks a central facilities command and does not model at the headquarters level its budget for base operating support—a large piece of the budget for operating forces—aside from the portion that is civilian pay. Second, the Air Force’s budget structure puts some items that appear in the other services’ operating forces budgets (budget activity 01) in budget activities 02, 03, and 04, which CBO did not include in this analysis. ♦

**Exhibit 8.**

**Modeled Amounts of the Marine Corps' Budget Request for Operating Forces**

Function	Model	SAG Number	SAG Name	Modeled Amount of the 2012 Request (Millions of dollars)
Operating Tempo and Training	Flying Hour Requirements	Navy 1A1A	Included in Navy budget (Mission and other flight operations)	1,800
		Navy 1A2A	Included in Navy budget (Fleet air training)	500
	Civilian Pay <sup>a</sup>	1A1A	Operational forces	95
Facilities	OSD Facilities Sustainment	BSM1	Sustainment, restoration, and modernization	566
	Civilian Pay <sup>a</sup>	BSS1, BSM1	Base operations support; sustainment, restoration, and modernization	833
Maintenance	Depot Maintenance	1A3A	Depot-level maintenance	191
	Aviation Depot Maintenance	Navy 1A5A	Included in Navy budget (Aircraft depot maintenance)	382
Miscellaneous	Civilian Pay <sup>a</sup>	1A2A, 1B1B	Field logistics, maritime prepositioning	259
Total Modeled Amount of the Request				4,626
Total Request				7,399

Source: Congressional Budget Office.

Notes: The Marine Corps uses deployable days as a measure of the percentage of days that ground units achieve deployable ratings in equipment and training. On the basis of a description provided in the Department of the Navy's *Fiscal Year 2012 Budget Estimates, Justification of Estimates* (OP-5 1A1A pp. 6–8), CBO did not consider the deployable days metric to be a model and therefore excluded it from this table.

SAG = subactivity group; OSD = Office of the Secretary of Defense.

a. Amounts not already included in other models.

According to CBO's analysis, models informed \$4.6 billion, or 63 percent, of the Marine Corps' \$7.4 billion request for operating forces in 2012. Most of that amount, \$2.4 billion, was for the Marine Corps' flying hours costs. Although those amounts are included in the Navy's budget, CBO presents them as part of the Marine Corps' budget for the purposes of this analysis to reflect which service performs those activities.

The Marine Corps, like the other services, uses OSD's Facilities Sustainment model. Except for modeling civilian pay, the Marine Corps does not use models to estimate funding needs for base operating support, according to the information provided to CBO. The Marine Corp models its depot-level maintenance costs for both ground and aviation units. Depot-level aviation maintenance is part of the Navy's budget, but for this analysis, CBO included it in the Marine Corps' tabulation.

The Marine Corps does not have a model for its training budget for ground units. Its method of constructing that budget does not use a model to link ground-unit optempo (known as deployable days) to the training that Marine Corps units undergo, the desired outcome of that training, and the costs of the resources used. ♦



# **Models for Operating Tempo and Training Functions**



**Exhibit 9.**

**Modeling of Budgets for Operating Tempo and Training, by Service**

	<b>2012 Budget Request (Billions of dollars)</b>	<b>Modeled Amount (Billions of dollars)</b>	<b>Percentage Modeled</b>
Navy	9.9	7.3	74
Army	5.6	5.6	100
Air Force	9.1	3.8	41
Marine Corps	3.0	2.4	79
<b>Total</b>	<b>27.6</b>	<b>19.0</b>	<b>69</b>

Source: Congressional Budget Office.

The services use models to inform most of their major peacetime operations and training functions such as flying hours, training miles, and steaming days. Those models accounted for \$19 billion, or almost 70 percent, of the nearly \$28 billion in requests for those activities in 2012. The modeled portion of the Air Force’s budget request for optempo and training is smaller than the modeled portion of other services’ requests because some of the Air Force’s modeled flying hours fall outside budget activity 01. ♦

**Exhibit 10.**

**The Navy’s Fleet Response Plan Cycle for Surface Combatants**

	27-Month Cycle			
	Basic	Integrated	Sustainment	Maintenance
Duration of Phase	112 days	90 days	546 days, of which 183 are scheduled for deployment	63 days
Number of Days Under Way	43 days	43 days	117 days	0 days
Activities	Sea trials, ammunition loading and unloading, unit-level training	Multiship training exercises up to the carrier strike group level	Continued advanced multiship training, including carrier strike group exercises after deployment	Major maintenance overhaul

Source: Department of the Navy.

Note: Surface combatants include cruisers, destroyers, frigates, and littoral combat ships.

The Navy’s budgeting models are built around the Fleet Response Plan (FRP)—a structured training process used to prepare and train Navy forces for routine deployment and, if necessary, for contingency operations overseas. In the FRP cycle, training increases in complexity until units are ready for deployment. Not all units are expected to be at the highest level of combat readiness at all times—only those that have an upcoming deployment are expected to be at that status.

This exhibit focuses on the FRP cycle for ships because they are the predominant combat platform in the Navy. Other Navy forces, such as construction battalions, also use the FRP process to train and employ their forces and to synchronize their activities with ships’ cycles. The FRP cycle ranges from 15 months to 32 months, depending on ship class. Exhibit 10 illustrates the FRP cycle for surface combatants, which include cruisers, destroyers, frigates, and littoral combat ships. Exhibit 11 lists the length of the cycle for other types of ships and other units.

Ships begin the FRP cycle in the basic phase, during which crews undergo unit-level training. The length of this phase for surface ships is, on average, 112 calendar days. Of those 112 days, ships are under way for an average of 43 days for sea trials, unit-level training, and loading and testing of ammunition. At the end of the basic phase, ships should be ready to operate as independent units. In the integrated phase, which lasts, on average, 90 days, ships train with other ships to fight as a larger force. At the end of that phase, ships are deemed to be sufficiently ready for major combat operations.

*(Continued)*



**Exhibit 11.**

**Length of Fleet Response Plan Cycles for Selected Navy Units**

Unit Type	Length of FRP Cycle (Months)
Aircraft Carrier	32
Carrier Air Wing	32
Amphibious Assault Ship	27
Mobile Diving and Salvage	27
Surface Combatant <sup>a</sup>	27
Explosive Ordnance Disposal Attachment	26
Fast Attack Submarine	24
Nuclear-Powered Cruise Missile Submarine	15

Source: Department of the Navy, *Commander, U.S. Fleet Forces Command Instruction 3000.15: Fleet Response Plan*, August 2007.

Note: FRP = Fleet Response Plan.

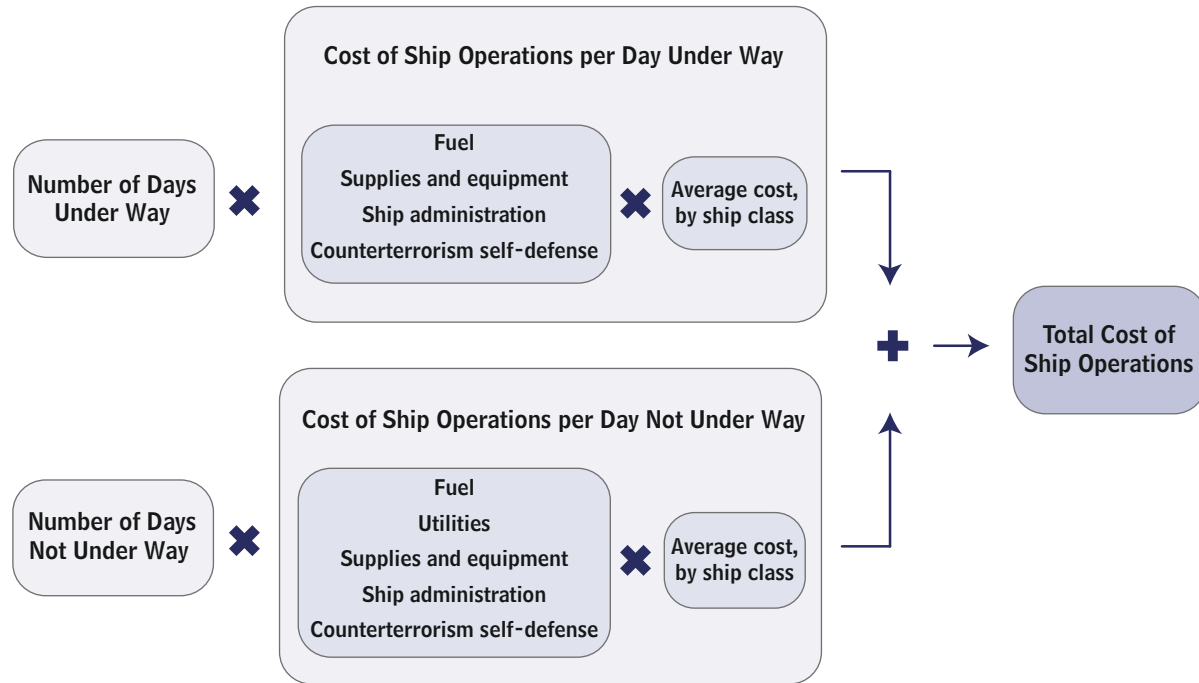
a. Surface combatants include cruisers, destroyers, frigates, and littoral combat ships.

*(Continued)*

Next, ships enter the sustainment phase, which is 546 days long, on average. At some point during that phase, ships are expected to complete a deployment of about 180 days as part of a carrier strike group or expeditionary strike group, or independently. After deployment, ships are expected to maintain a high level of readiness throughout the sustainment phase. The final step of the FRP cycle is the maintenance phase, which requires, on average, 63 days. Following maintenance, ships restart the cycle in the basic phase. ♦

**Exhibit 12.**

**The Navy’s Ship Operations Model**



Source: Congressional Budget Office.

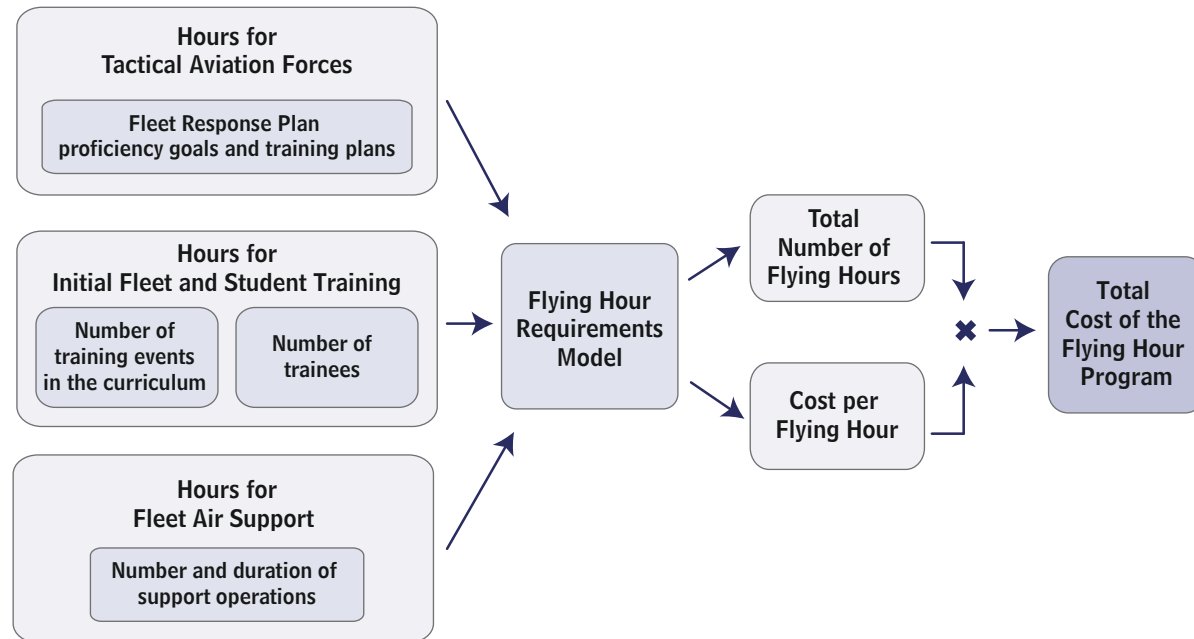
The Navy’s Ship Operations model is built on information about the resources used by each ship as it goes through the FRP cycle. The model is used to estimate the cost of preparing ships and training their crews to deploy overseas. Costs include those for fuel, utilities, supplies, equipment, ship administration, and counterterrorism self-defense measures.

The basic logic of the model is to multiply the number of days each ship is under way by the cost per day of operating the ship while under way, and to do the same for the days when each ship is not under way. The costs per day are estimated by multiplying the historically determined average amounts of resources each class of ship uses per day by the average cost, by ship class, of those resources. The sum of the costs for all the ships in the fleet while under way and not under way is the total cost of ship operations.

The Navy previously relied on methods that used average annual steaming days by ship class to estimate the costs for ship operations, but it has refined its budgeting methods over time. According to the Navy, the Ship Operations model is a more reliable method of estimating the cost of deploying ships because it is directly linked to the schedules of the ships in its fleet. The Navy first used the model to develop its fiscal year 2010 budget request. ♦

**Exhibit 13.**

**The Methodological Approach of the Navy and Marine Corps' Flying Hour Requirements Model**



Source: Congressional Budget Office.

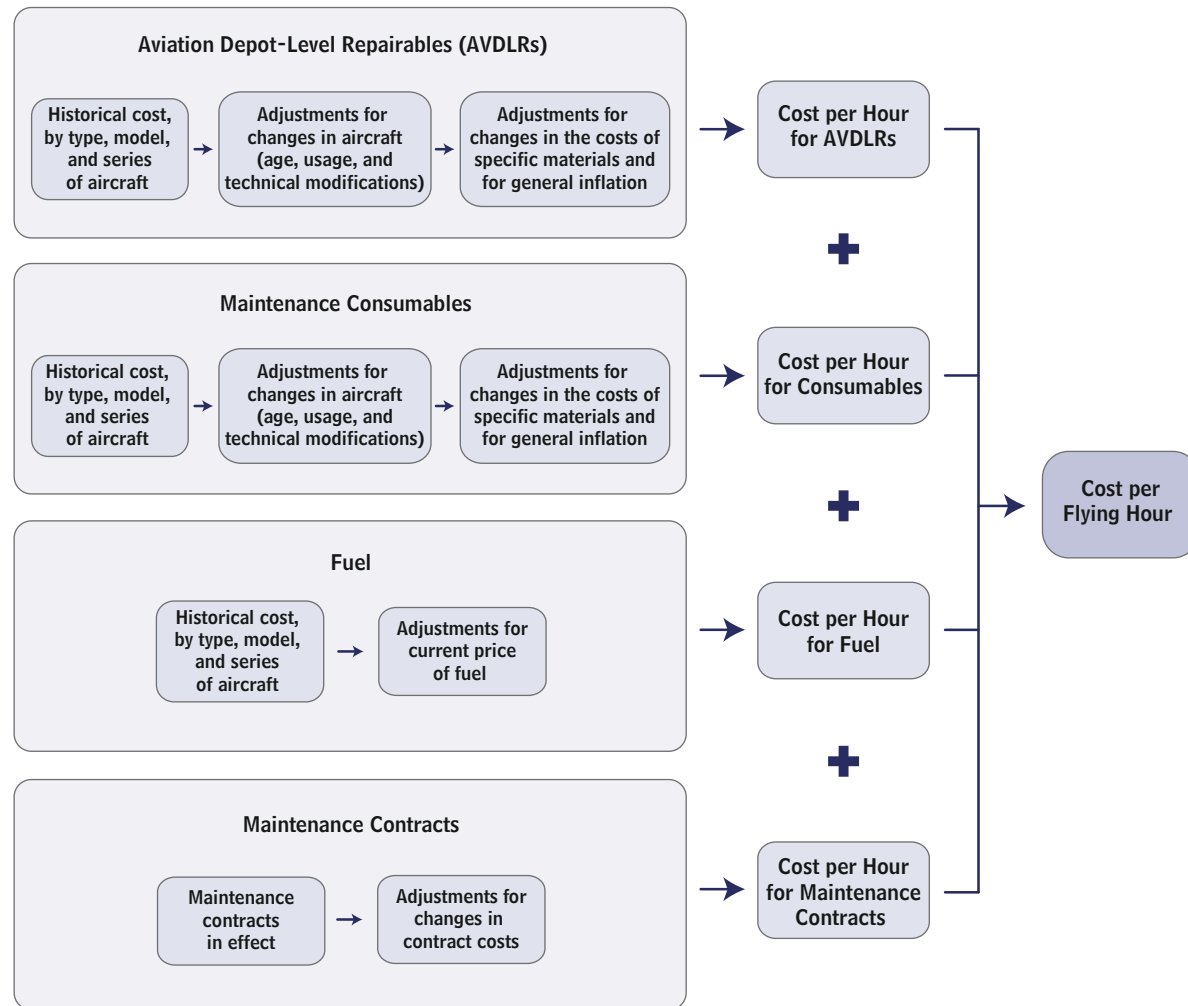
The Navy and Marine Corps' Flying Hour Program provides resources to train the services' tactical aviation forces. The program also includes flying hours for training pilots before they are assigned to tactical squadrons, for student pilots, and for some support flights for maintenance and logistics. It does not include flight hours for activities performed by the Naval Air Systems Command, such as testing and evaluating aircraft.

The Navy uses the Flying Hour Requirements model to determine the annual funding the Flying Hour Program needs for active and reserve forces. The model is used to estimate both the total number of flying hours (shown in this exhibit) and the cost per flying hour (shown in Exhibit 14). The model also includes the indirect costs of activities such as administrative overhead and information technology support. The total number of flying hours is multiplied by the cost per flying hour to obtain the total estimated cost of the Flying Hour Program.

The calculation of flying hours needed for tactical aviation takes into account the specific training events and associated proficiency objectives that pilots must accomplish in the various phases of the Fleet Response Plan. Similarly, the flying hours needed for the initial training of existing pilots before they are assigned to a tactical squadron and for the initial flight training for student pilots are determined by the appropriate training syllabi for those groups. The model calculates flying hours for support operations by using standard factors such as the flying hours used for refueling operations. ♦

**Exhibit 14.**

**Components of Cost per Flying Hour in the Navy and Marine Corps' Flying Hour Requirements Model**



Source: Congressional Budget Office.

The Navy and Marine Corps' Flying Hour Requirements model has four components: parts that are repaired at the Navy's depots (aviation depot-level repairables, or AVDLRs); materials used for repairs at the unit level (maintenance consumables); fuel; and aircraft maintenance contracts with firms in the private sector. The historical expenditure levels for the four components are adjusted to reflect future characteristics of aircraft in the fleet (age, usage, and technical modifications) and then adjusted to reflect changes in the costs of specific materials, fuel, and contracts and for general inflation. From those amounts, the cost per hour for each component is determined, and those are added to get the total cost per flying hour. ♦

**Exhibit 15.**

**The Army’s Force Generation Cycle**

	Phases of the Cycle (Total length = 36 months) <sup>a</sup>		
	Reset	Train/Ready	Available
Duration of Phase (For units on active duty)	6 months	18 months	12 months <sup>b</sup>
Activities	Reintegration of soldiers with families; equipment repair; personnel transfers; and training for individuals, teams, and crews.	Field training of increasing complexity to build readiness. Active units may be deployed and reserve units may be mobilized as surge forces. Deploying units conduct training on assigned missions. Units not identified for deployment remain in surge status and train for a wider range of possible missions.	Units conduct their missions. Units not used for contingencies train for full-spectrum operations. Deployed units return to reset after deployment. Units that do not deploy also return to reset after 12 months.

Source: Congressional Budget Office.

- a. The length of the cycle for units in the Army National Guard and Army Reserve is 60 months. For those units, the reset, train/ready, and available phases last 12, 36, and 12 months, respectively. The first 3 months of the available phase would be spent on postmobilization training before the units deploy.
- b. The Army is transitioning from 12-month deployments to 9-month deployments; Army policy states that all units deployed after April 1, 2010, will have a deployment of 9 months. As long as the Army retains the 36-month cycle, units deployed in the available phase will spend 3 extra months in either the reset or the train/ready phase.

The Army uses Army Force Generation (ARFORGEN), a structured process, to prepare its forces for operations. ARFORGEN is a rotational cycle in which units go through three phases that progressively build readiness over time. Each phase requires different amounts of funding, so the ARFORGEN cycle is an important element in determining the Army’s O&M budget request.

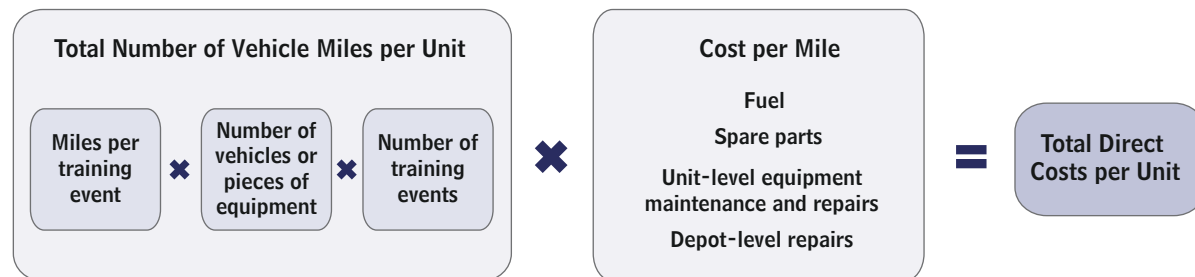
In the reset phase, units conduct personnel transfers and receive new equipment. Training takes place at the individual and small team levels, and units are not expected to be at a high state of readiness. Units may have to support civil authorities in the United States or combatant commanders if needed.

In the train/ready phase, greater amounts of resources are made available to increase readiness and combat capabilities. Units conduct training of increasing complexity up to the battalion and brigade levels. Units must meet readiness milestones that culminate at the end of the phase with the highest level of readiness. Active units in the train/ready phase may be deployed, and reserve units may be mobilized if more forces are needed than are already available. Units that are not slated for deployment train for a wider range of missions and may be designated as part of a surge force for any contingencies.

In the available phase, units are expected to be at the highest level of readiness and are the first considered for operational missions. Units designated for operational missions may deploy for up to 12 months. Units that do not deploy continue training while remaining available for contingency missions. ♦

**Exhibit 16.**

**The Army’s Model for Calculating Direct Costs for Unit Operating Tempo and Training**



Source: Congressional Budget Office.

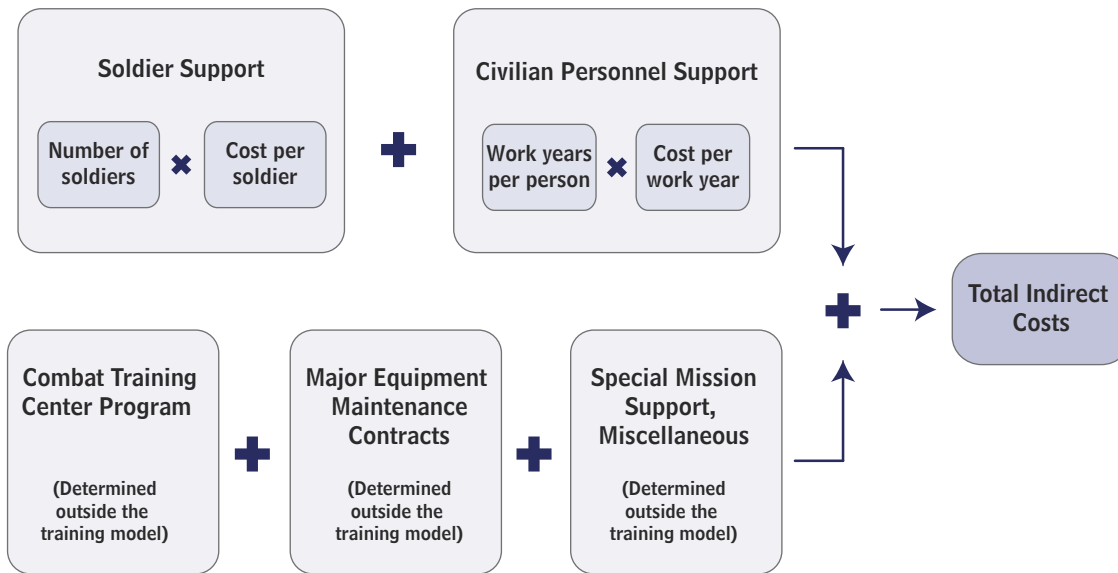
The Army’s optempo and training program provides resources to train its deployable units, and it uses the Training Resource model to calculate the funding it needs for that program. The model divides resources into two categories: direct costs, which are more closely tied to units’ training activities (shown in this exhibit), and indirect costs, which are driven largely by force structure or policy, such as costs for operating combat training facilities (shown in Exhibit 17).

Units incur direct costs when they drive vehicles, fly aircraft, or fire weapons to conduct training. The costs associated with driving vehicles include expenses for fuel, spare parts, maintenance, and repairs made at the unit level, contracts with private firms to maintain equipment at the unit level, and major repairs (such as those for engines and transmissions) at the depot level. The Army maintains historical data on the total expenditures for such resources in relation to total vehicle miles, which it uses to estimate cost per mile (expenditures divided by number of miles).

The Training Resource model calculates the prospective total number of vehicle miles in a year on the basis of the number of units and training events (with specific objectives) as those units go through the ARFORGEN cycle. To obtain total direct costs, the model then multiplies the number of vehicle miles by a three- or four-year average cost per mile. ♦

**Exhibit 17.**

**The Army’s Model for Calculating Indirect Costs for Unit Operating Tempo and Training**



Source: Congressional Budget Office.

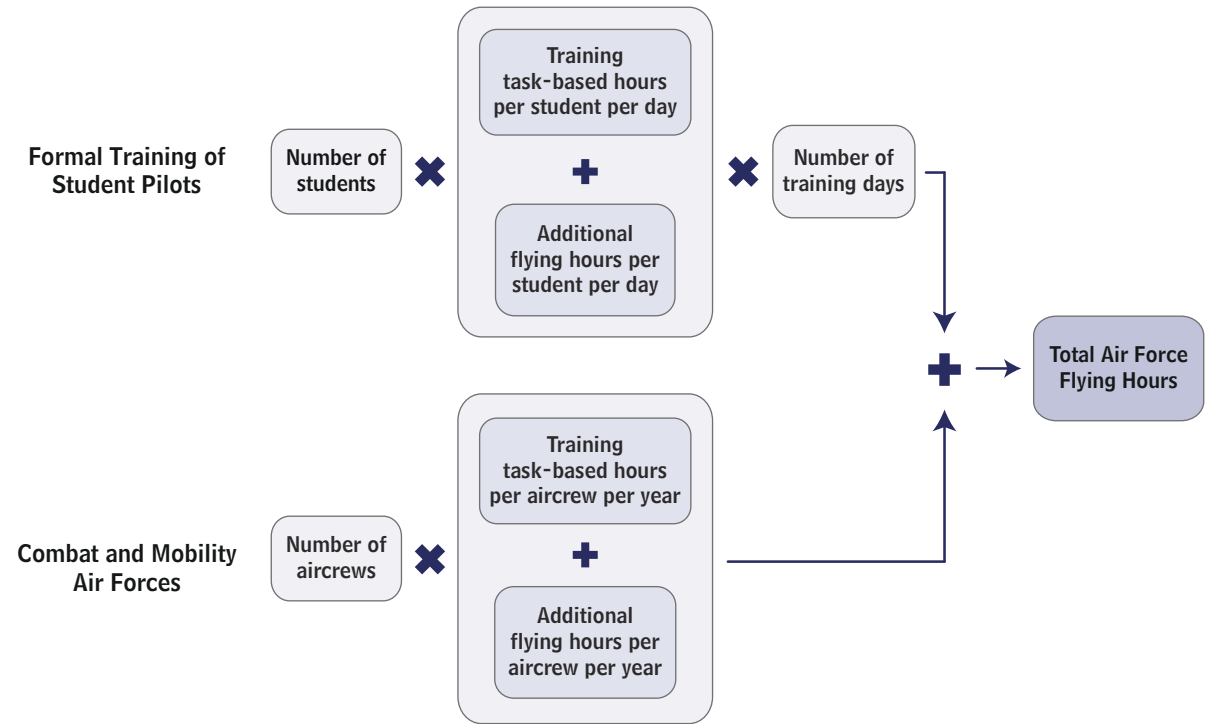
The indirect costs of the Army’s optempo and training program mostly involve resources provided to deployable units by other parts of the Army. They include expenditures for clothing and personal equipment for soldiers (the Soldier Support Program), civilian personnel support, the Army’s Combat Training Center program, contracts with private firms to maintain fixed-wing aircraft and other equipment, and the Army’s special programs.

The method that the Training Resource model uses to calculate indirect costs, unlike that used for direct costs, is not explicitly tied to units’ actual training. For the most part, the funding levels for indirect costs are determined in separate processes and imported into the model. According to Army officials, those separate processes use historical spending levels to predict costs.

In contrast to the Navy’s Ship Operations model, which includes deployed units (see Exhibit 12), the Army’s Training Resource model does not include any costs for deployed units. Once a unit deploys for contingency operations, it receives all of its funding from contingency appropriations. ♦

**Exhibit 18.**

**The Air Force’s Flying Hours Model**



Source: Congressional Budget Office.

The Air Force’s flying hours during peacetime provide basic flight training for student pilots and other aircrew, combat training for current combat pilots, and training to increase the experience of mobility (airlift) pilots. The Air Force Flying Hours model calculates servicewide flying hours on the basis of the curriculum and number of students for student training, and unit training requirements and number of aircrews for combat and mobility forces. Servicewide flying hours represents the total hours for active and reserve forces.

Student pilots go through a structured curriculum, performing various tasks for specific numbers of hours. In addition to pursuing those tasks, students also use flying hours to repeat tasks or to meet other responsibilities. The Flying Hours model determines the total flying hours for student training programs by multiplying flying hours per student per day (task-based plus additional flying hours) by the number of students and the number of training days.

Aircrews in combat and mobility forces use a specific number of flying hours per year to complete their training programs. They also use additional flying hours for other duties such as search and rescue. The model projects total flying hours for combat and mobility forces by multiplying those task-based and additional flying hours per aircrew by the number of aircrews. ♦





# **Models for Facilities and Maintenance Functions**



**Exhibit 19.**

**Modeling of Budgets for Facilities and Maintenance, by Service**

(Billions of dollars)

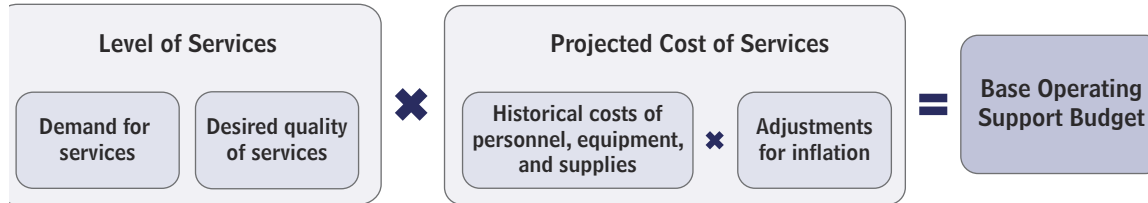
	2012 Budget Request	Modeled Amount	Percentage Modeled
Navy	14.6	13.2	92
Army	11.3	10.0	88
Air Force	6.4	4.2	66
Marine Corps	3.6	2.0	55
<b>Total</b>	<b>35.9</b>	<b>29.4</b>	<b>82</b>

Source: Congressional Budget Office.

Models informed about \$29 billion of the services' total 2012 budget request of \$36 billion for facilities and maintenance functions. The facilities function covers the daily operations, periodic repair and upkeep, and restoration of the services' facilities. The maintenance function deals with the maintenance of weapon systems and equipment at depots. The services have different types of equipment and weapon systems, but they all model maintenance functions in similar ways. In contrast, despite comparable requirements for the operation and upkeep of facilities, the use of modeling for constructing budgets for the facilities function varies considerably among the services. The difference between the Navy and the Army, which use models to inform large portions of their facilities budgets, and the Air Force and the Marine Corps, which use models to inform much smaller portions, is largely the result of variations in the services' budgeting approaches and organizational structures. ♦

**Exhibit 20.**

**The Navy’s and Army’s Base Operating Support Models**



Modeling of Budgets for Base Operating Support

Service	Subactivity Group Number	Modeled Amount of the 2012 Budget Request (Billions of dollars)	Total 2012 Budget Request (Billions of dollars)
Navy	BSS1	3.9	4.6
Army	131	6.5	7.6
<b>Total</b>	<b>n.a.</b>	<b>10.4</b>	<b>12.2</b>

Source: Congressional Budget Office.

Base operating support (BOS) encompasses activities that enable the smooth functioning of military bases, including services and programs that promote the quality of life of service members, their families, and the civilian workforce. The Navy’s and Army’s BOS models are similar. Both use a collection of related models to estimate funding needs for BOS activities.

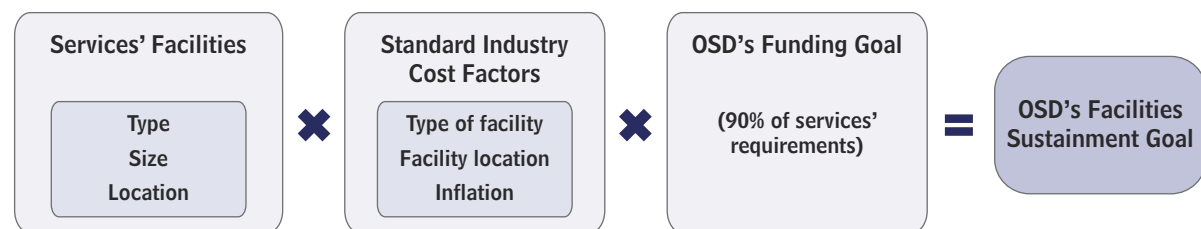
The demand for and desired quality of BOS services affect their costs. The demand for services depends on factors such as the population and square footage of an installation; quality is gauged by measures such as frequency and waiting time (such as the frequency of garbage collection or the length of the line at the dining hall). The Navy and the Army determine the amount and quality of services they will provide and multiply that level of services by the projected costs—historical costs adjusted for inflation—of the resources needed to carry out those services. The result is the base operating support budget.

The Navy’s BOS model contains 15 submodels covering 28 distinct activities such as fire protection and child development programs. The Navy’s request for BOS in 2012 was \$4.6 billion, roughly 85 percent of which was derived from its BOS model. The Army’s request for BOS in 2012 was \$7.6 billion, also about 85 percent of which was derived from a model.

The Air Force and the Marine Corps do not use models at the headquarters level to inform their BOS budget requests, but they do model civilian pay associated with base operating support. ♦

**Exhibit 21.**

**OSD’s Facilities Sustainment Model for All Services**



**Modeling of Budgets for Facilities Sustainment**

Service	Subactivity Group Number	Modeled Amount of the 2012 Budget Request (Billions of dollars)	Total 2012 Budget Request (Billions of dollars)
Navy	BSM1	1.4	1.4
Army	132	6.5	2.3
Air Force	11R	1.0	1.0
Marines	BSM1	0.6	0.6
<b>Total</b>	<b>n.a.</b>	<b>5.2</b>	<b>5.2</b>

Source: Congressional Budget Office.

Note: OSD = Office of the Secretary of Defense.

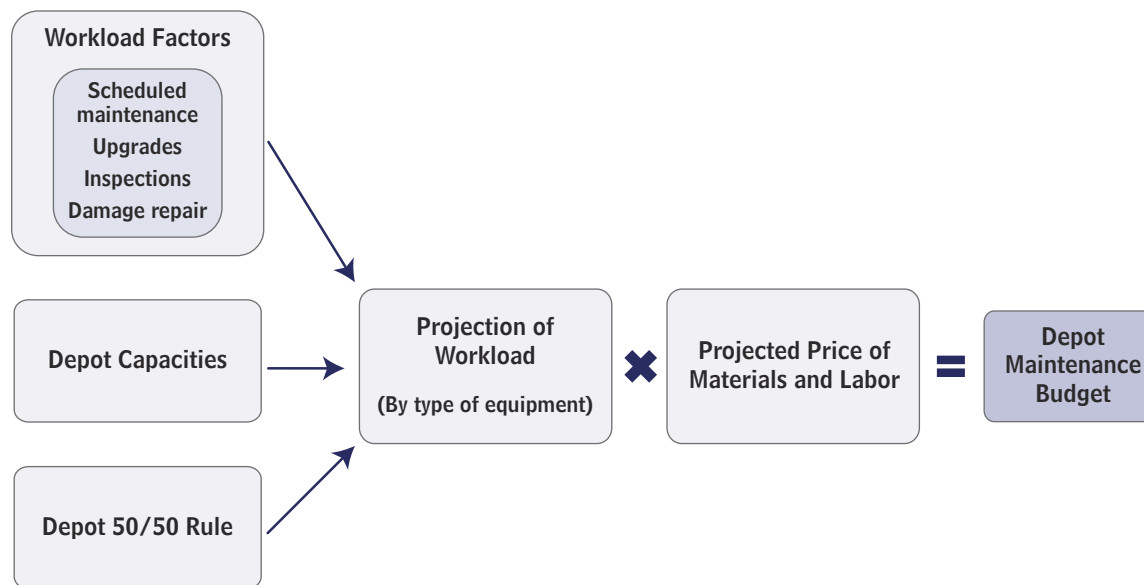
Facilities sustainment pays for periodic preventative maintenance and replacement of such things as roofs, carpet, and heating and cooling systems. All of the services are required to use the Office of the Secretary of Defense’s (OSD’s) Facilities Sustainment model to determine their budget request.

The services provide a detailed list of facilities to OSD, including the facilities’ types, sizes, locations, and conditions. OSD then applies standard industry costs, adjusted for location and inflation, for performing maintenance on each type of facility. The full cost of sustainment is obtained by adding the maintenance costs of all facilities for all four of the services. In order to ensure adequate funding, OSD has set a goal for the services to fund at least 90 percent of their respective amounts derived from the model. Because of budget constraints, the Navy and the Air Force have asked to fund only 80 percent of the amounts for 2012 derived from the model; OSD has not objected to that underfunding.

The Navy is unique among the services in that it uses a model to inform its budget request for facility restoration and modernization in addition to facilities sustainment. Restoration and modernization costs are used to repair facilities that have not been adequately sustained, need reconfiguration, or have been affected by special circumstances such as storms. The Navy’s Shore Facilities Investment model uses the replacement value, condition, and configuration funding for each facility to generate a total recapitalization requirement. For 2012, the operating forces portion of that requirement was about \$600 million. ♦

**Exhibit 22.**

**Modeling of Depot-Level Maintenance by All Services**



**Modeling of Budgets for Depot-Level Maintenance Within the Operating Forces Budget**

Service	Subactivity Group Number	Modeled Amount of the 2012 Budget Request (Billions of dollars)	Total 2012 Budget Request (Billions of dollars)
Navy	Multiple	7.4 <sup>a</sup>	8.1 <sup>a</sup>
Army	123	1.2	1.2
Air Force	11M	2.2	2.2
Marines	1A3A, Navy 1A5A	0.6 <sup>a</sup>	0.6 <sup>a</sup>
<b>Total</b>	<b>n.a.</b>	<b>12.0</b>	<b>11.3</b>

Source: Congressional Budget Office.

a. For the purposes of this study, the Marine Corps’ aviation depot-level maintenance was moved from the Navy’s budget to the Marine Corps’ budget to reflect which service actually performs those activities.

Maintenance of equipment performed at the depot level is the most intensive type of repair; it includes scheduled maintenance, upgrades, inspections, and repairs of battle and accident damage. CBO found that all four services model their depot-level maintenance budgets. First, they project the requirements for each ship; type, model, and series of aircraft; model of ground equipment; and type of ordnance. The services also take into consideration the depots’ capacities and workload requirements mandated by the Depot 50/50 Rule, which states that at least half of all depot-level maintenance must be performed at government facilities (as opposed to commercial ones; see 10 U.S.C. section 2466). Using those factors, the services develop maintenance projections that detail types and quantities of equipment to be brought into the depots and the specific types and amounts of work to be done on that equipment.

Most of the service-operated depots are financed through working capital funds (WCFs). Under that arrangement, the WCFs do not receive money directly from Congressional appropriations. Instead, operational commanders pay the depots for maintenance of their units’ equipment with appropriated funds that are allocated for that purpose. With the goal of covering their full operating costs, the depots set the prices for material and labor before a fiscal year begins. The services estimate their depot-level maintenance budgets by multiplying the projected workloads by the projected costs of material and labor.

CBO found that nearly all of the services’ 2012 depot-level maintenance requests were associated with models, a total of over \$11 billion. The Navy’s budget includes costs for the Marine Corps’ aviation depot-level maintenance, but CBO reassigned that amount, about \$400 million, to the total for the Marine Corps. ♦