

# FULL COST BUDGETING

## Full Cost Implementation

With the start of FY 2004, October 1, 2003, NASA is to fully implement the Agency's Full Cost Initiative and for the first time, will operate in a full cost environment in managing, accounting, and budgeting for its programs and resources. This budget submission provides for NASA's programs and projects in a full cost format whereby the Agency's infrastructure and supporting capabilities have been examined and matched against the demand of NASA's programs. Full cost implementation is designed to enhance cost-effective mission performance by modifying the way the Agency does business so that managers are provided with better information to support decision-making. Having full cost in place will be a tremendous asset to the Agency in facing its management challenge of effectively controlling costs and maximizing efficient utilization of its resources.

In its simplest terms, the full cost concept ties all Agency direct and indirect costs (including civil service personnel costs) to NASA's major activities. These major activities (final "cost objects") are NASA's programs and projects. Under full cost, there are no "free" resources for program managers. In contrast to the current approach, for the first time, all institutional infrastructure costs such as civil service salaries and the use of facilities/support services are associated with benefiting programs/projects. Therefore, full cost budget information highlights the full cost, including support costs, of each NASA project and thereby supports more complete, "full" disclosure of NASA's activities, clearer linkage between resource inputs and outputs/outcomes, and greater accountability regarding NASA's use of taxpayer resources.

NASA's full cost concept integrates several key fundamental improvements: accounting for all NASA costs as direct costs (including supporting service costs) or as general and administrative (G&A) costs (center and corporate); budgeting for all appropriate program, project, and initiative ("project") costs; and managing such "projects" from a full cost perspective.

Since NASA began its Full Cost Initiative in 1995, full cost practices have been defined to improve the way NASA achieves its mission by implementing new, improved management, budgeting, and accounting policies, practices, and procedures. These new full cost practices are designed to provide timely, accurate estimates and actual cost information on the services and support activities required to achieve

cost efficient administrative and program mission performance. The use of full cost management, budgeting, and accounting does not, in and of itself, change the infrastructure; rather, it more clearly discloses infrastructure costs, and their relationship to projects, while facilitating the decision-making process.

Implementing full cost budget formulation and execution at NASA is a key component in NASA successfully integrating budget and performance as set forth in the President's Management Agenda (PMA). NASA's status rating for the PMA has improved due to the major full cost budgeting accomplishments made this past year, and in NASA integrating its budget and performance reports starting with this FY 2004 budget submit.

Full cost management, budgeting, and accounting are to be accomplished throughout NASA in accordance with the Agency's Full Cost Implementation Guide, which was issued in February 1999 after the conduct of a feasibility study and the development of processes with input from across the Agency.

Where full cost figures appear on budget tables in this document, they are highlighted in **yellow**.

## Full Cost Components for NASA's Projects

With full cost, all Agency costs are separated into one of three major cost categories: Direct (with Service Pools); Center G&A; and Corporate G&A. The full cost of a program/project is the sum of all direct costs and G&A costs associated with the program/project.

$$\text{Full Cost} = \text{Direct Cost (with Service Pools)} + \text{Center G\&A Cost} + \text{Corporate G\&A Cost}$$

Exhibit 1 below depicts in detail the cost components for each NASA full cost program/project. A detailed explanation for each cost component is included later in this chapter.

EXHIBIT ONE

Direct Project (w/ Service Pools)				Center G&A	Corporate G&A
Direct Procurements	Direct Travel	Direct Civil Service Workforce and Benefits	Service Pools* Contracts/Purchases CS WF, Benefits, & Travel	Center G&A Purchases	Corporate G&A Purchases
				CS WF, Benefits, Travel/Pools	CS WF, Benefits, Travel/Pools

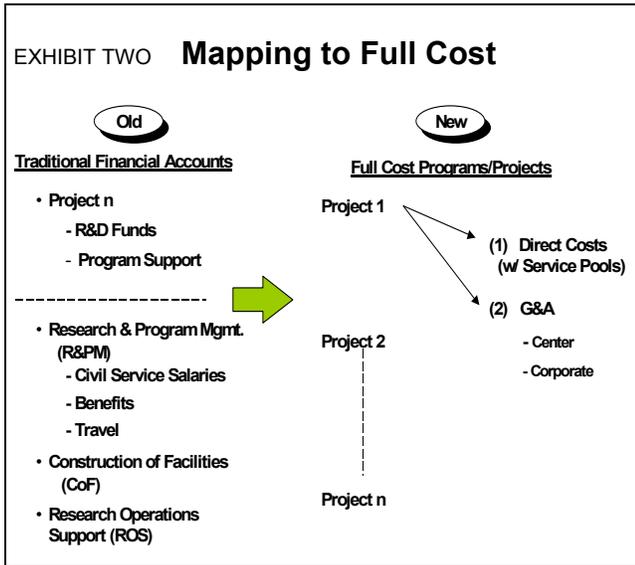
\* - Costs of services provided to projects based on on use/ consumption

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## Converting to Full Cost within NASA's Existing Appropriation Structure

Exhibit 2 provides a macro view of how NASA's traditional budget structure maps to the Agency's new full cost structure. As shown, NASA's program/project budgets have historically only captured direct R&D costs including supporting costs called program support. The Agency costs for both direct and indirect civil service workforce and travel dollars (previously budgeted under Research and Program Management (R&PM)), and other institutional infrastructure costs such as Research Operations Support (ROS) (used to support business management functions and basic center operations) have not been included. As stated above, now under full cost, all costs (both direct and indirect) are tied to NASA's activities at the project level.

matched to programs worked. In the case of indirect civil service labor, these costs are initially captured in G&A and service pool accounts, and are eventually distributed back to using programs based on actual consumption or a G&A approved distribution. Therefore, at the NASA program/project level, under full cost, the budget for the program/project will increase since all costs are now captured under the program budget. The target for applying full cost is typically at the project level (usually at Level 3 in the budget structure and at Level 4 for projects in formulation or less than \$100M), except for Space Station where full cost has thus far been applied primarily at the theme level (referred to as Level 2). The other exception is for Environmental Compliance under Space & Flight Support, where the activities themselves are not directly full costed since the NASA personnel who conduct these activities are considered part of the Center and Headquarters general and administrative (G&A) cost pools.



Since the submittal of NASA's FY 2002 budget, the appropriation structure in the Agency has evolved to support the full implementation of full cost practices in FY 2004. For the FY 2002 and FY 2003 Agency budgets, NASA retained the Science, Aeronautics and Technology (SAT), Human Space Flight (HSF), and Inspector General appropriations and eliminated the mission support appropriation, which funded civil service salaries/benefits, travel, ROS, and the construction of facilities. The budget requirements for mission/institutional support was developed at a high level by NASA Enterprise, and then merged into SAT and HSF by spreading mission support costs against the FTE's identified for SAT and HSF.

With this FY 2004 full cost budget submit, all institutional costs are budgeted for at a much lower level, at the NASA program/project activity level. The Agency's direct workforce and related costs are directly

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## **Cost Component Detail**

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### **Direct Project Costs**

This cost category consists of:

(1) **Direct costs** that are obviously and physically related to a project at the time the costs are incurred such as purchased goods and services, contracted support, and direct civil service salaries/benefits/travel; and

(2) **Service pool costs** cover a broad range of infrastructure capabilities that support multiple programs/projects at a center. The following seven standard service pools have been established at each NASA center for support of work performed at their site: Facilities and Related Services; Information Technology; Publishing Services; Science and Engineering; Fabrication; Test Services; and Wind Tunnel Services. These costs can be traced/linked to a given project based on usage/consumption.

Each pool carries all supporting costs incurred for that given function including: civil service salaries/benefits; contractor labor; travel; purchases; pool management; facility related costs. These costs are collected in a cost pool arrangement and are periodically distributed backed to using programs during the fiscal year.

During the budget formulation process, the demand for a pool's services in relation to its projected customers (using programs) and the pool's needed funding level are identified through negotiations with project managers and service providers. The projected service pool bill is then included in the project's full cost budget.

### **Center General and Administrative (G&A) Costs**

This cost category captures center costs that cannot be related or traced to a specific project, but benefit all activities. These costs are allocated to center programs based on the number of direct civil servants (including service pool workforce) and on-site contractors that work a given project. This method of cost allocation (cost per FTE (full time equivalent)) is considered to provide an appropriate indication of the amount of general infrastructure that is driven (consumed) by a project activity at a Center. A review of alternative G&A allocation methods used outside NASA will be conducted over the next year.

The following standard types of costs/functions are included in each center's G&A account: G&A civil service salaries/benefits/travel; center training and awards; security; grounds maintenance; pavement/roads;

fire protection; library; business computing; public affairs; non-program construction of facilities (CoF); transportation services; legal; human resources department; procurement support; budgeting; accounting; equal opportunity; educational outreach; medical services; and logistics services.

During the budget formulation process, each Center Director determines the appropriate funding levels for G&A functions for the upcoming fiscal year, consistent with Agency guidance and with the approval of Enterprises. The total Center G&A is then spread back against center programs, and is included in the program's full cost budget.

### **Corporate G&A Costs**

This cost category consists of costs that are related to the business operations of NASA Headquarters as a center and Agency level functions that are G&A in nature. This includes costs for: the NASA Administrator and immediate staff; the Enterprise level/management; Headquarters Operations management; and Functional management, including Safety and Mission Assurance (SMA). Costs for Corporate G&A functions performed for the Agency at NASA centers are also included. Some of these activities performed at Centers on behalf of the Agency were previously budgeted as part of the Center's institutional budget and have now been transferred to the Corporate G&A budget.

For the FY 2004 NASA Budget, Corporate G&A costs are allocated to agency programs/projects based on the program's share of NASA's total direct cost including service pool costs; however, over the next year, a review of alternative allocation methods will be performed.

## **Benefits of Full Cost**

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- Applying full cost practices will help lead to a more efficient, optimal use of institutional resources.
  - Institutional resources justified based on project requirements (directly or indirectly).
  - No "free" resources; program managers will have more insight and role in defining institutional capabilities.
  - A better linkage between services and their customers and the integration of civil service labor cost exists; funding for service pools allocated is based on demand/consumption rather than with a parametric formula used with old program support account; civil service workforce is allocated based on specified need.

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- Increased attention on G&A infrastructure and sources of support capabilities by managers at all levels (Center, Enterprise, and program); will help reduce underutilized institutional capabilities and find more cost effective alternatives.
- Increases competitive selection of support capabilities.
- Supports economic decisions for appropriate resource allocations, and the bench-marking of NASA service activities with other similar services; also provides a more comparable means for evaluating government vs. contractor options leading to minimization of government-held infrastructure.
- Strengthens ties between NASA's missions, programs/projects, and budget requests; helps justify NASA's budget on a program/project basis.
- Provides an effective tool for program/project managers to better manage, and motivates managers to operate efficiently.

## **Full Cost Assumptions**

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With full cost, institutional funds are budgeted within the supported project's budget line. This integration (within the appropriation) of previously separate defined funding for personnel, travel, and CoF is needed in order to obtain the full benefits of full cost management whereby a program manager has oversight for the full cost of a given project. The use of personnel, travel, and facilities funding will be tracked through service and G&A pools that represent an integral part of a program's full cost budget. To have to appropriate each of these support funds separately would decrease response time for applying resources, and would significantly increase the number of funding allotments and operating plan actions.

Under full cost, if a project is terminated or adjusted (downward or upward), associated funds for G&A, civil service workforce, and service pools require time to be reassessed and reallocated to other new using programs, and are also available for reduction or an increase. NASA needs time following a budget decision to realign/change institutional resources affected by those decisions. Center G&A and civil service workforce are the least flexible and will likely need to be maintained especially in the near-term. Service pool costs are somewhat more flexible in the short run.

## **One-Way Transition by Agency to Full Cost**

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Once NASA transitions to full cost, direct traceability back to previous budgets, especially at the project level, is not possible. Previous years' budgets cannot be recalculated and presented in full cost since there is not a one-to-one relationship of previously used cost categories to the new full cost categories (Direct with Service Pools and G&A).

The Program Support accounts previously used are not directly interchangeable with Service Pools since pools are based more directly on project consumption and include associated civil service workforce costs. Plus, a portion of Program Support is now budgeted under the Center G&A account. The ROS account previously used is not directly interchangeable with Center G&A that now includes associated civil service workforce costs. ROS is now included in Service Pools, Center G&A, and Corporate G&A. Previous estimates of direct project workforce may have included some indirect workforce. In addition, Agency-wide activity performed at a center that was previously budgeted under Center ROS transferred to Corporate G&A.

## **Potential for Future Refinement**

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The FY 2004 budget process is NASA's first attempt to budget completely in full cost. Pools and workforce allocations were constructed without specialized computer tools resulting in a labor-intense process until the new Agency Budget Formulation Module is ready for use. It is expected that refinements in full cost allocations will likely be seen in the next budget cycle.

# FULL COST BUDGETING: Transition to Full Cost and New Budget Structure

<b><u>IN MILLIONS OF DOLLARS</u></b>	<b>FY 2003 PRES BUDGET</b>	<b>FY 2003 AMENDED FULL COST*</b>	<b>FY 2004 BUDGET FULL COST</b>
<b>SCIENCE, AERONAUTICS AND TECHNOLOGY (FY 03) / SCIENCE, AERONAUTICS AND EXPLORATION (FY 04)</b>	<b><u>7,015.1</u></b>	<b><u>7,100.6</u></b>	<b><u>7,660.9</u></b>
<b><u>SPACE SCIENCE</u></b>	<b><u>3,414.3</u></b>	<b><u>3,468.4</u></b>	<b><u>4,007.1</u></b>
SOLAR SYSTEM EXPLORATION	975.7	1,046.2	1,358.6
MARS EXPLORATION	495.5	550.6	570.2
ASTRONOMICAL SEARCH FOR ORIGINS	698.1	798.9	877.0
STRUCTURE AND EVOLUTION OF THE UNIVERSE	331.0	398.3	431.7
SUN-EARTH CONNECTIONS	544.2	674.3	769.6
INSTITUTIONAL SUPPORT	369.8	--	--
<b><u>EARTH SCIENCE</u></b>	<b><u>1,628.4</u></b>	<b><u>1,610.3</u></b>	<b><u>1,552.2</u></b>
EARTH SYSTEM SCIENCE	1,248.8	1,529.0	1,477.4
EARTH SCIENCE APPLICATIONS	61.7	81.3	74.8
INSTITUTIONAL SUPPORT	317.9	--	--
<b><u>BIOLOGICAL &amp; PHYSICAL RESEARCH</u></b>	<b><u>842.3</u></b>	<b><u>912.7</u></b>	<b><u>972.7</u></b>
BIOLOGICAL SCIENCES RESEARCH	245.1	304.0	358.6
PHYSICAL SCIENCES RESEARCH	247.2	351.2	353.2
RESEARCH PARTNERSHIPS AND FLIGHT SUPPORT	169.5	254.1	260.9
INSTITUTIONAL SUPPORT	180.5	3.4	--
<b><u>AEROSPACE TECHNOLOGY</u></b>	<b><u>986.4</u></b>	<b><u>949.2</u></b>	<b><u>959.1</u></b>
AERONAUTICS TECHNOLOGY	541.4	949.2	959.1
INSTITUTIONAL SUPPORT	445.0	--	--
<b><u>ACADEMIC PROGRAMS/EDUCATION PROGRAMS</u></b>	<b><u>143.7</u></b>	<b><u>160.0</u></b>	<b><u>169.8</u></b>

\* Full cost is estimated for FY 2003 for comparison purposes only.

NOTE: Full funding for Federal retiree costs not included.

Indicates budget numbers in Full Cost.

# FULL COST BUDGETING: Transition to Full Cost and New Budget Structure

<b><u>IN MILLIONS OF DOLLARS</u></b>	<b>FY 2003 PRES BUDGET</b>	<b>FY 2003 AMENDED FULL COST*</b>	<b>FY 2004 BUDGET FULL COST</b>
<b>HUMAN SPACE FLIGHT (FY 03) / SPACE FLIGHT CAPABILITIES (FY 04)</b>	<b><u>7,960.3</u></b>	<b><u>7,874.8</u></b>	<b><u>7,782.1</u></b>
<b><u>SPACE FLIGHT</u></b>	<b><u>6,130.9</u></b>	<b><u>6,107.0</u></b>	<b><u>6,109.8</u></b>
INTERNATIONAL SPACE STATION	1,492.1	1,850.7	1,707.1
SPACE SHUTTLE	3,208.0	3,785.7	3,968.4
SPACE & FLIGHT SUPPORT	238.7	470.6	434.3
INSTITUTIONAL + SMA	1,192.1	--	--
<b><u>CROSSCUTTING TECHNOLOGY</u></b>	<b><u>1,829.4</u></b>	<b><u>1,767.9</u></b>	<b><u>1,672.3</u></b>
SPACE LAUNCH INITIATIVE	879.4	1,150.4	1,064.6
MISSION AND SCIENCE MEASUREMENTS TECHNOLOGY	274.9	434.3	438.4
INNOVATIVE TECHNOLOGY TRANSFER PARTNERSHIPS	146.9	183.1	169.3
INSTITUTIONAL SUPPORT	528.2	--	--
<b><u>INSPECTOR GENERAL</u></b>	<b><u>24.6</u></b>	<b><u>24.6</u></b>	<b><u>26.3</u></b>
<b>TOTAL AGENCY</b>	<b>15,000.0</b>	<b>15,000.0</b>	<b>15,469.3</b>

\* Full cost is estimated for FY 2003 for comparison purposes only.

NOTE: Full funding for Federal retiree costs not included.

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