

## **Financial Management Module In Support of the Management and Oversight of Large Facilities**



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## **PURPOSE OF THE Financial Management Module (FMM):**

The FMM provides guidance on the financial responsibilities involved in project planning, management and oversight of NSF large facilities projects, including clear definitions, process descriptions, and expectations for appropriate financial stewardship. These guidelines are intended to elaborate and provide specific guidance on the principles addressed in the [Large Facilities Manual](#).

## **APPROPRIATION ACCOUNTS**

NSF has several appropriation accounts, but the ones that are frequently used for funding large facility projects during their lifecycle stages include the Research and Related Activities (R&RA) account, the Major Research Equipment and Facility Construction (MREFC) account, and the American Recovery and Reinvestment Act of 2009 (ARRA).

*The MREFC appropriation is available “for necessary expenses for the acquisition, construction, commissioning and upgrading of major research equipment, facilities and other such capital assets pursuant to the National Science Foundation Act of 1950, as amended, including authorized travel.” (Consolidated Appropriations Act, 2008. P. L. 110-16, Title III - Science).*

It does **not** fund preconstruction planning, operations and maintenance, science utilization or educational outreach activities. The MREFC account is “no year” funding. This means that the funds have no fiscal year limitation in which NSF has to obligate the funds, the funds can be carried over to the next fiscal year, and are available until expended, unless rescinded by Congress.

In addition, NSF’s Large Facilities Office has established a NSF “tracking and reporting” system to assure that funding for large facility projects are obligated in the correct account and lifecycle stage.

Most large facility projects use the MREFC appropriation to fund the construction lifecycle, and the Research and Related Activities (R&RA) appropriation to fund the conceptual design and operations and maintenance lifecycles. However, the R&RA appropriation has no restrictions for funding construction.

ARRA funding was one-time funding and must be separately tracked and monitored independently from any non-ARRA funds. Section 1604 of the Act reflects certain restrictions on the use of these funds. The NSF Office of General Counsel will provide guidance as necessary. Additional award information may be found at:

[http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=arra0509](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=arra0509)

Funds from the various appropriation sources must be segregated, used for distinct purposes, and separately reported. They must not be co-mingled. (See “Payment Requirements – Commingling of Funds” in this document and NSF Bulletin 01-15, “Major Research Equipment Funding under NSF Assistance Awards.”)

## NSF FINANCIAL POLICY AND GOVERNING REGULATIONS

All recipients of federal assistance awards must follow OMB guidelines in their administration. OMB circulars set standards for financial management, define direct and indirect costs, the calculation of indirect cost rates, and the allowability and reasonableness of all cost elements.

The Code of Federal Regulations (CFR) is a codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

Specific information on OMB Circulars or CFR can be found at: <http://www.whitehouse.gov/omb/circulars/>. Pertinent OMB Circulars that are relevant to NSF Large Facility awards and awardees are reflected in the following table along with other award terms and conditions.

Administrative Requirements		
	2 CFR 215 – Uniform Administrative Requirements for Grants and Other Agreements with Institutions of Higher Education, Hospitals and other Non-Profit Organizations (OMB Circular A-110)	Sets standards for obtaining consistence and uniformity among Federal agencies in managing grants and cooperative agreements with higher education institutions, hospitals, and other non-profit organizations.
	OMB Circular A-102 – Grants and Cooperative Agreements with State and Local Governments	Establishes consistency and uniformity among Federal agencies in the management of grants and cooperative agreements with state, local, and Federally recognized Indian tribal governments. NSF implementation may be found at 45 CFR Part 602.
Cost Principles	2 CFR 220 – Cost Principles for Educational Institutions (OMB Circular A-21)	Establishes principles for determining costs applicable to grants, contracts, and other agreements with educational institutions.
	2 CFR 225 – Cost Principles for State, Local and Indian Tribal Governments (OMB Circular A-87)	Establishes principles for determining costs applicable to grants, contracts, and other agreements with State and local governments and Federally recognized Indian tribal governments.
	2 CFR 230 – Cost Principles for Non-Profit Organizations	Establishes principles for determining costs applicable

	(OMB Circular A-122)	to grants, contracts and other agreements with non-profit organizations.
Audit Requirements	OMB Circular A-133- Audits of States, Local Governments and Non-Profit Organizations	Sets standards for obtaining consistence and uniformity among Federal agencies for the audit of states, local governments, and nonprofit organizations expending Federal funds.
NSF Policies and Procedures	Award and Administration Guide (AAG). Part II of the NSF Proposal & Award Policies & Procedures Guide	Provides NSF policies regarding award and administration of grants and cooperative agreements and references OMB circulars, Public Laws, Executive Orders and other directives.
NSF Award Conditions	CA-FATC - Cooperative Agreement Financial and Administrative Terms and Conditions	Specify a broad range of financial and administrative requirements pertaining to finance, administration, and property stewardship.
	CA-FATC – Cooperative Agreement Supplemental Terms and Conditions for Managers of Large Facilities	Provides supplemental financial and administrative requirements for large facility awards.
	CA-FATC – Cooperative Agreement Supplemental Terms and Conditions for Managers of FFRDCs	Provides supplemental financial and administrative requirements for FFRDCs.
	Programmatic Terms and Conditions (PTCs)	Provides program specific requirements for the award.

## FINANCIAL REQUIREMENTS

### Financial Management System Requirements

All awardees are required to have financial management systems that meet the requirements of Section .21 of 2 CFR 215 (OMB Circular A-110). The grantee’s financial management system must meet the standards for fund control and accountability prescribed in this section. Also, 2 CFR 215.21 through 215.28 prescribes methods for making payments and rules for satisfying cost sharing and matching requirements, accounting for program income, budget revision approvals, making audits, determining allowability of cost, and establishing funds availability.

The Award and Administration Guide (AAG), Part II of the Proposal & Award Policies & Procedures Guide, is comprised of the documents used to guide, manage, and monitor the award and

administration of grants and cooperative agreements made by NSF. This document may be found at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=papp](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=papp)

Chapter III, Financial Requirements and Payments, provides guidance and requirements related to financial management of NSF grants and cooperative agreements. Additional financial and administrative requirements applicable to cooperative agreements (referenced in the chart above) may be found at: [http://www.nsf.gov/awards/managing/co-op\\_conditions.jsp](http://www.nsf.gov/awards/managing/co-op_conditions.jsp) Chapter III, Financial Requirements and Payments, of the Award and Administration Guide, provides more detailed information regarding the following financial aspects of award administration.

## **PAYMENT REQUIREMENTS**

### **Requesting Payments**

Most NSF's awardees are required to request payments electronically through the FastLane Cash Request Function. The timing of advances and the procedures to be observed assure that cash payments occur only when essential to meet the needs of an awardee for its actual disbursements. NSF reserves the right, upon written notice, to withhold future payments if the awardee fails to comply with the conditions of an NSF award, including the reporting requirements, or is indebted to the US Government.

Awardees may receive payments from NSF: (1) in advance of costs incurred provided that certain conditions exist; (2) Special Payment; or (3) Working Capital Advances. The requirements and policy pertaining to these payment methods are reflected in [AAG Section III.C](#).

### **Commingling of Funds**

The accounting systems of all awardees and subawardees must ensure that agency funds are not commingled with funds from other awards or Federal agencies. Each award must be accounted for separately. Awardees and subawardees are prohibited from commingling funds on either a program-by-program or project-by-project basis without prior written approval of the awarding agency.

In no case will NSF-furnished funds be commingled with the personal funds of, or be used for personal purposes by, any officer, employee, or agent of the awardee; nor will any of these funds be deposited in personal bank accounts for disbursement by personal check.

In addition, MREFC funds must not be commingled with Research & Related Activities (R&RA), ARRA, or EHR funds. NSF has established a process for segregating funds when making awards for large facility projects.

The MREFC account is used **only** to fund construction, acquisition, commissioning and upgrades of a project. When a facility project is funded for construction in MREFC, any R&RA funding **must** be used for a distinctly different scope of work not included in Work Breakdown Structure<sup>1</sup> defining

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<sup>1</sup> Refer to "Project Management" in this document for more information about the Work Breakdown Structure.

the uses for MREFC funding. For example, a project that is under construction and funded through MREFC could continue to provide R&RA funding for research and development activities, or could be doing preliminary or ongoing “operations” at the same time the project is under construction.<sup>2</sup> A separate Cooperative Support Agreement (CSA) will be issued for each category of funding since funds cannot be commingled, and each CSA will refer to the unique scope of work funded.

### **Awardee Electronic Funds Transfer (EFT) Update**

Awardee EFT System Update is a FastLane Financial Function used by awardees to provide NSF with their electronic banking information. This system enables NSF to transfer funds electronically to an awardee’s bank account by using the electronic banking information provided by the awardee. More information on EFT is available at [https://www.fastlane.nsf.gov/NSFHelp/flashhelp/fastlane/FastLane\\_Help/fastlane\\_help.htm#financial\\_functions\\_introduction.htm](https://www.fastlane.nsf.gov/NSFHelp/flashhelp/fastlane/FastLane_Help/fastlane_help.htm#financial_functions_introduction.htm)

### **CASH REFUNDS AND CREDITS TO NSF**

#### **Final Unobligated Balance**

NSF has a reversionary interest in the unobligated balance of an award upon expiration or completion of the award. [AAG Chapter III E.2](#) contains instructions on how to handle these situations. Detailed instructions for submission of the Federal Financial Report (FFR) are available on the FastLane website at <https://www.fastlane.nsf.gov/jsp/homepage/faulogin.jsp>

#### **Erroneous Payments**

Advances or reimbursements made in error must be refunded to the NSF if the erroneous payment creates either an “excess cash on hand” condition or a negative “Balance Authorized” as computed on the FFR. Excess funds should be promptly refunded electronically or by check. Contact the NSF Division of Financial Management (DFM) at (703) 292-8280 for instruction for electronically refunding monies to NSF. Refer to [AAG Section III.D.2](#) for further information.

#### **Interest Earned on Advance Payments**

Awardees must establish or demonstrate to NSF their willingness and ability to establish written procedures that will minimize the time elapsing between the transfer of funds from the U.S. Treasury and their disbursement by the awardee. Awardees shall maintain advances of NSF funds in interest bearing accounts<sup>3</sup>.

#### **Program Income**

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<sup>2</sup> More generally the scope of the funding through R&RA funding should be distinguished from the scope of the funding provided from MREFC.

<sup>3</sup> See NSF Award and Administration Guide (AAG) Chapter III.D.3 [http://www.nsf.gov/pubs/policydocs/pappguide/nsf10\\_1/aag\\_3.jsp#IIID3](http://www.nsf.gov/pubs/policydocs/pappguide/nsf10_1/aag_3.jsp#IIID3), for requirements and exceptions.

If, in accordance with the award, program income is designated for credit to award costs, it will be recovered by NSF by crediting costs otherwise chargeable against the award on the FFR. [AAG Chapter VI.F.](#) provides further instructions and clarification.

### **Other Cost Credits**

Purchase discounts, rebates, allowances, credits resulting from overhead rate adjustments and other credits relating to any allowable cost received by or accruing to the awardee shall be credited against NSF award costs if the award has not been financially closed out. An award is financially closed out when the final net disbursements have been reported on the FFR. Credits of \$300 or more shall be credited against NSF award costs even if the grant has been closed out. See also [AAG Chapter III. D.5](#) for further information.

## **FINANCIAL REPORTING REQUIREMENTS**

### **Quarterly Disbursement Reporting - FFR**

Awardees are required to report the status of funds received from NSF on a quarterly basis through the submission of a FFR. The reports are prepared and submitted electronically to NSF by the FastLane Financial Report Function or [Research.gov](#). Additional instructions may be found at [AAG Chapter III.E.](#)

Failure to submit the FFR to NSF in a timely manner can result in one or more of the following actions:

- Suspension of all future payments;
- Closeout of expired awards based on previously reported disbursements;
- Suspension of unexpired awards; and
- Suspension of review and processing of new proposals.

### **Final Disbursement Reporting**

NSF does not require grantees to submit individual FFR's for each award for purposes of final grant accountability. NSF procedures have been designed to extract the final financial data from the entries in the FFR. [AAG Chapter III.E](#) provides additional instructions for this process.

## **PROJECT MANAGEMENT**

### **Earned Value Management**

Earned Value Management (EVM) is an integrated system of project management and control that enables a Principal Investigator (PI) and/or Project Manager to monitor the progress of a project in terms of integrated cost, schedule, and technical performance measures. EVM is a

methodology used to measure and communicate the real physical progress of a project and relate it to the project’s financial status, by taking into account the work completed, the time taken, and the costs incurred to complete that work. Earned Value (EV) helps evaluate and control project risk by measuring project progress in monetary terms.

This enables the Project Manager (PM) to compare the current and planned status, so that corrective action can be taken when there is a deviation from target.<sup>4</sup> EVM provides three measures to tell where the project is – what work is supposed to be done, what work has been done and what the actual cost is of the work expended<sup>5</sup>. See definitions in the table below.

At the heart of EVM is the Work Breakdown Structure (WBS). The WBS is the hierarchical structure of a project starting with high-level objectives or deliverables, extending downward to sub-elements that comprise the high-level element, and finally to the lowest level of the structure, the smallest element that can be individually budgeted. These elements are aggregated into individual *work packages* that describe deliverables, resources, duration, and associated risk factors. A *resource-loaded schedule* is created by aggregating these individual work packages into an overall project schedule, which also defines dependencies among the work packages to form a coherent, integrated overall project. **EV is based on assigning a monetary value to the activity as it is measurably completed.** Completion of the work must be determined by objective measures such as milestones or deliverables.

The EV, planned value, and actual cost are all plotted versus time - this compares the values of the work accomplished, what was planned to be accomplished, and the actual value of the work performed. **Any technical performance, schedule, or cost deviation from a specific project plan is called a ‘variance’.** Typical sources of variances are: failure of a technical design to meet performance specs; underestimating time to perform certain tasks or procure items; and underestimating cost of materials or services, for example using an outdated vendor quote. Calculating cost variance (CV) and schedule variance (SV) are useful in identifying potential problems and performance trends.

EVM terms include:

Budgeted Cost of Work Scheduled (BCWS)	Estimated value in dollars of the work to be accomplished as scheduled throughout the project. It answers the question: How much was budgeted to accomplish the work? BCWS is the performance baseline established at the start of the project and revised through a disciplined process of <i>Change Control</i> <sup>6</sup> .
Budgeted Cost of Work Performed (BCWP)	Planned costs of the work allocated to the completed activities (or portions of activities) throughout the project. It answers the

<sup>4</sup> James P. Lewis, *Project Planning Scheduling and Control: A Hands-On Guide To Bringing Projects In On Time and On Budget*, p. 281, 3<sup>rd</sup> Edition, McGraw-Hill, New York, 2001

<sup>5</sup> The terms Planned Value (PV) is equivalent to BCWS and Earned Value (EV) is equivalent to BCWP

<sup>6</sup> Refer to Chapter V of the Large Facilities Manual, “Special Topics”, Definition and Use of Contingency Resources in NSF Facility Construction.

	question: What was the planned value of the work that has been completed? It is the value in the performance baseline of the work performed.
Actual Cost of Work Performed (ACWP)	Actual costs incurred in accomplishing the work performed.
Cost Variance (CV) = (BCWP-ACWP)	Difference between the amount of work completed (BCWP) and the amount that was actually expended (ACWP) for an element of work. A negative variance means that more money was spent for the work accomplished than was planned.
Schedule Variance (SV)= (BCWP-BCWS)	Difference between the amount of work completed (BCWP) and the estimated budget (BCWS) for an element of work.
Cost Variance % = 100 x CV/BCWP	Indicates how much over or under budget the project is as a percentage of the planned cost of the work performed.
Schedule Variance % = 100 x SV/BCWS	Indicates how much ahead or behind schedule the project is as a percentage of the planned schedule.
Estimate at Completion (EAC)	Actual amount spent to date plus the estimated cost of the work remaining.
Cost Performance Index (CPI)	Equals the ratio of the BCWP to the ACWP.
Schedule Performance Index (SPI)	Equals the ratio of the BCWP to the BCWS.
Project Change Control	Formal process for approval of changes to the technical scope of work, budgets and schedule of project through the Change Control Board.

### Executing the Project Performance Measurement Baseline Plan

Part of executing a project according to the project's performance measurement baseline plan involves adjusting the plan to incorporate actual progress and experience. All project cost performance is measured monthly against the baseline so that cost deviations can be detected as early as possible.

The *Estimate to Complete* is the project's estimate of the budget required to complete all remaining work. The project will include revised information from actual experience and signed contractor cost and schedule commitments. It includes factors such as learning curves and other factors that are adjusted based on experience thus far in the project. The BCWS is revised through the project's Change Control process to reflect the most realistic plan so that the performance measurement is meaningful.

The initial performance measurement baseline is preserved in the project's database for reference. All changes to the performance measurement baseline should be documented.

### **Partnership Considerations in Financial Management**

Several NSF large facilities are funded, built and/or operated in partnership with other entities, such as other agencies or foreign governments. Partnerships introduce additional risks that NSF must recognize. For example, a partner may unexpectedly exit the partnership or unilaterally discontinue providing anticipated funding. NSF's financial planning must consider the unique, project-specific circumstances for each potential risk and plan appropriately and defensively to protect NSF's interests.

A partnership can best protect itself by proactively addressing partner financial default or withdrawal as part of the initial agreement or memorandum of understanding between the partners. Appropriate clauses specifying compensatory penalties can be incorporated into the agreement and become important means for insuring a facility's financial stability. They protect the facility's investments and assets and its capability to continue carrying out its scientific objectives. If a partner withdraws or financially defaults, it is important that the other partners and the facility's governance board act firmly and in unison in implementing the provisions of the cooperative agreement.

Program officers and other NSF staff who have been involved in international projects are an important source of experience and information. NSF's Offices of General Counsel (OGC) and International Science and Engineering (OISE) should also be consulted, in addition to the BFA Divisions of Acquisition and Cooperative Support (DACS) and the Large Facilities Office.

## **GOVERNMENT PERFORMANCE AND RESULTS ACT (GPRA) REPORTING**

For all facilities in the MREFC account, negative cost variances (CV) and schedule variances (SV) should be kept to less than 10%. GPRA goals are subject to annual review and may be revised.

## **THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009**

Reporting and Accountability Requirements and Special Award Conditions are part of the ARRA funding.

NSF ARRA Reporting information is available on <http://nsf.gov/recovery/reporting.jsp> . This website provides all of the information on reporting requirements, registration with FederalReporting.gov, and relevant OMB and NSF Guidance.