

# PUBLIC COMMENTS ON NSF LARGE FACILITIES MANUAL (LFM) DRAFT, MAY 2016 & NSF FINANCIAL DATA COLLECTION TOOL WITH NSF RESPONSES

Public comments received were sorted into three categories and are provided in three separate tables as follows:

- Content and/or clarify language in the Large Facilities Manual, C-#
- Typographic or editing in the Large Facilities Manual, T-#
- Financial Data Collection Tool, F-#

Each comment is addressed with one of the following NSF Responses

- Addressed in this version with an explanation of how the comment was addressed
- No change with an explanation of why
- Will be assessed and addressed in later version

# CONTENT AND CLARIFY COMMENTS TABLE

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-1	0 - General	NSF (DFM)	A general observation:	Risk assessment and monitoring, as well as contingency, are addressed in various sections of the manual. While project lifecycle has a major impact on the subjects, it may be more clear to consolidate risk and contingency into a single subject area in order to provide focus.	Will be assessed and addressed in later version.
C-2	0 - General	NSF (DACs)	Sections 2 and 3, in particular	<p>The concern is the use of the word Termination as part of the construction stage. The new 2 CFR 200 which was approved last year standardized all Federal definitions. Agencies cannot be at odds with the use of the guidance. The LFM use of the word Termination is going against what I think it is you want to convey. The last stage of the construction process is the Closeout of the award not a termination.</p> <p>The use of the word Termination is a negative and means you end the award before the grantee could finish the project. See below the definitions.</p> <p>§200.16 Closeout. Closeout means the process by which the Federal awarding agency or pass-through entity determines that all applicable administrative actions and all required work of the Federal award have been completed and takes actions as described in §200.343 Closeout.</p> <p>§200.95 Termination. Termination means the ending of a Federal award, in whole or in part at any time prior to the planned end of period of performance.</p>	Addressed in this version. The use of the terms ‘termination’ and ‘closeout’ were revised to conform with 2 CFR 200 and FAR definitions. Term definitions were added to the lexicon. Related to Comment C-46.

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C-3	0 - General	NSF (GEO)		I think the document could use a description of science planning, academy reports, Advisory Committee comments and how they shape facilities at NSF in the introductory section (pull up language from section 3.3)	Will be assessed and addressed in later version.
C-4	0 - General	NSF (GEO)		Provide the location of the internal guidance documents	No change. Internal guidance documents are for NSF Staff and located on collaborative portals.
C-5	0 - General	NSF (GEO)		Where is the Annual Work Plan guidance for MREFC projects? How does the AWP for MREFC map to the baseline maintenance processes?	Addressed in this version. Language revised in Sections 2.5.1 and 3.5.
C-6	0 - General	NSF (GEO)		I think there needs to be information on re-budget authority as a method of management prior to contingency allocation in an operations or MREFC effort. Re-budgeting may be different than descope as it provides the opportunity to continuously assess time phased scope priorities. For operations this is critical and it should be assessed first, prior to any contingency requests. Re-budgeting may require de-obligation by the Awardee and assuring that there is an acquisition strategy/contract to support this method is important.	Will be assessed and addressed in later version.  For construction, risk management plan addresses “re-budgeting” as a mitigation strategy within a work package.  For operations, will be assessed and address in later version.
C-7	0 - General	NSF (GEO)		Where is the guidance for the Awardee Advisory Committees for the project? This is a lesson learned for large subawards/subcontracts.	Will be assessed and addressed in later version.
C-8	0 - General	NSF (LFO)	References to “scope, Scope Management Plan, scope contingency, de-scope, scope options” Sections: 2.4.1; 2.4.3.2; 3.4.1; 4.2.5-3,4,10; 4.4.5; 5.2.3; 5.2.11; 8.2	Clarify kinds of up-scope enhancements allowed in SMP with examples, including parking of items de-scoped between PDR and FDR or during project. Clarify difference between scope = deliverable and scope = implementation details.	Addressed in this revision. Various edits in Sections 2.4.1 and 2.4.3 were made to clarify the use of scope options in a Scope Management Plan (SMP). 2.3.2-2 SMP added to PEP list for PDR

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C-9	0 - General	NSF (LFO)		See white paper "...NSF LFO Improvement Suggestions 2016-06-23" on various suggestions to improve NSF oversight, including changes to the LFM	Addressed in this version as applicable to public. Others addressed in internal guidance and some suggested improvements are under assessment.
C-10	0 - General	NSF (LFO)	Contingency and EVM expectations under contracts	The LFM is not clear about contingency expectations in the case of contracts. We need some very simple "applicability" statements in the opening sections of the LFM. "Unless otherwise noted, the policies and procedures in the manual apply to research infrastructure projects regardless of the award instrument employed. Cooperative agreements are governed by the Uniform Guidance. Contracts are governed by the FAR for for-profits and by the Uniform Guidance for non-profits and educational institutions." I also need to know if the EVM reporting for FFPCs has contingency in the baseline for EVM reporting or if it is carried separately as it is for CAs. On funding, I don't think we can hold back 'contingency' for a contract like we do for CAs. Contingency is allowed under UG. "Reserve" or "contingency reserve" is not...see SOG 2016-2 where we cover these definitions as well. Perhaps these definitions should also be included in Section 8.2 (Lexicon)?	Addressed in this version. Also addresses C-13 and C-22. Language in the first paragraph page 1.1-1 was revised to indicate NSF awards frequently take the form of cooperative agreements, but may also be made in the form of contracts. Cooperative agreements with universities, consortia of universities or non-profit organizations are governed by the NSF Uniform Guidance and contracts are governed by the Federal Acquisition Regulations (FAR). Unless otherwise noted, the policies and procedures in the manual apply to research infrastructure projects regardless of the award instrument employed. Also added on page 1.1-2 that departures from the manual are considered, the Recipient must provide a written justification and NSF should document these in the internal management plan.
C-11	0 - General	NSF (OIG)		... we note that the LFM is unclear as to which of the new requirements relate to large facilities in operations and suggest NSF clarify this prior to the LFM issuance. We also suggest ensuring that LFM guidance for NSF staff and recipients aligns	Addressed in this version. Language revised to clarify throughout LFM, specifically Sections 2.5, 3.5, and 4.2.6. LFM is also augmented with internal guidance (SOGs).

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				with NSF internal Standard Operating Guidance (SOGs). As an example, see our comment on section 4.2.4.1, NSF Policy Positions.	
C-12	0 - General	NSF (OISE)	Sec. 2.1.6.4 and Appendix A – MREFC panel roles and criteria for prioritizing MREFC projects; Sec. 2.3 – Design Stage; Sec. 4.6 – Partnerships; Sec. 5.5 – Environmental Considerations; etc.	We do request that the role of OISE in facilitating and coordinating NSF international research infrastructure be explicitly included both (i) in practice i.e., how LF projects are overseen and (ii) in the LF manual – which are of course related. For (ii), we recognize that, for the most part, specific divisions/offices within NSF are not called out in the manual.	No change. Comment is an observation.  Addressed in this version. In Section 2.1.6.1, OISE is listed as part of the Strategic Group for Integrated Project Teams (IPT).
C-13	1.1 Purpose and Scope	NSF (GEO/PLR)	Paragraph 1: “Such awards frequently take the form of cooperative agreements.” Paragraph 2: “Historically, awards have been made for such diverse projects as accelerators, telescopes, research vessels, aircraft, and geographically distributed but networked observatory systems.”	We have in the past and are in the queue now to construct research stations using contract mechanisms; why not include PLR and polar Research Station projects as opposed to casting these as an unstated exception?	Addressed in this version. In Section 1.1, “Such awards frequently take the form of cooperative agreements, but may also be made in the form of contracts.
C-14	2.1 Purpose and Scope	NSF (GEO/PLR)	“...(NSF) investments through the ... (MREFC) Account provide state-of-the-art infrastructure for research and education, such as laboratory and field instrumentation and equipment, multi-user research facilities, distributed instrumentation networks and arrays, and mobile research platforms.”	Include polar research stations	Addressed in this version. In Section 2.1, “remote research station” added.

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C-15	2.1.3 Facility Life Cycle	NSF (LFO)	Figure 2.1.3-1 Progressive Steps in the MREFC Life Cycle, ..... Renewal & Re-competition Reviews(Program, MREFC Panel & DRB, OD & NSB)	Remove reference to MREFC panel from all but design phases	Addressed in this version. Figure 2.1.3-1 was revised, deleted MREFC from the Renewal & Recompetition stage.
C-16	2.1.3-1, last paragraph	NSF (GEO)	“Individuals should discuss any proposed departures with the cognizant Program Officer. “	Who are the individuals in the attached statement? Note: If this is an internal document, are individuals from the Awardee permitted to provide input?	Addressed in this version. Changed “Individuals” to “Project stakeholders”.
C-17	2.1.3-1, last paragraph	NSF (GEO)		IMP should be defined prior to this section as the reader does not have context to the paragraph meaning. ( It is defined in the later sections of the document )	Addressed in this version. Added: “The IMP is the primary document that describes how NSF will oversee a facility through the various life cycle stages (see Section 3.3).”
C-18	2.1.3-1	Lockheed Martin (AIMS)	Points at which there may be departure from the MREFC process outlined here should be identified early in the project development and documented as part of the NSF Internal Management Plan (IMP) Individuals should discuss any proposed departures with the cognizant Program Officer.	Will there be any documentation that the Operations and Divestment stage are not part of this project? The document says any departure from these stages would be identified in the NSF IMP but I wasn’t sure if that information was reflected.	Typo addressed in this version. A period was added after “(IMP)”.  No change. Response to Commenter was provided: Per section 7.5 of the PEP, the Concept of Operation Plan should include estimate of annual operations and maintenance staffing and funding that will be needed when the facility is constructed and operated.  Per section 7.6 of the PEP, the Facility Divestment Plan should include a description and estimate of divestment liabilities at the end of facility life for transfer, demolition, site remediation, decontamination,

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					etc. This plan will not be anywhere near as developed and detailed as the PEP, but should discuss above items at a high level.
C-19	2.1.3-3	Lockheed Martin (AIMS)	Preliminary Design Phase Definition: Further advances the project baseline definition and the Project Execution Plan. It produces a bottom-up scope, cost, schedule, and risk analysis of sufficient maturity to allow determination of the Project Total Cost and overall duration for a given Fiscal Year start and to establish the MREFC budget request to congress.	It is understood we provide a funding profile and spend plan for PDR. We also understand we baseline at PDR per the LFM for scope, cost and schedule. Does the LFO allow for changes in the funding and spend plan profiles at the end of FDR to allow for any updates we may need to make based on the awarded subcontract?	Addressed in this version. Language revised in Sections 2.3 and 2.4 to clarify TPC, baseline, and performance measurement baseline (PMB).
C-20	2.1.4 Figure 2.1.4-1	NSF (GEO/OCE)		What is the systems engineering requirement for Large Facility Projects?	Will be assessed and addressed in later version.
C-21	2.1.4 Figure 2.1.4-1	NSF (GEO/OCE)		What is the output or definition of a developed Project Controls System?	Addressed in this version. Added to footnote on 2.3.2.-2: "See Figure 4.2.2-1 for examples of project controls systems inputs and outputs." Section 10 of the PEP addresses Project Management Controls including EVMS. LFM Section 4.5.3.6 is reserved for future content on EVM validation.



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C-22	2.1.4 Summary of MREFC	NSF (GEO/ OCE)		Can industry lead facility projects or only non-profits/academic institutions? (This is usually an FAQ, so perhaps addressing it upfront in the summary section would be beneficial)	Addressed in this version. Paragraphs 2-4 in section 2.1.4 were modified to clarify the fact that various institutions (educational, non-profit, or industry) may propose and be awarded implementation of work for different stages based on best interests of a particular project and NSF goal of nurturing institutions doing cutting edge science.
C-23	2.1.4 Figure 2.1.4-1	NSF (GEO)		NEPA and permitting responsibilities (not just environmental impacts) should be articulated in the chart. Does one need the EA or EIS prior to construction funding request?  Editorial Note – label Figures on bottom, Tables on top	Addressed in this version. Figure 2.1.4 was revised to include NEPA. Additional guidance on NEPA requirements will be added to the LFM after internal guidelines are finalized.  Will be assessed and addressed in later version.
C-24	2.1.4 Figure 2.1.4-1	NSF (GEO)		What does industrialize key technologies mean? (not a modern term)	Addressed in this version. Figure 2.1.4 was revised to clarify.
C-25	2.1.4 Figure 2.1.4-1	NSF (GEO)		When is the ConOps ( <i>Operations Plan?</i> ) delivered and reviewed?	Addressed in this version. Revisions to define the Concept of Operations during the planning and the Operation Plans for Ops.
C-26	2.1.4 Figure 2.1.4-1	NSF (GEO)		Property management/ownership model should be included or in the PEP. This is very important for developing the design. (lease, NSF own, Awardee own, there are a lot of options to trade off and assess)	Will be assessed and addressed in later version as part of the PEP detailed guidelines, Section 3.4.2.

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C-27	2.1.4 Fig. 2.1.4-2	NSF (OIG)		We suggest updating figure 2.1.4-1 to incorporate new requirements, such as the independent cost estimate, incurred cost audits, incurred cost submissions, etc.	Addressed in this version. Figure 4.2.1-1 revised to include additional input to the costs analysis and Section 4.5.3 revised.
C-28	2.1.5	NSF (GEO/ OCE)		This to be written Section 2.1.5 should include internal competition planning text as part of this section.	Will be assessed and addressed in later version.
C-29	2.1.6-14	Lockheed Martin (AIMS)	Pg 2.1.6-14. "The CO holds the warrant and is the only individual authorized to obligate or de-obligate government funds. The CO, through their warrant, has the sole authority to award and administer the construction contract(s) used in support of Large Facility projects."	This statement says the "CO has the sole authority to award and administration the construction contract (s) used in support of Large Facility projects. This does not make sense for our situation – can NSF clarify the CO's role in our case.	Addressed in this version. Duplicate of C-33. Statement clarified/updated to "The CO, through their warrant, has the sole authority to award and administer the prime construction contract(s) used in support of Large Facility projects."
C-30	2.1.6-6	Lockheed Martin (AIMS)	Table – PD Phase	What do they mean by the CO "creates solicitations for enabling research, workshops, summer studies.... (the first bullet).	Addressed in this version. Language revised in Table to indicate the G/AO and CO supports proposal development (shared responsibility with PO).
C-31	2.1.6-7	Lockheed Martin (AIMS)	Table – Construction Stage	Does the PO have authority to approve significant change to the project baseline?	No change. Response discussed with commenter. For contracts, the PO does not have single authority to approve baseline changes. PO will be involved in approval per Change Control Plan. CO will provide formal/final approval of any contract changes, per bullets under G/AO or CO.

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				<p>Who are the external ad hoc panel members?</p> <p>Need to understand the “periodic reviews” of project progress – monthly, quarterly, annually so we can determine frequency and requirements for these reviews?</p> <p>Is the GPRA where the requirement for an annual performance plan comes from?</p>	<p>No change. See Sections 2.4.1 and 4.5.3.2, for annual review panel during construction.</p> <p>No change. See Sections 2.4.1 and 4.5.3.2 for annual review panel during construction.</p> <p>Yes, since replaced by Government Performance and Results Modernization Act of 2010 (GPRAMA). Updated LFM reference to state: “ensures compliance with Government Performance and Results Modernization Act of 2010 (GPRAMA)”.</p>
C-32	2.1.6-13	Lockheed Martin (AIMS)	The G/AO is responsible for oversight of the financial and administrative terms and conditions of the assistance agreement, just as the PO is responsible for scientific and technical oversight. Unlike the PO, he/she holds the warrant to obligate government funds. The G/AO and the PO jointly share the principal technical and financial responsibilities for the oversight and assurance of a large facility project.	What is the difference between the G/AO and the CO?	No change. The LFM describes the difference between G/AO and CO in the current version. Response was made directly to commenter explaining that the G/AO is the financial officer for cooperative agreements, CO for contracts.

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C-33	2.1.6-14	Lockheed Martin (AIMS)	The CO holds the warrant and is the only individual authorized to obligate or de-obligate government funds. The CO, through their warrant, has the sole authority to award and administer the construction contract(s) used in support of Large Facility projects.	This statement says the “CO has the sole authority to award and administration the construction contract (s) used in support of Large Facility projects. This does not make sense for our situation – can NSF clarify the CO’s role in our case.	Addressed in this version. Duplicate of C-29. Language clarified/updated to “The CO, through their warrant, has the sole authority to award and administer the prime construction contract(s) used in support of Large Facility projects.”
C-34	2.1.6-14	Lockheed Martin (AIMS)	Cost Analyst	Who is this on NSF side? Need to confirm that this is not a cost item that NSF must bear and verify if this person is in place right now.	Addressed in this version. Revised language to “The Cost Analyst provides a written recommendation to the G/AO or CO stating... identified by the requesting G/AO or CO.”
C-35	2.1.6-14	Lockheed Martin (AIMS)	Footnote 1: Refer to the Business Systems Review (BSR) Guide described in Section 4.5.3.3 for discussion on this point. When NSF is not the cognizant audit agency for the recipient institution, its oversight of recipient business practices is narrowly defined.	Will there be another BSR on ASC as there was already one conducted when the current contract was awarded? We need to understand timing as well for when this will take place.	Will be assessed and addressed in later version.

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C-36	2.1.6-15 HFLO Section	NSF (GEO/ OCE)	“Prior to NSF requesting NSB approval to include a proposed project in a future budget request, the HFLO contributes to agency assurance that the project plans are construction ready, and that the construction and operations budgets are satisfactorily justified. This assurance comes through assignment of the LFO Liaison to the IPT and membership (as assigned) on various governance bodies such as the Director’s Review Board and MREFC Panel.”	I think the LFM language requires definition of the deliverable that describes the assurance or certification of the total project cost of an MREFC or Operations Project. The language is unclear. Is it a letter to the CFO certifying the TPC? What gets delivered? I think this is the most important authority that HFLO has in the document. Who is responsible for the project independent cost estimate? Is it LFO or the Directorate?	No change. Comment addresses internal procedures. Internal processes are handled with internal Standard Operating Guidelines (SOG’s).
C-37	2.1.6 HFLO Section – monthly report	NSF (GEO/ OCE)		What are the specific monthly report requirements for the PO? These requirements have changed over time, but are not specified in the manual. In the past, the requirement was to submit the awardee’s submission that met LFO requirements with a summary from the PO. This was not uniformly applied as some POs wrote their own reports based on the Awardee submissions. The report sections for an MREFC project would benefit from standardization as the Awardees could then use the Manual for direction. Some CAs have clauses written to specify reports, so maybe the Manual should direct the Awardee to the award clause.	No change. NSF internal process. SOG under development.

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C-38	2.1.6 HLFO Section	NSF (GEO/ OCE)	The statement “The HLFO develops and implements processes for insuring that all facility award instruments” is unclear.	What are the processes, how are they implemented, who delivers and when? Is it a report, email, discussion? This is unclear.	Addressed in this version. Language revised in Section 2.1.6 to clarify role and responsibility of HLFO and LFO.
C-39	2.1.6	NSF (GEO/ OCE)		The roles and responsibilities section contains a lot of verbs. In many cases the deliverables and sign off associated with these verbs are unclear. For example, what does assurance deliver and how is it delivered? (a report, a letter, email, witness, controlled document, etc.) This section would be a lot stronger if the deliverables and location of the filing of these deliverables would be defined. Appendix B only has some of the information.	Will be assessed and addressed in later version.
C-40	2.1.6 Roles and Responsibilities	NSF (GEO/ PLR)	Table 2.1.6-1 Summary of Principal Roles and Responsibilities: Under ‘Construction/ Implementation Stage’ “Develops a Cooperative Agreement (CA)” Under ‘Operations Stage’ (G/AO or CO)Creates special terms and conditions in the CA to capture requirements for annual performance goals (shared responsibility with the PO) (LFO) Advises PO and G/AO on project management issues related to recompetition of award for facility operation	Include “or contract agreement” where CA appears.  For third bullet, LFO role does not apply to Antarctica.	Addressed in this version. Language in table was modified to include contract agreements in addition to cooperative agreements (CAs).  Addressed in this version. Language was revised from “project management issues related to recompetition of award for facility operation” to “related project management issues in the event of recompetition of the award for facility operations”

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C-41	2.1.6 Roles and Responsibilities	NSF (GEO/PLR)	Page 2.1.6-11 “The AD oversees development of MOUs with other agencies, international partners, private foundations, and other entities and, with the approval of the NSF OD, enters into negotiations with those parties and signs these agreements on behalf of NSF when authority to do so is delegated by NSF OD.”	Not straightforward for PLR; This can be delegated and often is in that agreements are signed at the level where resolution of issues is handled;	Addressed in this version. Language added “Unless delegated to a lower level, ...” and revised to “...signs or delegates signature for these...”
C-42	2.1.6 Roles and Responsibilities	NSF (GEO/PLR)	Page 2.1.6-11 “Overseeing the organization of all design reviews including appointment of review panels, charges to the panels, and Directorate responses to review panel recommendations”	Did this happen before? The DD is meant to be cut out of the loop here?	Addressed in this version. Language revised in Section 2.1.6.2 to clarify <i>Senior Management of the Originating Division, Directorate, or Office Assistant Director or Office Head</i> responsibilities. There is a separate section for Division Director’s role.
C-43	2.1.6 Roles and Responsibilities	NSF (GEO/PLR)	Page 2.1.6-11 “Ensuring that the performance plans of the relevant Division Directors reflect the requirements and expectations of the LFM and other NSF policy statements, and the necessity to provide an environment of open communication and transparency in the management of MREFC projects”	suspect that if this occurs it is only in a generic sense	Addressed in this version. Language revised in bullet to clarify.

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C-44	2.1.6 Roles and Responsibilities	NSF (GEO/ PLR)	Page 2.1.6-12 "Grants and Agreements Officer"	It should be explicitly stated up front here that the IPT will have either a G/AO or CO depending upon whether a CA or contract mechanism is in play.	Addressed in this revision. The assignment of a G/AO or CO to the IPT for CAs or contracts is explicitly listed in the roles and responsibilities for those two individuals. Figure 2.1.6-4 lists G/AO or CO as part of the IPT Award Management Group.
C-45	2.1.6	NSF (MPS)		Table 2.1.6-1 says the PO is "Experienced or trained in management of large projects." It also says the LFO Liaison "Advises POs on project management issues during project development and oversight" yet there is no requirement that the LFO have similar experience or training.	Addressed in this version. "Experienced and trained in management of large projects." was added to the LFO liaison role in Table 2.1.6-1
C-46	2.1.6, 3.1, 3.3, 4.2, and 4.5	NSF (DACs)	These sections should be using the word "closeout" rather than "termination"	2.1.6-5 Table 2.1.6-1 Devises and carries out a renewal or <i>termination</i> strategy that implements recompetition of the operating award wherever feasible 2.1.6-7 Devises and carries out a renewal or <i>termination</i> strategy that implements recompetition of the operating award wherever feasible Defines business practices for renewal, recompetition, or <i>termination</i> of the Award Advises PO and G/AO on effective operational oversight strategies, renewal and recompetition strategies, and <i>termination</i> 2.1.6-10 Overseeing implementation, operation, and eventual divestment and <i>termination</i> of NSF support for the project. 2.1.6-13	Addressed in this version. Related to Comment C-2. The use of the terms 'termination' and 'closeout' were revised to conform to the 2 CFR language for award lifecycle and FAR definitions. Term definitions were added to the lexicon.



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				<p>The G/AO confers with the PO and other relevant offices to ensure that the NSF’s technical and administrative oversight activities are well coordinated. The G/AO and the PO collaborate on the preparation of solicitations and the proposal and award process. The G/AO has individual responsibility for developing and overseeing the implementation of financial and administrative aspects of the award process, and joint responsibility with the PO for recompetition planning and execution, and award <i>termination and</i> closeout.</p> <p>2.3.1-3 facility. It also identifies critical issues and risks facing the project (for example: project management issues, completing essential R&amp;D activities, partnership agreements, <i>termination</i> or divestment liabilities) and lays out a strategy for financing these activities.</p> <p>3.1-1 Guidelines for plans to terminate operations under NSF awards are in development, with Section 3.6 provided as a placeholder. Divestment, and termination of NSF funding and oversight of a facility, may be accomplished through transfer to another agency or funding source or through decommissioning and deconstruction.</p> <p>3.3-1 This document provides guidance to the PO on topics to be included in an Internal Management Plan (IMP), grouped by life-cycle stage. The IMP is the primary document that describes how NSF will oversee development, construction, operation and eventually divestment <i>and</i></p>	<p>Addressed in this version. Related to Comment C-2. The use of the terms ‘termination’ and ‘closeout’ were revised to conform to the 2 CFR language for award lifecycle and FAR definitions. Term definitions were added to the lexicon.</p>

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				<p><i>termination</i> of the award <i>support for a major facility</i>. The requirement to develop an IMP is described in Section 2.3.1 for MREFC and in Section 2.7 for non-MREFC projects. Two primary purposes are served by development of an IMP:</p> <p>4.2.2-1 The CEP should be tailored to address all relevant stages and costs of the facility lifecycle, from Development and Design through Construction, Operation, and <i>Termination</i> /Disinvestment. For example, the expected level of funding needed for the Operations Stage should be identified at the Conceptual Design Review. Operating costs estimates will be updated throughout the design and construction process as further discussed in the Concept of Operations Plan developed as part of the PEP described in Section 3.4 of this manual.</p> <p>4.2.2-2 For most large facilities projects, funding is derived from the appropriate NSF budget account depending on the Stage: typically the Research and Related Activities (R&amp;RA), Education and Human Resources (EHR) or MREFC account. Barring documented exceptions, the R&amp;RA (and possibly EHR) account will be used to fund the Development, Design, Operations, and Termination Disinvestment Stage costs. The MREFC account will be used to fund construction, acquisition and commissioning costs as part of the Construction Stage.</p> <p>4.2.4-1</p>	<p>Addressed in this version. Related to Comment C-2. The use of the terms ‘termination’ and ‘closeout’ were revised to conform to the 2 CFR language for award lifecycle and FAR definitions. Term definitions were added to the lexicon.</p>

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				<p>If anticipated by NSF and as discussed in Section 2.6 of this manual, proposals will be requested to address partial or full termination disinvestment of the facility during the award period, including property decommissioning and disposition costs and other costs related to employee separations. It is incumbent upon the Recipient to ensure their operations proposal is complete, appropriate, and reasonable.</p> <p>4.5.1-1 The Recipient is responsible for complying with the reporting requirements contained in the award instrument (e.g., technical and financial reporting), this manual, and in the Proposal and Award Policy and Procedures Guide (PAPPG) – particularly with respect to property management and final reporting and closeout requirements for termination of the award. The Recipient is also responsible for providing internal oversight of its own activities.</p>	<p>Addressed in this version. Related to Comment C-2. The use of the terms ‘termination’ and ‘closeout’ were revised to conform to the 2 CFR language for award lifecycle and FAR definitions. Term definitions were added to the lexicon.</p>
C-47	2.1.6.1 - Integrated Project Team (IPT)	NSF (OISE)		<p>Regarding specific LF projects, please consider adding an OISE program officer to each LF Integrated Project Team (IPT). This OISE PO could provide country-specific guidance on international partnership for a particular MREFC project, and as necessary, facilitate coordination with international partners during the design-to-execution phases of the project. If such a role for OISE is agreeable to LFO, then, a suggested edit to the LFM is:</p> <p>Sec.2.1.6.2 - Integrated Project Team (IPT) - “Comprised of NSF personnel with knowledge</p>	<p>Addressed in this version. Description of IPT revised to align with the SOG. OISE is included as part of the strategic membership.</p>

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				and expertise in areas related to the scientific and technical, award management, international partnership, and strategic aspects of a particular MREFC project.”	
C-48	2.1.6.3 IPT	NSF (GEO/ OCE)		Minutes of the meeting should be required and communicated to assurance functions.	No change. Addressed in internal guidelines (SOG).
C-49	2.1.6.3 Coordinating Advisory Bodies	NSF (GEO/ PLR)	Page 2.1.6-17 “The IPT is chaired by the PO. See Figure 2.1.6-4. Members are appointed by the ADs or Office Heads, in consultation with the PO. Appointments shall be for the duration of the project or until new appointments are made by the Office Heads. The PO will convene the IPT at least quarterly to discuss any project-related issues.”	bypasses DD who is held accountable and supposed to facilitate communications...  correction to “until new appointments are made by the <i>ADs or</i> Office Heads	Addressed in this version. Language revised to include DD’s and AD’s.
C-50	2.1.6.4 MREFC Panel & DRB	NSF (GEO/ OCE)		What are the deliverables from the MREFC panel with respect to assurance and prioritization? Is the facilities plan or budget request timeline prioritized by the MREFC panel? Is there a charter for the MREFC panel that describes functioning and quorum voting, etc.? I think the information in Appendix B may not suffice.	No change. This is an internal NSF process and codified in internal guidelines (SOG).

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-51	2.1.6-2	NSF (OISE)	Membership of LFWG	We also request nominating to the overall Large Facilities Working Group the OISE program officer who is assigned to be OISE liaison to LFO. This is distinct from the OISE participation on specific IPTs (above). As part of the LFWG advisory group, the OISE PO could provide big-picture input regarding international cooperation, US foreign policy, etc., related to NSF Large Facilities.	No change to LFM. Agreed. LFWG modified to include OISE as part of the strategic membership.
C-52	2.2.2 Approvals	NSF (GEO/ OCE)		What is the format for the approvals noted in this section? (letter, email, as described by another policy, etc.) Appendix B has some information, but not all.	Addressed in this version. Language revised for written approvals.
C-53	2.2.2	NSF (OGC)	<ul style="list-style-type: none"> <li>Are there any conflicts of interest or other major challenges regarding this project that the Director needs to be aware of?</li> </ul>	The attached bullet describes exiting from development to design stage. The “planning” section states that the Director should be notified of any COI. My question is what sort of COI is this referring to? Her COI with the project if any? The COI of another NSF staff member?	Addressed in this version. Language revised. Intent is project challenges other than technical.
C-54	2.3.1.1	NSF (GEO/ OCE)		This section should include a concept of operations. The basics of how the facility is envisioned to be operated and the user requirements as well as the system requirements. This is more specific and a necessary addition as it serves to start user/operator requirements that could be different than a “community outreach” section of the PEP. The User requirements are often omitted from the system requirements or science objectives and missed. This is especially important for cyberinfrastructure projects. (basic systems engineering – above)	Addressed in this version. Added bullet for concept of operations.  As noted in response to Comment number C-62, comments associated with system engineering will be assessed and addressed in a later version.

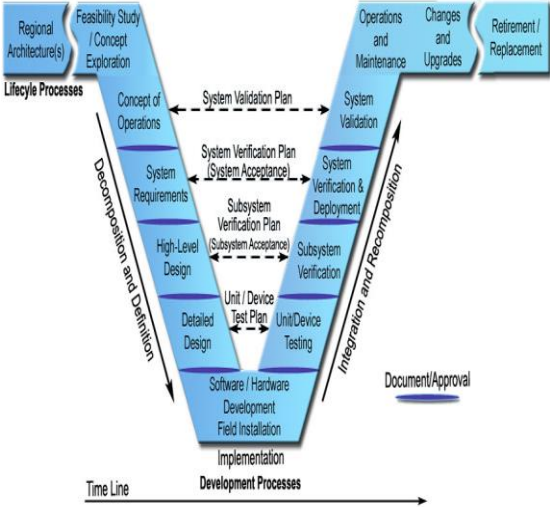
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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-55	2.3.2	NSF (GEO/ OCE)		How does the no cost overrun policy apply to operational costs? If the ops budget changes, what is the process to right size the scope to assure that the facility being built can be operated to cost? This is a lessons learned from past projects. How is an operational budget change communicated to the MREFC panel & DRB post-approval?	No change. Policy does not apply to operations. Operations equals proposed budget, not a total project cost (TPC).
C-56	2.3.2	NSF (GEO/ OCE)		The design process does not include text on design/build vs design/bid/build and how this is handled with respect to project readiness.	Will be assessed and addressed in later version after SOG is complete.
C-57	2.3.2	NSF (GEO/ OCE)		NEPA -- Is the FNSI needed or just commencement of the process? In some cases permits involve a lot of risk. How should this be addressed in the text?	No change to the LFM. FNSI is a result of an EA and not applicable to all projects. Section 5.5 and Fig 2.1.4-1 indicate that environmental impacts need to be understood by PDR.
C-58	2.3.2	NSF (GEO/ OCE)		What are the requirements for operations budget reviews during the construction phase? How does NSF assure that cost growth is managed along with scope and TPC?	Addressed in this version. Discussion on the Concept of Operations Plan was added including the requirement for an estimate of annual operations and maintenance costs, staffing levels, and other activities.
C-59	2.3.2 PDR phase	NSF (GEO/ OCE)		When do the operations costs or ceilings get defined? How are they developed and iterated?	No change required. Figure 2.1.4-1 identifies it is iterated at each stage. Internal process that needs assessment.
C-60	2.3.2.5 NSF Director's Recommend ation	NSF (GEO/ PLR)	Bullet 5: "The NSF Director is satisfied that external participation in all phases of the project (other agencies, international and/or private sector entities, etc.) is well planned."	This is why Rick Spinrad and others went to Antarctica.	No change. Comment is an observation statement.

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C-61	2.3.3	Lockheed Martin (AIMS)	<p>Page 2.3.3-1 4<sup>th</sup> bullet and 2.3.3-2 footnote comment: A fully implemented PMCS, including a final version of the resource-loaded schedule and mechanisms for the project to generate reports – using the Earned Value Management System (EVMS)<sup>1</sup> – on a monthly basis and use them as a management tool. Path dependencies, schedule float, and critical path are defined; and footnote <sup>1</sup> During construction, progress should be tracked and measured using the Earned Value method (this method is required by OMB in <i>Planning, Budgeting, Acquisition, and Management of Capital Assets, OMB Circular No. A-11 (2014)</i>. A discussion of Earned Value is included section of Section 8, Guidelines for Earned Value Management.</p>	Will this be a requirement for LM which we will then flow down to our subcontractors?	<p>Addressed in this revision. Footnote was expanded to clarify. “<sup>1</sup> During construction, progress should be tracked and measured using the Earned Value method (this method is required by OMB in <i>Planning, Budgeting, Acquisition, and Management of Capital Assets, OMB Circular No. A-11 (2014)</i>). This is a requirement for the award recipient who acts as a prime contractor. Secondary contractors to the prime are not required to follow formal EVMS, but must be able to provide the appropriate inputs to the EV reporting. A discussion of Earned Value is included section of Section 5.8, Guidelines for Earned Value Management, currently under development.”</p>
C-62	2.3.3.1 Bullet 2, requirements	NSF (GEO/ OCE)		<p>The Manual really needs a systems engineering description of this bullet and the relationship to Conops, requirements, derivation, acceptance (test, integration, verification, validation, commissioning and Operational Definition. Here is an example of what is needed:</p>	<p>Will be assessed and addressed in later version.</p>

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
				 <p>The manual should utilize some sort of INCOSE process and break down the process to address the development, construction and transition processes more clearly than “functional requirements”.</p> <p>Given the unique nature of NSF projects, I do agree that in the conceptual stage there needs to be traceability from the science question(s) or science to the infrastructure conceptual design. In some cases, I think NSF should think about getting external technical review on the traceability before starting the investment in projectizing as this is very expensive and can cause a project to develop without the proper scientific input and prioritization. I would also recommend that projects get a technology readiness level assessment at the traceability (pre-concept design review stage) and get</p>	<p>Will be assessed and addressed in later version.</p>



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				<p>scientific input/external review at that point as well. The definitions of “industrialization, non-recurring engineering, subsystem development and their relation to technology and engineering readiness need to be included in the Large Facilities Manual more explicitly.</p> <p>I recommend adaptation of INCOSE processes into facility guidance and the Manual. This is a lesson learned at NSF that needs to be incorporated into the Manual from multiple projects.</p>	Will be assessed and addressed in later version.
C-63	2.3.3.2	NSF (GEO/ OCE)		<p>“Fit up” is not a modern term. Use an INCOSE lexicon for awardees (interfaces, ICDs, ICAs, etc.). This is a lessons learned. Again, the terminology with respect to systems engineering, requirements, IVT and commissioning is not modern or to generally accepted engineering practices. This is a lesson learned and has been an FAQ at many design reviews.</p>	Will be assessed and addressed in later version.
C-64	2.3.3.2 FDR	NSF (GEO/ OCE)		<p>Quality and Safety Management should be clearly articulated at FDR and integrated into schedule and cost baselines. Change the wording of “plans” to management and staffing policies, procedures and staff. This is a lesson learned.</p>	Addressed in this version. Added “Management; integrated into the resource loaded schedule”.
C-65	2.3.3.3	NSF (GEO/ OCE)		<p>Awardees are responsible for conducting cost analysis and delivering it to NSF for review. At what step in the process is the cost analysis from the Awardee delivered and reviewed? It should be delivered with every cost estimate at every design review. Where is the cost analysis standard for the Awardee provided in the Manual?</p>	No change. Response made directly to Commenter. Cost analysis is done by NSF and explained with new 4.2 section.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-66	2.4.1	NSF (GEO/ OCE)		I think there should be more language to describe the baseline maintenance process we expect during construction. The re-plan definition seems to allow Awardees to allocate schedule contingency without tracking variances to original plans. This is also an EVM comment. I think more guidance is needed on this in the Manual.	Addressed in this revision. Language revised throughout Section 2.4.1 to clarify the similarity between re-planning and use of cost and schedule contingency. A sentence was added to indicate the use of EVMS to track progress and variances.
C-67	2.4.1	NSF (GEO/ OCE)		Is the OMB requirement to report any impact to a science requirement in the monthly report still valid?  How is scope management (descoping) included in the baseline maintenance section?	Will be assessed and addressed in later version.  Addressed in this version. Language throughout section 2.4.1 was revised to include discussion of scope management as part of re-planning or re-baselining.
C-68	2.4.2	NSF (GEO/ OCE)		The Commissioning section does not use modern engineering language. I recommend incorporating INCOSE language and aligning the commissioning strategy with the acquisition strategy. The commissioning plan should be as detailed as the Final Design and acquisition strategy allows. If the plan is allowed to float to year 5 of a 6 year project, it will not have the proper upfront time and budget allocation. Lesson learned on many NSF projects. Too often weak definition of upfront IVT/commissioning results in transfer of costs and risk to the O&M phase. The year 1 O&M budget needs to be clearly reviewed based on the IVT/commissioning at FDR. Year 1 ops budgets should be higher than later years as this is a best practice. In some cases Year 1 should be 20-30% higher than Year 2.	Will be assessed and addressed in later version. Partially addressed in this version. Additional revisions will be assessed and addressed in a later version. References to commissioning plans were replaced by a suite of documents listed in the PEP: Integration and Commissioning, Acceptance Plans/Operational Readiness, Transition to Operations, and Conduct of Operations. Bulleted list of items to be included in the 2.4.2 'commissioning' plan was relevant only to an operations plan and thus was moved to section 2.5.1 Operations Management and Oversight.

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C-69	2.4.2 Commissioning Plan	NSF (LFO)	In LFM (15-89) Section 2.4.2, Commissioning Plan, in the second sentence which reads “The scope of commissioning work is to undertake initial operation of the facility and bring it up to the design level of operation in accordance with the IMP,”	I suggest striking “IMP” and replacing it with “PEP” or if we have the latitude to revise the entire sentence, replace it with: “Commissioning verifies that the substantially complete facility operates over its full range of capabilities as specified in final design documents.”	Addressed in this version. Revised sentence to: “Commissioning verifies that the substantially complete facility operates over its full range of capabilities as specified in the final design documents.”
C-70	2.4.3	NSF (GEO/ OCE)		Project Close out costs must be part of the TPC. Therefore this section needs to be completed and the requirements of this section should be included as sections in the PDR and FDR sections. Is project close out an MREFC or R&RA cost? This interpretation should be in the policy.	Will be assessed and addressed in later version.
C-71	2.5.1	NSF (GEO/ OCE)		There is standard award language that indicates the Program Officer provides the Awardee with Annual Work Plan and Annual Report Guidance. I think these sections should perhaps reference the Awards as the language provided in these sections provides a perception that the AWP and Annual Report are “lightweight” as compared to the PEP. In some cases, the AWP will have a framework that is similar to the PEP and incorporate more user and science engagement.	Addressed in this version. Language revised to clarify the requirements for AWP and Annual Report. The PEP is for the construction stage.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-72	2.5.1	NSF (GEO/ OCE)		Ops Reviews should review the Operations Plan or Manual that the MREFC effort produced. It might also be helpful to review GPRA at the review and additional metrics for facility performance that should be established via an IEEE Conops (if systems engineering language is incorporated). This is not burdensome, it is necessary for the management to have a set of deeper metrics than GPRA to self-assess facility operations and conduct prudent management.	Will be assessed and addressed in later version.
C-73	2.5.1 Operations Management and Oversight	NSF (GEO/ PLR)	1 <sup>st</sup> sentence: "Although NSF does not directly manage the operations of the facilities it supports (with the exception of Antarctic activities),..."	"Antarctic and Arctic"	Addressed in this version. "Arctic" was added.
C-74	2.5.2	NSF (GEO/ OCE)		The NSB Recompensation statements and policies should be cross referenced in this section. The IMP should be updated at the recompetete stage and included in this section.	Addressed in this version. This Section and NSB policy is referenced from Section 3.5.2 Procedures for Renewal or Recompensation of an Operating Large Facility with a footnote. Edits regarding IMP will be done in later version after SOG IMP implemented.
C-75	2.6	NSF (GEO/ OCE)		Divestment is covered in two places 2.6 and 3.1.1. The discussion on how to manage divestment prior to defining divestment is awkward in the Manual, especially since in section 3.1.1 you state it as undefined. I recommend in this version that you just the TBD in 2.6 as well so that the reader does not have to search ahead for no definition.	Addressed in this version. Language in Sections 2.6 and 3.1 revised to clarify the need for divestment plans and to call out the fact that the section with guidelines (3.6) is under development.

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				Since the divestment strategy influences construction strategy, I recommend getting it defined and reviewed up front. For example modularization, segmentation and incremental build might be a necessary construction strategy based on divestment (LIGO I and LIGO II, etc.).	Will be assessed and addressed in a later version (Section 3.6 Guideline for Divestment plans).
C-76	3.4.1	NSF (LFO)	10.2 EVMS	While meeting with Battelle two weeks ago it became apparent that brief description in LFM Section 3.4.1, 10.2 EVMS, may or may not cover a description what ANSI/EIA 748C describes in Section 3.7 as the "Earned Value Methodology" but others may describe as "progressing rules." Although one might argue that the word "processes" covers this, adding "progressing rules" to the description may better highlight an area where the sponsor and recipient need to come to some agreement.	Addressed in this version. Language revised in Section 2.3.3.2.
C-77	3.4.1 List of the Essential Components of a Project Execution Plan, Table-1	AURA	"up-scoping opportunities"	Section 4.4 of the components table "Scope Management Plan and Scope Contingency" includes "up-scoping opportunities" remarks. The intent of this phrase should be clarified, as it is unclear if this relates to the recovery of prior de-scopes or allows true scope increases.	Addressed in this version. Language added to clarify in-scope enhancements and further definition of the Scope Management Plan in Section 2.4.1.
C-78	3.4.1-1	NSF (GEO/OCE)		The Project Development Plan elements should be made clearer as they are foundational to cost estimation. The CEP development must be in the PDP	Addressed in this version. PEP components clarified and Section 3.4.2 reserved for future additional guidelines for PEP. Section 4.2.2.1 revised to clarify CEP requirements.
C-79	3.4.1-1	NSF (GEO/OCE)		The PDP should include a section on systems engineering and SEMP	Will be assessed and addressed in later version.

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C-80	3.4.1-1	NSF (GEO/ OCE)		The PEP or PDP should include the SOP requirements from the NEPA documentation. These are sometimes expensive cost drivers	Addressed in this version. Language added to Table 3.4.1-1 PEP components. Revised language in Section 5.5 and will be further assessed after NSF internal guidelines are finalized.
C-81	3.4.1-1	NSF (GEO/ OCE)		The Community Outreach should include the SOPs created by the environmental documents and a section on media relations. There are standard processes used for large construction efforts across NSF.	Will be assessed and addressed in later version. As part of an EA there is public comment period, need to review the NSF internal guidance to determine edits, if any, for PEP contents or other parts of LFM.
C-82	3.4.1-1	NSF (GEO/ OCE)		Sections 7 and 15 are really the same – see the systems engineering “V” above. I recommend leaving Operations in 15 and moving the IVT to Systems Engineering.	Will be assessed and addressed in later version.
C-83	3.4.1-1	NSF (GEO/ OCE)		Section 5 – Staffing – some projects may require an indirect review or Staffing Integration management review. I think it is important to highlight the integration between back and front offices and assure that the proper direct and indirect support are clearly articulated. This goes to a description of what each indirect rate applies at each institution. This will assure that costs assumed as covered by indirect are actually covered and that the project, NSF and reviewers are clear on cost allocations. Sometimes what is in the rate, does not get applied in practice and this should be resolved for projects up front.	Addressed in this version. Language added to Section 4.2 requiring the application of indirect cost rates be articulated in the CEP and BOE.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-84	3.4.1-1	NSF (GEO/ OCE)		I recommend that section 13 be named Environment, Safety and Health (ES&H). NEPA is a continuous process and needs to be managed during construction with safety and health. Usually they are in one scope....after siting....	Addressed in this version. Added “Environmental” to the PEP-13 in Table 3.4.1-1.
C-85	3.4.1-1	NSF (GEO/ OCE)		16.3 – Conops is part of the PDP and systems engineering effort, not part of project close out.	Addressed in this version. Conops plan was moved to be under Systems Engineering (PEP 7.5) table 3.4.1-1.
C-86	3.4.1-1	NSF (GEO/ OCE)		Divestment is a construction requirement and needs to be in the PDP/systems engineering sections (up front, like conops)	Addressed in this version. Divestment Plan was moved to be under Systems Engineering in the PEP element table 3.4.1-1.
C-87	3.4.1-1	NSF (GEO/ OCE)		The PEP should have a section on deliverables. This should include: 1. Technical Data Package (standards, plans, specs, documentation) 2. Manuals for Operations (Operations Manuals) 3. Standard Operating Procedures 4. Cybersecurity and COOP 5. Data specifications and data lifecycle management specs/procedures. The deliverable section should also assure the delivery medium (CDs, paper, website) are specified. The MREFC and R&RA acquisition strategy maps to this statement as the TDPs and Ops Manuals will be different for a turn-key vs deliver only. This section should form the basis for funding allocation and auditing.	Will be assessed and addressed in later version.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-88	3.4.1-1	NSF (GEO/ OCE)		Change from divestment to downsizing, decommissioning and/or divestment. Request that appropriate high level plans, design requirements and schedule/cost are attached to the strategy. What happens if NSF needs to cut operations costs and downsize during the construction period? What are the mid-construction off ramps to address this situation?	Will be assessed and addressed in later version.
C-89	3.4.2	NSF (LFO)		Section 3.4.2 refers to an internal NSF guidance document "Guidelines for Development of Project Execution Plans for Large Facilities." Where can the document be found? Is this even useful and still worth sharing with Programs internally at NSF? Should this reference be deleted from the LFM and become a SOG?	Addressed in this version: deleted unnecessary references to any internal NSF guidance. Adjusted the footnotes and references to internal documents and/or included direction to contact PO. Indicated that the Guidelines for the PEP are in development in Section 3.4.2. Left references to specific sections of PAM, as directions to the PO. Common in Sec 4.2, among others.
C-90	3.4.2-1	Lockheed Martin (AIMS)		Can we get the additional details NSF PO expects to see in the PEP?	Will be assessed and addressed in later version. Section 3.4.2 "Detailed Guidelines for Development of Project Execution Plans for Large Facilities" LFM is under development.
C-91	3.5	NSF (GEO/ OCE)		Add data management plan in place as an assessment.	Addressed in this version. Added a bullet for the data management plan to be in place and ready for operations.



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C-92	3.5	NSF (GEO/ OCE)		This section is “light” on proposal preparation requirements. If NSF requires that proposals meet GAO cost requirements, then this section needs to encompass the GAO requirements (WBS, set of requirements, etc., etc.). At first pass, the Ops Plan would need to have the same requirements as the PEP for MREFC.	Addressed in this version in Section 4.2.
C-93	3.5	NSF (GEO/ OCE)		I suggest you change the title of this section to Management & Operations or Operations & Management. This is the conventional term.	Addressed in this version. “Maintenance” in title of 3.5.1 was changed to “Management”.
C-94	3.5.2	NSF (GEO/ OCE)		Does the re-comp guidance map to the NSB guidance provided in November 2015?	Will be assessed and addressed in later version.
C-95	3.5.2	NSF (GEO/ PLR)	Page 3.5.2-1 Footnote 1 “Refer to the footnotes in Section 2.1.6 and 2.7.1 on award thresholds requiring DRB and NSB approval.”	Did not find footnotes with info in 2.1.6	Addressed in this version. Removed reference to 2.7.1 and clarified statement pointing to footnote in 2.1.6.
C-96	4.2.1	Lockheed Martin (AIMS)	Pg 4.2.1-2	NSF requires 90-180 days to do a cost analysis before we progress to the next design phase, yet the figure 4.2.1-1 reflects this analysis is done post FDR but prior to construction award. 1 – It sounds like NSF intends to perform this prior to FDR, is this accurate and if yes why the deviation from the LFM. (PJJ Comment: It is my assumption that in order to complete a cost analysis post FDR but prior to award of construction (CLIN 005) we will need to have our subcontractor proposals received, down select, site visits, final proposals, orals, negotiations and LMs analysis. After all of that, then NSF will start their analysis of the LM submittal which will take up to 180 days. It will	No change. Response made directly to Commenter. It is provided as a notional timeline for planning purposes. Timeline can and has been adjusted for projects. NSF and the Recipient should put together a timeline that supports all project needs. NSF typically requires 90 to 180 calendar days to complete a full review and detailed cost analysis of a proposal budget prior to proceeding to the next design phase or prior to award for operations or construction. This time will vary depending on

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
				take LM 30 days to finalize our review and analysis, NSF 180 days to do the same. Then at least 30 more days for the NSF to issue the modification to our prime contract and 20 days for LM to process the award once funding has been received – this is 260 days or 8.6 months. This is an extraordinary amount of time for construction proposal validity period. Three months is often at the high end of a validity period range. However, extending this period will cause subcontractors to price in additional risk due to cost of materials, resource availability, etc.)	project scope, cost, risk, complexity, and relative importance. No, NSF does not intend to perform this prior to FDR.
C-97	4.2.1	Lockheed Martin (AIMS)	Pg 4.2.1-2	Does NSF expect to do a cost analysis of our subcontractor proposals (IAW 4.2.1) prior to award of construction?	Addressed in this version. Added bullet - For proposals that contain a subaward(s), each subaward must include a separate budget justification. Response also made directly to Commenter.
C-98	4.2.1 Cost Estimating and Analysis Overview, Fig. 4.2.1- 2	NSF (OIG)	When submitting packages for cost analysis, Recipients must submit the following as a minimum: Cost Estimating Plan per Section 4.2.2.1. "Cost Model Data Set" per Section 4.2.2.1. Reports and Proposals per Sections 4.2.2.2 and either 4.2.3.2 or 4.2.4.2. The Work Breakdown Structure (WBS) and WBS Dictionary per either Sections 4.2.3.3 or 4.2.4.3.	Please clarify whether the steps apply to facilities in construction, operations, or both. For example, it was unclear in the operations section whether WBS is required for operations awards or not.	Addressed in this version– Sections 4.2.1 and 4.2.2 are applicable to both construction and operations. WBS is for both construction and operations. Added Section 4.2.2.7 Work Breakdown Structure and revised language throughout sections 4.2.1 through 4.2.4 to clarify.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-99	4.2.1 Cost Estimating and Analysis Overview	NSF (GEO/PLR)		Recommend this section be scrubbed to ensure inclusion of contract mechanism & CO involvement	Addressed in this version. Added CO wherever the G/AO was mentioned and revised caption for figure 4.2.1-1.
C-100	4.2.1 Cost Estimating and Analysis Overview	NSF (GEO/PLR)	Figure 4.2.1-2	Not apropos to the Antarctic support contract	Addressed in this version. Figure deleted. New figure to illustrate the NSF cost analysis process.
C-101	4.2.2	Lockheed Martin (AIMS)	Pg 4.2.2-8 Management Fees	This needs to be clarified for situations involving contracts. This addresses cooperative agreements. Contracts need to be addressed differently or its specific exclusion noted in the IMP to avoid confusion (see Pg 2.1.3-1).	Addressed in this version. Language regarding fees has been changed. See Section 4.2.2.5.
C-102	4.2.2 Cost Estimating & Analysis, 4.2.2-10	NSF (OIG)	As a term and condition of the award, the recipient will be required to provide information (typically annually) on the actual use(s) of the management fee.	We suggest NSF more definitively outline the frequency of submitting management fee data. We suggest annually instead of "typically annually".	Addressed in this version. Language regarding fee has been changed. See Section 4.2.2.5.
C-103	4.2.2 Cost Estimating and Analysis Process, 4.2.2-10	NSF (OIG)	The LFM does not require the auditee to submit a written assertion of need that details all sources of revenue, and examine all federal and non-federal sources of revenue for each awardee in determining whether a management fee is necessary and warranted.	We suggest NSF require the auditee's proposal involve a full disclosure of all financial resources and other sources of income available to cover unallowable expenses.	Addressed in this version. Language regarding fee has been changed. See Section 4.2.2.5.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-104	4.2.2 Cost Estimating and Analysis Process, 4.2.2-10	NSF (OIG)	The LFM lists appropriate uses of management fee stating, "Examples of potential appropriate needs include ....and financial incentives to obtain and retain high caliber staff."	Our review of management fee uses at large facility awardees highlighted examples of "incentives," including significant signing bonuses and payment for private school tuition of employees' children. The use of management fees for these types of expenses may be questionable to taxpayers. We suggest NSF consider giving examples of "appropriate" financial incentives.	Addressed in this version. Language regarding fee has been changed. See Section 4.2.2.5.
C-105	4.2.2 Cost Estimating and Analysis Process, 4.2.2-10	NSF (OIG)	The LFM does not address whether management fee should be captured under a separate line item in proposals.	We suggest NSF require management fees to be submitted as a separate line item in its future NSF proposals, rather than including them under a category of allowable cost.	Addressed in this version. Language in Section 4.2.2.4 revised to indicate Fee to be included under G.6 – Other.
C-106	4.2.2 Sample Project Management Control System Flow Chart, Fig. -1	AURA		Regarding Risk Analysis Tools, the flow chart only shows only one approach; Monte Carlo Simulations. We recommend that other approaches be documented (e.g. bottoms up methodology using Cost, Schedule and Technical risk factors)	No change. This figure is a sample. Monte Carlo is considered a “gold standard”. Other methods usually does not include all possible correlations and outcomes for impacted activities from a single risk. See Section 5.2.8 for more on quantitative risk analysis.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-107	4.2.2.1 Cost Estimating Plan, 4.2.2-1 and 4.2..3-2	NSF (OIG)	<p>For construction awards, the CEP must explain how the Recipient will follow "The Twelve Steps of a High-Quality Cost Estimating Process" from the GAO Cost Estimating and Assessment Guide.</p> <p>Recipients are required to follow the best practices within the GAO Cost Estimating and Assessment Guide and GAO Schedule Assessment Guide.</p> <p>This is not called out as a requirement in the operation's estimates section of the LFM.</p>	<p>Please clarify whether the GAO Cost Estimating and Assessment Guide is a <i>requirement</i> for facilities in construction, operations, or both. On pg. 3.5.1-1 in the operations plan section it states "Note that cost estimating should follow the Government Accountability Office (GAO) Cost Estimating Guidelines, per Section 4.2."</p> <p>However, 4.2 is unclear what applies to construction and what applies to operations. In addition, while the construction section requires a statement from the awardee that they followed the GAO Cost Estimating and Assessment Guide the same requirement is not made for operations.</p>	<p>Address in this version. Language in Section 4.2.2.1 was revised to add clarity. The GAO guide applies to the facility lifecycle (construction and operations) but then addresses primarily construction.</p>
C-108	4.2.2.2 Relevant Guidance and Reporting Formats	NSF (OIG)	<p>Budget contingency should also be presented as a part of the total amount of Other Direct Costs and included in section G.6 on the standard NSF budget form. Budget contingency budget estimates should be developed in accordance with Sections 4.2.5 and 5.2 of this manual. Budget contingency and allocations of contingency will be called out in the Cooperative Support Agreement by the GIAO under the "Contingency" section, based on information provided in the negotiated budget justification.</p>	<p>Comment: The new Large Facility Manual outlines how NSF awardees should develop contingency in Sections 4.2.5 and 5.2 including development of a risk management plan, tying contingency to WBS elements, use of Monte Carlo simulations etc. We suggest 4.2.2.2 be clear that the proposal budget should include adequate documentation to support that the contingency amounts were developed in accordance with 4.2.5 and 5.2 and are supportable.</p>	<p>Addressed in this version. Following was added to 4.2.2.4 under Other Costs: "The proposal should include adequate documentation on the basis of estimate for the contingency amounts, indicating that they were developed in accordance with 4.2.5 and 5.2 and are supportable."</p>

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-109	4.2.2.2 Relevant Guidance	NSF (MPS)	“Proposed budgets must comply with the applicable federal regulations, as implemented by NSF in the Proposal and Award Policies and Procedures Guide (PAPPG)”. Recipients are required to follow the best practices within the GAO Cost Estimating and Assessment Guide and GAO Schedule Assessment Guide. Recipients must note any departures from these GAO guides and explain their rationale.”	Section 4.2.2.2 “Relevant Guidance” needs editing. The first part doesn’t need saying – as NSF never tells proposers that they do need to comply with federal regulations. As the title is “Guidance”, instituting the requirement to follow best practices restricts flexibility that can be potentially beneficial in a scientific research environment. The logic of the paragraph is further tangled when it concludes that the recipients apparently are not required to adhere to best practices but can instead explain their rationale for deviating. (I support that flexibility – but the logic of the paragraph is a muddle and needs to be rewritten coherently.)	Addressed in this version. Language in Section 4.2.2.2 revised to provide clarity.
C-110	4.2.2.2 Relevant Guidance & Reporting	NSF (GEO/ PLR)		Be sure language in section is inclusive of contract mechanism; comply with FAR...; cognizant CO....	Addressed in this version. Language revised to include CO.
C-111	4.2.3.2 Cost report	NSF (GEO/ OCE)		I recommend having the report signed by the AOR and PI prior to submission. I also recommend that the Awardee Cost Analysis of the construction report be an appendix of the cost report	Will be assessed and addressed in later version.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-112	4.2.2.3 Funding Sources and Award Instruments	NSF (GEO/PLR)	“All lifecycle Stages are funded through the appropriate award instrument (typically a Cooperative Agreement (CA)) between NSF and the managing organizations (i.e., the Recipient). Infrastructure utilization is typically supported through grants (R&RA or EHR) funded by NSF and/or other agencies to conduct research and education activities using the facility.”	If contracts are not referred to, it sets AIMS up for ongoing confusion	Addressed in this version. Sentence modified to “All lifecycle Stages are funded through the appropriate award instrument (a Cooperative Agreement (CA) or a contract agreement) between NSF and the managing organizations...”  Added statement to be verified and finished “For projects to be funded through contractual agreements rather than assistance awards), the PO recommends to award or decline in accordance with the proposal processing procedures contained in...”
C-113	4.2.2.4	Lockheed Martin (AIMS)	Pg 4.2.2-7 Section 4.2.2.4	G.5: Clarification on the reference to uniform guidance, 2 CFR section #200.331 is incorrect so needs to be fixed. GPO.gov says parts 305-399 are reserved. Would like clarification on intent of this reference or an alternate source document for its availability. <a href="https://www.gpo.gov/fdsys/search/pagedetails.action?collectionCode=CFR&amp;searchPath=Title+1%2FChapter+III%2FPart+304&amp;granuleId=CFR-2014-title2-vol1-sec200-331&amp;packageId=CFR-2014-title2-vol1&amp;oldPath=Title+1%2FChapter+III&amp;fromPageDetails=true&amp;collapse=true&amp;ycord=479">https://www.gpo.gov/fdsys/search/pagedetails.action?collectionCode=CFR&amp;searchPath=Title+1%2FChapter+III%2FPart+304&amp;granuleId=CFR-2014-title2-vol1-sec200-331&amp;packageId=CFR-2014-title2-vol1&amp;oldPath=Title+1%2FChapter+III&amp;fromPageDetails=true&amp;collapse=true&amp;ycord=479</a>	Addressed in this version. Language was added to indicate “Recipients of cooperative agreements” follow uniform guidance, 2 CFR section #200.331.  Addressed in this version. Following was added to Section 4.2: “For proposals that contain sub-awards, each sub-award must include a separate budget justification.”

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-114	4.2.2.4	NSF (GEO/ PLR)	B.3 – Graduate Students “Recipients should provide ..... Actual payroll data may not be available as these may be TBH positions.”	Define TBH	Addressed in this version. TBH stood for To-Be-Hired. Language changed to identify open versus filled positions.
C-115	4.2.2.4 & General	NSF (GEO/ OCE)		What is the hierarchy of compliance for documentation? Is it the supplemental info in this Manual or the PAPPG? Shouldn't the Awards Specialist be the person who is providing guidance on this matter (maybe via the Program Officer)?	Addressed in this version. Language revised to clarify the LFM supplements the PAPPG.
C-116	4.2.2.4 Suppl. Guidance for Construction & Operations Awards:	NSF (DFM)	4.2.2.4 Supplementary Guidance for Construction and Operations Awards:	Recommend adding specific PAPPG and/or Uniform Guidance references to the sub paragraphs. For example 4.2.2.4.ETravel: could reference the PAPPG section on Travel (Chapter II.C.2.g.(iv)) and/or perhaps 2 CFR §200.474.	Addressed in this version. Added reference to Chapter II.C.2.g in Section 4.2.2.4.
C-117	4.2.2.4 Supplementa ry Guidance for Construction and Operations Awards	AURA	"sub- awards"	To preclude confusion and to ensure consistency with Section 2.3.3.3 language, the word "sub- awards" should be replaced with "sub-awards and subcontracts" in both sub-sections G.5 and G.6 of Section 4.2.2.4. Given that the OMB Guidance addresses the terms "sub-awards" and subcontracts" separately, and noting that Section 2.3.3.3 of the Manual also addresses the terms separately, we suggest that Section 4.2.2.4 should read in the same manner.	Addressed in this version. Sub-awards was expanded to include sub- contracts in Section 4.2.2.4, G5, a note was added to explain the difference between sub-awards and sub-contracts in both this section and on page 4.4-1, and the two terms were added to the Lexicon.
C-118	4.2.2.5 Management Fee	NSF (MPS)		There is no discussion of performance incentives in the discussion of management fee. This has been used by NSF at times.	Addressed in this version. Language regarding fee has been changed. See Section 4.2.2.5.



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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-119	4.2.2.-7 Cost Estimating and Analysis Process, G.6-Other	NSF (OIG)	Budget contingency should also be presented as part of the total amount of Other Direct Costs and included in section G.6 on the standard NSF budget form.	The contingency estimates include indirect costs as well as direct costs, so it is not correct to categorize contingency as only "Other Direct Costs." Contingencies are required budget information for construction awards specifically listed on Form SF 424C (line 13) which NSF has agreed to use. We suggest that budget contingency have its own separate line item on proposed budgets to NSF.	Addressed in this version. Section 4.2 supersedes the use of SF 424C. Language added to Section 4.2.2.4 for contingency to be itemized separately under "Other Direct Costs".
C-120	4.2.2-9	NSF (MPS)	Prohibited use of management fees.	The NSF large facilities manual seems like a very odd place to look for this information. Obviously NSF needs to make these policies clear to awardees, but it might be better to direct the reader of the LFM, via a hyperlink or reference, to a more general source for information on this topic such as the CFR. That way the LFM will be current if the CFR is updated.	Addressed in this version. Language regarding fee has been changed. See Section 4.2.2.5.
C-121	4.2.3	Lockheed Martin (AIMS)	Pg 4.2.3-5 Construction Cost Book Detail and Supplementary Guidance	Is this how they want to see our subs proposals? Do subs need to submit BOEs for each labor category? Do they need to use NSF budget category codes? If yes, do we want to have the GC use A-I or just G-5 for all BOEs (this section refers back to section 4.2.2.4)? While I am not used to doing this for construction it is not impossible. It should be noted that in addition to BOEs there will be need a detailed cost estimate by WBS in excel to match up with each BOE. Requiring a General Contractor to provide this level of detail for each labor category seems unnecessary. This may be more appropriate for contracts that are not fixed price.	Addressed in this version and direct with commenter. The information is intended to supplement the GAO best practices, grant guidance in the PAPPG and industry standards. Language in Sections 4.2.2 and 4.2.3 revised to clarify.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-122	4.2.3.3	NSF (GEO/ OCE)		Emphasize that the WBS should be deliverable based. Emphasize activity based estimates versus LOE. To me, it looks like you are encouraging all IVT to be LOE. I think a statement on minimizing all LOE where practicable would be good guidance.	Addressed in this version. Section 4.2.3.4 indicates that the WBS should be deliverables based. Language added to 4.2.3.3: Level of effort tasks should be minimized for optimizing tracking of spending against budget and accomplishments against plan in the project Earned Value Management reports.
C-123	4.2.3.3	NSF (GEO/ OCE)		Define integration, verification, validation and test. Recommend that this get done at subsystem, system and system of systems levels.	Will be assessed and addressed in later version.
C-124	4.2.3.4	NSF (GEO/ OCE)		Is BOE refinement the Awardee Cost Analysis? It seems confusing.	No change. Response made to commenter. Cost analysis done by NSF.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-125	4.2.4 Cost Estimating and Analysis for Operations Awards, 4.2.4-1 through 4.2.4-4.	NSF (OIG)	The language in the construction estimate section includes: "The results of an independent cost estimate review will be factored into the NSF cost analysis. To ensure maximum usefulness of the review, it will generally be done as part of the Preliminary Design Phase." "There may be one or more years between the PDR and the start of construction, which is predicated on successful completion of the FDR."	The cost estimating and analysis for operations awards section is silent on whether independent cost estimate reviews will be done on operations awards. We suggest NSF require that significant operation awards go through an independent cost estimate review. We suggest NSF should make it clear when the independent cost estimate will be done so awardees can plan accordingly. Currently, the LFM says "will generally be done as part of the Preliminary Design Phase." If there are significant changes between the PDR and FDR how will NSF assess the new quotes and data? We suggest NSF conduct an independent review of all updated quotes. If the independent cost estimate review indicates significant issues, or significant time has elapsed between the PDR and FDR, how will NSF handle this? We suggest NSF request the recipient to update its estimates with current, accurate and complete cost data and also perform a follow-up review. We suggest that the large facility proposals go through the most stringent of the eight types of GAO independent cost reviews, an independent cost estimate.	Addressed in this version. Following language added to section 4.2.4: NSF may choose to perform independent cost reviews of operations awards based on a risk-based determination of need and review type.  No change needed. Words describe expectations for more refined estimates and a NSF cost analysis.  No change. Expect to do ICE, but don't need to require it for all.
C-126	4.2.4-1 figure	NSF (GEO/ OCE)		Education & Outreach budgets (EHR vs directorates). I recommend putting (if allowable) next to this term	No change. The figure is a sample.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-127	4.2.4-1 figure	NSF (GEO/ OCE)		This figure seems like it is encouraging LOE for Operations. I think there should be guidance on encouraging activity based estimates where practicable. This is a standard M&O panel recommendation and should be incorporated into the Manual	Comment addressed in this version – Changed the list under Science Operations from <ul style="list-style-type: none"> <li>2.0 Principal Investigator(s)</li> <li>2.1 Scientists</li> <li>2.2 Postdoctoral Scholars</li> <li>2.3 Students</li> </ul> to <ul style="list-style-type: none"> <li>2.1 Research Planning</li> <li>2.2 Experimental and Operations Support</li> <li>2.3 Data Analysis</li> <li>2.4 Calibrations and Data Quality</li> <li>2.5 Special Projects</li> </ul>
C-128	4.2.4-1 figure	NSF (GEO/ OCE)	Bullet: 5.0 Contingency	Reference the definition of Operations Contingency in the figure. In the section, hotlink the Uniform Guidance	Addressed in this version. Section 4.2.6 references the Uniform Guidance.
C-129	4.2.5.1 NSF Policy Positions, Point 4	NSF (OIG)	In support of NSF's "No Cost Overrun" policy, projects shall use a confidence level for contingency estimates between 70 and 90 percent (under a probabilistic approach).	We suggest NSF also state its expectation not only in terms of a confidence level, but also the precision of the estimate (so that NSF can say, for example, that it is 80% confident that the point estimate is accurate within a range of plus or minus 20%).	No change. The accuracy of the estimate changes with development of the design. The risk register includes uncertainty in the estimate for development of the budget contingency.

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-130	4.2.5.1 NSF Policy Positions, Point 5	NSF (OIG)	<p>NSF will hold budget contingency through project completion, in an amount up to 100% of the total NSF-approved contingency budget, until it can be justified for obligation.</p> <p>However, the LFM does not outline the procedures related to this new policy; for example, that the allocations would be included in the award notice and the CSA amended. As another example, the new SOG states the project would monitor budget contingency against both the NSF-approved contingency budget and the total allocation to date. This expectation should be made clear in the LFM.</p>	<p>We suggest describing the process and procedures related to this new policy of holding budget contingency, including explaining how the amount of contingency to be held by NSF will be determined. Also, indicate that the allocations would be included in the award notice and the CSA amended. Additionally, the new Contingency SOG (under Monitoring and Reporting of Budget Contingency) requires that the Project monitor budget contingency use against both the NSF-approved contingency budget and the total allocation to date. This expectation should be made clear in the LFM. We suggest the LFM be updated to align with the SOG, i.e., incorporate requirements from the new SOG as it relates to the recipient.</p>	<p>Addressed in this version. Added language to Item 3 on page 4.2.5-4.</p>
C-131	4.2.4.4 Operations Awards Proposals Supplementa ry Guidance	NSF (GEO/ PLR)	<p>“It is the Recipient’s responsibility to manage and maintain the NSF-funded facilities, equipment, and instrumentation used in the conduct research. However, NSF rarely maintains ownership to major research equipment and facilities it funds. This stewardship responsibility is necessary to protect the U.S. Government’s and the public’s investment in these unique research facilities.</p>	<p>With the exception of polar research station facilities, ...</p>	<p>Addressed in this version. Footnote added: “The polar research station facilities, for example, are exceptions.”</p>

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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-132	4.2.5.1	AURA	Provision 5 on Section 4.2.5.1 states "NSF will hold budget contingency through project completion, in an amount up to 100% of the total NSF-approved contingency budget, until it can be justified for obligation."	<p>It should be noted that the NSF has already approved the contingency budget through the rigorous exercise noted in Section 4.2.5, so clearly the contingency amount (in aggregate) has been justified. In addition, as per 'standard' Cooperative Support Agreements, the NSF requires "All proposed changes or proposed use of contingency will be made known to NSF (posted via a change control database or similar) prior to authorization." It would thus appear that justification before approval is already established. It is not clear what additional justification is required by this provision. Also, it is unclear from this language as to whether the contingency funds will be provided as part of the annual funding action consistent with the funding profiles already established as part of the NSF process. If it is not, then there would potentially be delays in timely receipt of funds for contingency events; this could increase project costs. This change could restrict the ability of the projects to proactively manage risk (since funds may not be available as planned when needed –this again would drive project costs).</p> <p>With regards to determining the amount to withhold, the burden to predict usage and the amount of contingency to allocate is a new administrative task that has the potential to drive new tools or new features to existing tools. The new NSF expectation for risk levels and project health to be verified through Monte Carlo analysis of integrated cost, schedule and risk plans is not immediately</p>	<p>Addressed in this version. Added language to Item #3 on page 4.2.5-4. For cooperative agreement contingency will be held by the Recipient per the Uniform Guidance as stated on page 4.2.5-2.</p>

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				suited to a time phased assessment. If historical performance and algorithmic models can be used this burden will be minimized but this policy is a noticeable increment in periodic administrative effort.	
C-133	4.2.5.1	NSF (MPS)		<p>NSF Policy position is inconsistent in stating that NSF has a “No Cost Overrun” policy and that that Directorates are responsible for the first 10% of the cost overrun. Item 5 says “NSF will hold budget contingency through project completion, in an amount up to 100% of the total NSF-approved contingency budget, until it can be justified for obligation.” This provision may skew the budget profile requested by a project towards higher award amounts in early years, since the year-by-year funding must exceed the sum of expenditures, obligations, and risks in a given year.</p> <p>A Project Manager, in dealing with the uncertainty in the level of availability of budget contingency, may overestimate its potential need in early years. How will NSF protect against this?</p>	Addressed in this version. Language added regarding mechanisms on page 4.2.5-1. Contingency use refers to budget allocations, not expenditures.
C-134	4.2.5.4 Contingency Planning and Assessment during Preliminary Design	NSF (OIG)	Use of rigorous probabilistic cost estimating methods that estimate confidence levels for the TPC (such as Monte Carlo methods based on probability distributions for risk) are preferred and NSF highly encourages application of these methods where practical.	We suggest NSF make it clear whether probabilistic cost estimating methods are, or are not, a requirement. If probabilistic cost estimating is not used, what are other acceptable methods?	No change. Not required, but industry standards driven by Section 4.2.5. Recipient would have to propose alternate method and NSF would have to approve.

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C-135	4.2.5.5 Development of the Contingency Use Process	NSF (OIG)	The CCB change request document, whether forwarded to NSF for approval or not, must have the minimum content requirements necessary to comply with relevant cost principles, as well as to maintain an audit trail. SEE SAMPLE CHANGE CONTROL REQUEST FORM. This form states "Cost control accounts may be included for traceability in the accounting system."	When use of budget contingency is requested, we suggest that NSF require the recipient to document in the Change Control Request (in Additional Documentation for example) which of its accounts the related charges will be recorded under to provide better traceability in its accounting system.	Addressed in this version. Sample CCB form change from "may" to "must" for inclusion of cost control accounts.
C-136	4.2.5.6 Contingency Planning and Assessment during Final Design	NSF (OIG)	At the Final Design Review (FDR) the budget estimate should be substantially based on externally obtained cost estimates (vendor quotes, bids, historical data, etc.). This added definition is expected to result in an increase in the project's estimated Budget at Completion (BAC) and a reduction in its budget contingency, while TPC remains constant. Also as part of the FDR, NSF assesses the methodology employed by the project to further refine its cost and contingency estimates including schedule and scope adjustments.	It would be useful if the contingency section explained whether the independent cost estimate at PDR would cover a review of contingency. Also, if contingency amounts are further refined between PDR and FDR, we suggest stating that NSF will review the revised amounts and specifying what type of review will be performed.	No change. GAO guide explains what different types of reviews would focus on. Expect all would review contingency.  No change. This is covered in Item 2 on page 4.2.5-4.  No change, addressed by 5.2.11.1 and explanation of NSF cost analysis in sections 4.2.



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Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-137	4.2.5.6 Contingency Planning and Assessment during Final Design	NSF (GEO/ PLR)	“This added definition is expected to result in an increase in the project’s estimated Budget at Completion (BAC) and a reduction in its budget contingency, while TPC remains constant.”	Why does better information necessarily translates to an expected increase??	Addressed in this version. Revised to “This added definition is expected to result in a change in the project’s estimated Budget at Completion (BAC) and in the accompanying budget contingency, while keeping the sum of the two at or below the NSB approved TPC.”
C-138	4.2.5.6 Contingency Planning and Assessment during Final Design	NSF (GEO/ PLR)	“All of this information would then factor in to the total project cost assessment being refined and evaluated by other divisions within NSF to make the initial construction award.”	should clarify what Divisions this is meant to signal (here and earlier in the document)	Addressed in this version. Revised to “evaluated by NSF”, eliminating reference to other divisions. The process is detailed elsewhere in this section.
C-139	4.2.5.7 Contingency Use and NSF Oversight during Construction	NSF (OIG)	Unexpended contingency funds may not be used to support operations or other out-of-scope activities.	We suggest that NSF clearly define scope and out- of-scope activities to avoid the possibility of subsequent disagreement between NSF and the recipients as to the meaning of these terms.	Addressed in this version. The scope is articulated in the WBS and scope management plan.
C-140	4.2.5.8	NSF (GEO/ OCE)		I think putting the “second level” WBS requirement may skew the scope delineation. I recommend that the Awardee propose a reporting level and the panels/NSF decide on the proper reporting.	Addressed in this version. “Second level” revised to “for each element at the level proposed by the recipient and agreed upon by NSF”

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-141	4.2.5.8	NSF (MPS)		Monthly reporting is a tricky issue – it should be done monthly but the paper work reduction act says we cannot compel an awardee to do so. This section entirely omits reporting technical status! It's only financial status! It is very important that the technical status be reported, accompanied by a narrative of progress relative to the plan and the factors that contribute to cost and schedule variances. The liens should be listed by date for a decision on whether to initiate a CCB action. A time-phased risk profile is helpful.	No change. Section 4.2.5 covers Budget Contingency Planning for the Construction Stage and this subsection includes the associated reporting requirements. Section 2.1.6 indicates that the monthly report summarizes both technical and financial status.  No change. Section 5.2.11.3 addresses Liens List in detail including anticipated decision date for action.
C-142	4.2.5.8 Reporting Require- ments	NSF (OIG)	At a minimum, the monthly report will include...(4) an updated change log indicating all contingency allocations ("puts and takes") and a "liens" list of projected amounts of possible future calls on contingency.	We suggest that NSF also request its recipients to provide a comparison of approved budget to actual use of contingency. This comparison could be the recipients' affirmation that they are using contingency funds as approved by NSF.	Addressed in this version. Language added to Item 3 on page 4.2.5-4 and reporting requirement on page 4.2.5-10.
C-143	4.2.5.9	NSF (GEO/ OCE)		What about in-kind contributions? How should these be handled?	Will be assessed and addressed in later version.
C-144	4.2.5-1 Change Control	NSF (GEO/ OCE)		There should be a 'from/to' table for re-budgeting and this should be encouraged in the Project Controls Implementation section (or designed). The table on the bottom of the sample form may not allow for clear traceability across accounts, only drawdown. The process for indirect allocation and financial officer sign off (prior to NSF sign off) should be included. This is a lesson learned. Indirect allocation from contingency can then get tracked as well (with proper from/to table)	Addressed in this version. Language in Section 4.2.5 revised including clarification of Reporting Requirements.

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-145	4.2.6 Budget Contingency Planning during the Operations Stage	NSF (MPS)		Needs a better title to avoid the implication that it is about including budget contingency in operation. It includes a paragraph about divestment that would benefit from its own heading.	Addressed in this version. Material not relevant to budget contingency during operations was moved to section 4.2.4 Cost Estimating and Analysis for Operations Awards and 4.2.4.1 Purpose.
C-146	4.3	NSF (GEO/ OCE)		Use INCOSE language to describe systems engineering and a "V" diagram. The SEMP should have an outline or set of criteria. The acceptance in the Quality program or subcontracts and acceptance at the system/subsystem performance should be clear. (acceptance to spec, acceptance to performance requirements with defined levels (user, witness, cert, etc.)	Will be assessed and addressed in later version.
C-147	4.4	NSF (GEO/ OCE)		There are many documents that are missing from this section. Go through the PEP, add the Operations Manual and develop a list of what is required to recompute the facility. This will provide the comprehensive document list NSF needs. Plans, specs, SOPs, workflows, QA/QC, safety, cybersecurity, data management and many more. IF NSF needs to recompute, what is the acceptable quality level for the documentation and how do the documents get delivered?	Will be assessed and addressed in later version.
C-148	4.4 Documenta- tion Require- ments	NSF (OIG)	Access to any pertinent books, documents, papers and records should be made available to the NSF Director and the Comptroller General of the United States or any of their duly authorized representatives to make audits...	We suggest adding NSF OIG to the list of organizations for which the awardee must provide access to documentation.	Addressed in this version. Section 4.4 revised to include OIG.

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-149	4.5.3 Recipient Performance Reviews and Audits	AURA		<p>The review processes documented in Sections 4.5.3.2 through 4.5.3.4 are in essence "open ended" in number of reviews that may take place. It would be beneficial for the Foundation to establish some estimate of expected effort required by the awardee to support these activities. For programs already in place wherein project costing did not assume such required support, consideration should be provided for additional funding to address this additional scope.</p> <p>In addition, the BSR explanation notes that the BSR "...determines if these policies and procedures conform to OMB requirements, NSF expectations, and other applicable federal regulations." While the OMB requirements and federal regulations are explicit documents, it is not clear where "NSF expectations" are defined. This lack of clarity extends to the BSR Guide, and needs to be addressed more specifically.</p>	Will be assessed and addressed in later version.
C-150	4.5.3-3	NSF (LFO)		Paragraph on required use of the Financial Data Collection Tool may need revision based on readiness for use.	No change. Data Collection Tool will be ready for use.
C-151	4.5.3 Recipient Performance Reviews and Audits, 4.5.3.4	NSF (OIG)	NSF conducts a cost incurred audit for large facility awards above \$100M at the end of the award and potentially during execution of the award based on an annual large facility risk assessment conducted by the Large Facilities Office and the Cooperative Support Branch at NSF.	Please clarify whether the cost submission and cost incurred audits apply to facilities in construction, operations, or both. We suggest both.	Addressed in this revision. Following was added to Section 4.5.3.4: "These incurred cost audits are for both construction and operations awards."

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-152	4.5.3 Recipient Performance Reviews and Audits, 4.5.3.5	NSF (OIG)	EVM section stated "This section reserved for future content.	As we have recommended in the past, we suggest the certification of EVM systems and the validation of EVM data.	Will be assessed and addressed in later version after the finalization of the SOG.
C-153	4.5.3 Recipient Performance Reviews and Audits	NSF (DFM)	4.5.3 Recipient Performance Reviews and Audits:	Recommend considering adding Reviews for Payment Testing and for Program income Reporting. This will increase awareness of these monitoring processes and establish expectations for recipient responses to the reviews. We can provide language should this be recommendation be accepted.	No change. Payment testing is done as part of the BSR. LFM already makes note of the BSR. BSR Guide is on LFO Public Website. Add this reference to the footnote.
C-154	4.5.3.1	NSF (MPS)		4.5.3.1 misuses a lot of terms and creates confusion. It refers in a single sentence to conducting reviews and internal audits in conformance with generally accepted accounting, project management, and operations management standards and practices. Further in, it talks about safety reviews, as well as many technically oriented reviews. Financial reviews of awardees, and the internal audit and processes of the awardee, is a huge subject that should not be addressed here. Safety reviews of the awardee organization are similarly the subject of state regulation, OSHA, and other standards. Often, awardees are state universities subject to regulation and oversight.	Addressed in this version. Language in Section 4.5.3 revised to clarify Recipient Internal Reviews and NSF External Reviews.

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-155	4.5.3.2 External Reviews	NSF (MPS)	“The PO will typically use a standard review ‘template.’ These well-defined review formats provide a broad outline against which the project can be compared and checklists that can be used to assess the status of the project.” A footnote regarding the template says: “Please contact the cognizant NSF PO for details and a description of best practices and/or preferred templates.”	Text makes no distinction between operations and construction reviews. To be effective, the Program Officer should have in-depth professional knowledge of the scientific operation of the facility, and should develop a review charge written to elicit advice matched to the specific needs and challenges of the facility. The review should not be based on a check-the-box template. The PO should consult with the DD, G/AO, DD, and LFO (where appropriate) to develop the charge.	Addressed in this version. Language revised in Section 4.5.3.2 to indicate the review charge should be matched to the needs of the facility at the time.
C-156	4.5.3.2	NSF (MPS)		LFO seems to be included in all operations reviews and has the right to concur on all operational review charges. It claims the PO will use a standard review template. It claims that exceptional circumstances may require the PO to consult with LFO Liaison to constitute a review charge and format to meet the specific requirements of the review.	Addressed in this version. Language in Section 4.5.3.2 revised to “The PO may use a standard review “template” developed by the Division or Directorate. “
C-157	4.5.3.2 NSF External Reviews.	NSF (OIG)	Additional ad hoc reviews may be requested by the PO under certain circumstances, such as significant re-planning of construction projects, changes in key personnel, and major changes in research technical design, direction and scope.	We suggest review of updated vendor quotes/bids be added to the circumstances. As also referred to in Section 4.2.5.7, we suggest the NSF clearly define scope, change in scope and major change in scope, to avoid the possibility of subsequent disagreement between NSF and its recipients as to the meaning of these terms.	Addressed in this version. Language in Section 4.5.3.2 revised. The scope is articulated in the WBS and scope management plan.

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-158	4.5.5 Re-baselining	NSF (MPS)		Every re-allocation of budget or schedule contingency changes the baseline, as does the use of scope contingency! Usually re-baselining occurs when the underlying planning assumptions are so different from project reality that the major re-planning is needed. What criteria trigger the re-baselining definition? What should be done as a result? This section has little information content, and needs to be rewritten to provide substantive definition.	Addressed in this version. Language was revised in Sections 2.4.1 and 4.5.5 to clarify re-planning and re-baselining.
C-159	4.5.5 Re-Baselining	NSF (OIG)	The re-baselining section does not explain what type of reviews NSF will complete in the event of a re-baseline. For example, whether re- baselined proposals will be required to go through an independent cost review.	We suggest clarifying what types of reviews re-baselined proposals will go through.	Addressed in this version. Language added to Section 4.5.5 to indicate that re-baselined projects may go through external panel review, NSF cost analysis, and Board Approval.”
C-160	4.6	NSF (GEO/ OCE)		Is there a definition for MOA? Sometimes MOUs are between the Awardee and foreign countries, this section indicates only NSF can have MOUs... I think it depends on the ownership model and other factors	Addressed in this version. Added “with NSF” to clarify. PAM indicates that MOU’s & MOA’s are synonyms. PAM refers to only NSF MOU’s.
C-161	5.2	NSF (GEO/ OCE)		Because expert judgement is required for risk assessment, I recommend that the Awardee assure the experts are vetted by their project advisory committee and maybe even NSF prior to conducting the assessment. This should be a recommendation and not a requirement	Will be assessed and addressed in later version.

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
C-162	5.2.1 Introduction	NSF (GEO/ PLR)	3 <sup>rd</sup> paragraph “ While quantitative risk analysis has become easier and more sophisticated, it is unlikely to fully replace qualitative risk analysis because the quantitative analysis requires validated inputs that are more labor intensive to produce.”	Comment indicated to add “and generally are not amenable to automation” at the end of the sentence.	No change. Comment is an efficiency observation.
C-163	5.2.11.1 Contingency Budget Timeline	NSF (OIG)	At the Final Design Review (FDR) the PEP budget estimate should be substantially based on externally obtained cost estimates (vendor quotes, bids, historical data, etc.)	Consistent with our comments in 4.2.4, we suggest that NSF instruct its recipients that estimates based on vendor quotes/bids should be kept current (i.e., preferably less than a year old but no more than 18 months) throughout the project life cycle at least until award.	No change. Addressed in Section in 4.2.4.
C-164	5.2.3.2 Contingency Definitions	NSF (OIG)	For MREFC construction projects, the amount of budget contingency is determined by performing a probabilistic risk analysis on the baseline cost and schedule and selecting a Total Project Cost with an acceptable confidence level (typically between 70-90%).	As also mentioned in 4.2.5 .1, we suggest NSF also state its expectation not only in terms of a confidence level, but also the precision of the estimate (so that NSF can say, for example, that it is 80% confident that the point estimate is accurate within a range of plus or minus 20%).	No change. Level of confidence in the estimate changes as the design develops. Uncertainty in the cost estimate is included as part of the risk register and part of the quantitative risk analysis for development of the budget contingency.
C-165	5.2.3.2 Contingency Definitions	NSF (GEO/ PLR)	“Budget contingency is held separately from the PMB and allocations...”	PMB not defined in chapter	Addressed in this version. PMB is defined as Performance Measurement Baseline.
C-166	5.2.6.3 Risk Description	NSF (OIG)	However, note that NSF does not allow the use of contingency for risks that are commonly referred to as “unknown unknowns” such as exceptional events or major changes in scope.	Suggest that NSF provide some examples of exceptional events for which contingency is not allowed to be used. Also, as mentioned in 4.2.5.7 and in 4.5.3.2, we suggest the NSF clearly define scope, change in scope and major change in scope, to avoid the possibility of subsequent	Addressed in this version. Language has been added and revised throughout the LFM on the scope management plan and the usage of contingency.



## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
				disagreement between NSF and its recipients as to the meaning of these terms.	
C-167	5.2.7.3 Limitations of Qualitative Analysis	NSF (GEO/ PLR)	2 <sup>nd</sup> bullet: "They must also evaluate whether other risks might keep that risk from creating much improvement if it were mitigated."	rephrase for clarity: ... keep mitigation of a particular risk from resulting in much improvement	Addressed in this version. Revised to: "They must also evaluate whether other risks might prevent mitigation of a particular risk from resulting in much improvement."
C-168	5.2.7.4	NSF (GEO/ PLR)	2 <sup>nd</sup> paragraph, Page 5.2.7-6: "Research has shown that the overlap in probability values with common word definitions is severe."	Research has shown that the <i>lack of overlap</i> in <i>assigning</i> probability values with common word definitions is severe.	Addressed in this version. Sentence revised according to comment.
C-169	5.2.8.8 Handling Inflation	NSF (OIG)	Inflation is part of the NSF budgeting and project planning.	We suggest that NSF require its recipients to affirm (and also verify in NSF reviews of proposal budgets) that inflation is not double-counted in other estimates, such as in contingency.	Addressed in this version. The method for escalation is to be addressed in the CEP and BOE. The project may include a risk that the inflation is different from the BOE.
C-170	5.5 Environmental	NSF (GEO/ OCE)		Where are the decision milestones and off ramps defined? Does a PEA need to be completed by PDR and noticed? This is a lesson learned from past projects.	Will be assessed and addressed in later version. Environmental compliance needs to be prior to funding for construction. After internal guidelines are complete, LFM will be edited as accordingly. Language added regarding potential time associated with EA's.
C-171	5.5 Environmental Considerations	NSF (GEO/ PLR)	2 <sup>nd</sup> paragraph: "These statutes include, but are not limited to, the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA) and the Endangered Species Act."	Add , the Antarctic Conservation Act,	Addressed in this version. Per guidance from OGC, ACA wasn't added but the following language was: "While NEPA and its implementing regulations focus on activities that take place within the United States, proposed activities that

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/ Observations	Comment	NSF Response
					take place outside of United States may also be subject to NEPA.”
C-172	2.4.1; 2.5.3; 5.4 External reviews	NSF (LFO)		It is not clearly stated that the reports from external reviews are to NSF and not the recipient. Recipients should not react to reports unless directed to by written instruction by the PO	Addressed in this version. 2.4.1-1 “Following internal NSF review and evaluation of the external panel report, NSF may issue written guidance to the recipients for subsequent response and action.” 2.5.3 “As a result of internal NSF evaluation of the report and assessments, the appropriate NSF entity may issue written guidance to the recipient for subsequent response and action.” 5.4 “The reports and recommendations from these external reviews are made directly to NSF. NSF evaluates the review panel input, determines the appropriate response, and issues written guidance to award recipients for any subsequent response and action.”

# TYPOS & EDITING COMMENTS TABLE

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/Observations	Comment	NSF Response/Resolution
T-1	2.1.3 Facility Life Cycle	NSF (OISE)		Pg. 22 - end of para 1 - "(ideally) were partnerships" should be "(ideally) where partnerships"	Addressed in this version. Typo corrected.
T-2	2.1.6 Roles and Responsibilities	NSF (GEO/ PLR)	Page 2.1.6-11, bottom of page "This responsibility include coordination of planning"	Typo ("includes")	Addressed in this version. Typo corrected.
T-3	2.1.6 and Summary of Significant Changes	NSF (MPS)	Changed issuance of the HLFO MREFC facility status report from "monthly" to "periodic" on page 2.1.6-13.	I did not find this. Whether or not HLFO issues status reports, the spending rate for MREFC projects motivates NSF Program Officers and other staff receiving technical and financial status reports on a monthly basis during construction.	Addressed in this version. Changed to 2.1.6-15
T-4	2.1.6.4 Governing Bodies	NSF (GEO/ PLR)	Page 2.1.6-19 "The MREFC Panel ... makes recommendations to the Director. The Panel consists of the NSF Deputy Director (Chair), the Ads, Program Office Heads"	Typo: capitalize d in ADs	Addressed in this version. Typo corrected.
T-5	2.4.1 Construction Award Management and oversight	NSF (GEO/ PLR)	2 <sup>nd</sup> paragraph: "Following the review, the PO and the LFO Liaison will each independently assess the review, confer on areas of concern, share their views, and report their observations through their respective supervisory. "	Typo: insert "chain" at end of sentence	Addressed in this version. Typo corrected.

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/Observations	Comment	NSF Response/Resolution
T-6	2.4.2 Commissioning Plan	NSF (GEO/PLR)	8 <sup>th</sup> bullet: “A discussion of how major maintenance issues (such as budgeting for periodic replacement of long-lived capital assets whose useful life extends beyond the duration of the CA) will be handled”	Typo “who useful life” -> “the useful life of which”	Addressed in this version. Language revised.
T-7	3.1 Introduction to Management Plans	NSF (GEO/PLR)	3 <sup>rd</sup> paragraph: “An IMP also provides financial strategies for funding given the estimated budgetary estimates.”	Duplicated ‘estimates/d’	Addressed in this version. Language revised.
T-8	3.4.1	NSF (GEO/PLR)	Table 3.4.1-1 4.4 Scope Management Plan and Scope Contingency “.... Scope Contingency <i>complies</i> savings from potential de-scoping options, with decision points ...”	Should “complies” be “compiles”?	Addressed in this version. Typo corrected.
T-9	3.5	NSF (GEO/OCE)		Replace IT security with cybersecurity	Addressed in this version. Language revised.
T-10	4.2.1 Cost Estimating and Analysis Overview	NSF (GEO/PLR)	Figure 4.2.1-1: Alternate text	Alternate text for the figure contains typo “Brand Chief”	Addressed in this version. Typo corrected.

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/Observations	Comment	NSF Response/Resolution
T-11	4.2.3.3	NSF (GEO/PLR)	“ Guidance and examples of common WBS elements can be adapted from GAO, DOE, DOD and other guidance and tailored for NSF projects(U. S. Department of Energy WBS Handbook dated August 16, 2012) (DoD Standard Practice WBS for Defense Materiel Items, MIL-STD-881C, dated 3 October 2011).”	editorial: add space before parenthesis and "e.g. after; use only one set of parentheses so separate two examples by comma	Addressed in this version. Typo corrected.
T-12	4.5.3.1 Recipient Internal Reviews	NSF (GEO/PLR)	“Although internal review team are typically populated by project staff...”	Typo - teams	Addressed in this version. Typo corrected.
T-13	4.6.1 Partnerships Overview	NSF (GEO/PLR); NSF (OISE)	Last paragraph: “ The NSF Office of International and Integrative Activities (OIIA) should be advised”	(OISE) ! Pg. 157 – Please correct the name of the office; “NSF Office of International and Integrative Activities (OIIA)” should be “NSF Office of International Science and Engineering.”	Addressed in this version. Language revised.
T-14	5.1 Introduction	NSF (GEO/PLR)	“They are based primary on current standards and best practices for project management.”	“primarily”	Addressed in this version. Typo corrected.
T-15	5.2.6.1 Risk Identification Process	NSF (GEO/PLR)	Last paragraph: “The Risk Register provides a means of tracking and reporting status as risks occur and migration strategies are implemented, and is an important tool for Risk Management implementation.”	Mitigation?, not migration	Addressed in this version. Typo corrected.

## Public Comments on Large Facilities Manual (LFM) May 2016 & NSF Responses

Cmt #	LFM Section/ Paragraph	Source	LFM Language/Observations	Comment	NSF Response/Resolution
T-16	5.6	NSF (MPS)		Heading 5.6 has a typo.	Addressed in this version. Typo corrected.
T-17	Summary of Significant Changes	NSF (MPS)		Change 5 refers to a third bullet on page 2.2.2-9, yet there is no page 2.2.2-9. (The manual goes from 2.2.2-1 to 2.3.1-1)	Addressed in this version. Corrected 2.2.2-9 to 4.2.2-9.

# FINANCIAL DATA COLLECTION TOOL COMMENTS TABLE



## Public Comments on Financial Data Collection Tool (May 2016) & NSF Responses

Cmt #	Section/ Paragraph	Source	Comment	NSF Response/Resolution
F-1	Financial Data Collection Tool: General	AURA	<p>Are totals in this report intended to tie to any other report submitted to NSF?</p> <ul style="list-style-type: none"> <li>- Program reports include data on commitments which are not reported here.</li> <li>- ACM\$ reports only show cash drawn, some expenses reported here may not have been paid in cash yet.</li> <li>- Audited financial statements</li> <li>- How is program income reported?</li> </ul>	<p>Addressed in this version. This data tool does not tie to any other report submitted to NSF.</p> <p>Addressed in this version. Updated Instructions (Overview) that Program Income is not included in the Data Tool. A description has been added to the instructions which state that Program Income should not be included in your costs but provided on the Program Income Reporting Worksheet per the PAPPG.</p>
F-2	Financial Data Collection Tool: General	NSF (OIG-Audit, Maguire)	<p>We understand that the overall purpose of the reporting tool is to provide for the collection of cost data from each awardee for each large facility, to increase NSF's management and financial oversight of its large research facilities. Collection of this information will provide NSF valuable budget and expenditure information needed for NSF's oversight purposes. However, we note overall that the reporting tool is not the equivalent of an incurred cost submission (which, among other things, reports total recipient direct costs for all of a recipient's awards and calculates and proposes indirect cost rates subject to negotiation). Therefore, in terms of facilitating an incurred cost audit, it seems that the reporting tool, at best, could only facilitate a direct cost audit with a review of the application of indirect cost rates of the award being reported. NSF would have to further coordinate with the awardee for an indirect cost rate audit for an NSF cognizant awardee.</p> <p>Nevertheless, we are offering comments to help ensure that NSF's policies and procedures will provide reasonable assurance that the controls in place, both during construction and operations, will strengthen NSF's and its awardees' ability to exercise proper stewardship of large</p>	<p>No change. Comment is a preamble to other comments.</p> <p>No change. NSF will only be collecting this information for the purposes of conducting incurred cost audits. Additional NSF purposes have not been identified at this time.</p> <p>Recipients are allowed to re-budget cost categories without previous approval from NSF. Only, budget reallocations associated with changes in scope need approval.</p> <p>NSF does not intend to conduct incurred cost audits of indirect costs.</p>

## Public Comments on Financial Data Collection Tool (May 2016) & NSF Responses

Cmt #	Section/ Paragraph	Source	Comment	NSF Response/Resolution
			<p>facility funds. Our comments are provided below by section. We hope you find them useful.</p>	
F-3	Financial Data Collection Tool: Instructions	AURA	<p>The instructions on the form are unclear as to whether a form for each CSA under a CA is to be submitted or if one form for fill CSAs under a CA is required.</p> <p>Additionally, the guidance does not provide specific deadlines requirements. Currently, it references to the award terms and conditions. However, the award terms and conditions do not address this compliance requirement.</p> <p>It is not yet clear when the requirement for submitting the 'first' report is, if for FY16 data that could create issues. NSF is asking for public comment that will certainly lead to some changes in the data collection tool and will take time for NSF to revise. Given that we are already into the FY 4th quarter, there likely will not be sufficient lead time to properly prepare once the revised tool is released.</p>	<p>Addressed in this version. The instructions were strengthened to make it clear a new form must be created for each CSA. There should be only one CA for each submission of this data tool.</p> <p>Addressed in this version. The instructions have been updated to give guidance on the deadline for annual submissions. The Terms and Conditions will also stipulate the frequency which will be determined by the Grants and Agreements Officer, and the Cooperative Agreement's Terms and Conditions. It will be no less frequently than annually 60 days after the end of the current award funding year (performance period) to NSF.</p> <p>Addressed in this version. Clarifications were made in the LFM on the annual due date of the tool and in the Terms and Conditions.</p> <p>The Instructions were updated to require this data collection annually 60 days after the end of the current award funding year (performance period) to NSF as well in the Terms and Conditions of the award.</p>

## Public Comments on Financial Data Collection Tool (May 2016) & NSF Responses

Cmt #	Section/ Paragraph	Source	Comment	NSF Response/Resolution
F-4	Financial Data Collection Tool: Instructions and Instructions Overview	NSF (OIG-Audit, Maguire)	<p>Overall, the reporting tool collects budgeted and actual costs for individual Cooperative Agreements (CA)/Cooperative Support Agreements (CSA). However, NSF does not clearly explain that the reporting tool also provides for budget to actual comparison/reconciliation at the total project level, which is the level cumulative proposed budgets are made and National Science Board approval is obtained. Therefore, the instructions should be clarified to explain that NSF intends to fully account for all of the awards made for each NSF large facility that are in total valued at \$100 million or greater and may be comprised of several different CSA and CA awards, funded by multiple NSF appropriations.</p> <p>Additionally, the reporting tool does not collect "Contingencies" or "Fee" data (either in budget or in expenditures to date). The tool also does not collect drawdown data or cash on hand data that could be reconciling items when comparing budget and actual costs and costs claimed to the general ledger. Without this information it will not be possible to adequately reconcile and compare actual to budgeted costs to determine how funds are being spent in comparison to how they were planned.</p>	<p>Addressed in this version. The Instructions have been revised to better clarify NSF's intention to fully account for all of the awards made for each NSF large facility that are in total valued at \$100 million or greater and may be comprised of several different CSA and CA awards, funded by multiple NSF appropriations.</p> <p>Recipients are allowed to re-budget cost categories without previous approval from NSF. Only, budget reallocations associated with changes in scope need approval. Budget to actual comparisons will not provide a reconciliation for the project.</p> <p>Addressed in this version. The Instructions have been revised to indicate that "Contingencies" or "Fee" should be entered in the Other Direct Costs and to add a note.</p> <p>No change. This tool will not capture drawdown or cash on hand data. This data is already captured in a Federal system (ACM\$) and it is not required to submit this data twice. This data can be obtained through the ACM\$ system.</p> <p>The tool was developed to capture incurred cost data, not to collect cash drawdown or cash on hand information. Cash drawdown is available in ACM\$.</p>

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F-5	Financial Data Collection Tool: Instructions Overview	NSF (OIG-Audit, Maguire)	<p>In the Overview Section, specific criteria for applicability of the reporting tool should be clarified, i.e. the tool is required for each CSA and CA for a facility or project that has a total awarded amount of \$100 million or more. It should explain that NSF will identify all the awards that comprise each project and modify the award agreements to identify each CSA and CA that require completion of the reporting tool. This section should state that one other purpose of the tool is to provide for a comparison of expenditures to budget amounts for each award and the total of the project's awards, to the maximum extent practicable.</p> <p>Also, the Instruction Overview states, "Only this NSF-approved tool should be used to submit incurred cost data." This statement should be clarified because it could create confusion if a full incurred cost submission is required from an awardee for which NSF is cognizant for the purposes of negotiating the awardee's indirect cost rate.</p>	<p>Addressed in this version. A clarification was made to the instructions on the required CA and CSA's. To be addressed in this version. NSF will revise the language and give clarity.</p> <p>No change. This tool will not be used as a comparison tool but to provide the Auditor with basic information on number of awards, amounts, expenditures, subcontracts, subawards and indirect cost rate information.</p> <p>Addressed in this version. Changes made to Instructions on this sentence and it has been removed.</p> <p>NSF does not anticipate obtaining other incurred cost submissions.</p>

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F-6	Financial Data Collection Tool: Federal Register Notice	NSF (OIG-Audit, Maguire)	<p>The Comment Request Summary states that NSF will be "requesting OMB clearance of this collection for no longer than 3 years." We suggest that NSF also state its intentions after that time period (in a later version of the reporting tool), especially since the subsequent charge statement is more focused on determining and assessing awardee burden, rather than on emphasizing NSF's need to improve its, and the awardee's, financial management of large facility awards. The instructions should explain that the reporting tool was instituted to ensure that funds for large facility awards. The instructions should explain that the reporting tool was instituted to ensure that funds for large facilities are properly expended and managed. This message was verbally conveyed during NSF's recent Large Facility Workshop, but was not communicated as well in the written request for comments from the community.</p>	<p>No change. Since this tool may change as it is used NSF will not state any intentions of other uses of the tool at this time.</p> <p>Addressed in this version. NSF has revised the language and gives clarity on the use of the tool and added this to the Instructions.</p>

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Cmt #	Section/ Paragraph	Source	Comment	NSF Response/Resolution
F-7	Financial Data Collection Tool: Setup Tab	AURA	<p>The cell in which the Users is to fill in the number of Subcontracts or Subawards being reported will not take a number greater than 7.</p> <p>There will likely be situations where there are more than 7 contracts totaling a minimum of \$150,000. Either remove the limit and allow input for all contracts above 150k or explicitly state if contracts should be chosen by highest BAC, highest BCWS, highest Actuals, etc. for the 7 being chosen.</p> <p>For grand totals to tie out for the total project all subcontract values should be used. Only selecting contracts totaling a minimum of \$150,000 could leave a substantial gap in reporting the total BAC of the project and may cause confusion validating data. Perhaps a solution is one line for all other contracts less than \$150,000.</p> <p>The input sheets need to be clearer if budgets being entered are cumulative to date or BAC. Reducing the ambiguity of the budget data being requested would be helpful (specifically call out if this is a FY request, cumulative to date, or BAC). It may be useful to populate the tool with a sample (test) data for examples of how the budget and actual totals trace across the worksheets.</p> <p>There are some cases where cells should be merged on the Subcontract/Sub award sheets (i.e. D:E, F:G, etc. for general look and feel). It also seems like rows 31 and 32 on those sheets should be formulas from the data entered above (Gray). Just a note, there could be a disconnect with this tool and EVMS data as EVMS data also includes estimated actuals based on delayed accounting processing of invoices.</p>	<p>Addressed in this version. Clarification was made to explain that all subcontracts and subawards would be required in the Data Tool.</p> <p>Addressed in this version. Clarification was made to explain that only subawards and subcontracts over \$150,000 would be entered as separate field and one extra would be entered for all remaining subawards and subcontracts under \$150,000 as a combined and cumulative entry.</p> <p>Addressed in this version. NSF has clarified that budgets and expenditures are cumulative to date for the current year.</p> <p>Addressed in this version. Cells have been merged.</p> <p>No change. This data tool is not requiring EVMS data.</p>

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Cmt #	Section/ Paragraph	Source	Comment	NSF Response/Resolution
F-8	Financial Data Collection Tool: CSA Budget, Cost, and Program Expenditures Worksheets	NSF (OIG-Audit, Maguire)	<p>Under major costs elements, the tool does not provide lines for "Contingencies" or "Fee" (either in budget or in expenditures to date), although these may be significant items included in some CAs. Contingencies are required budget information for construction awards specifically listed on Form SF 424C (line 13), which NSF has agreed to use and should be collected by this tool. Fee should also be included in the tool if a recipient proposes fee, since this is also a cost to NSF. Additionally, we note that the tool does not provide for cost drawdowns (ACM\$), which should be collected for comparison to costs claimed.</p> <p>The instructions for worksheet preparation for the CSA Cost Worksheet state that the Program Charges Worksheet consolidates this data for all CSAs. There is no Program Charges Worksheet, so the instructions should be clarified (perhaps the Program Expenditures Worksheet).</p> <p>It appears, based on the color coding legend provided, that the current expenditure information in the CSA Budget Worksheet is linked from other report tabs and the current claimed amount on the CSA Cost Worksheet is auto-calculated. The tool should explain this and caution the awardee to ensure that the calculated expenditure amount agrees with the amounts claimed. Also, the reporting tool should provide for an explanation in the event there is a difference between the General Ledger and Job Cost Ledger on the CSA Cost Worksheet.</p> <p>It would also be useful if the tool used consistent terms throughout the different worksheets to identify current costs claimed/expenditures and to ensure that the title of the worksheet tab matches the title on the worksheet.</p>	<p>Addressed in this version. The Instructions have been revised to indicate that Contingencies" or "Fee" should be entered in the Other Direct Costs and to add a note.</p> <p>No change. NSF does not use the SF-424C budget document but the NSF-1030. NSF has provide guidance on were to include both "Contingencies" or "Fee" on the approved budget. NSF has replaced the word charges from the Instructions.</p> <p>Addressed in this version. Added to cost and CSA budget worksheet and the instructions</p> <p>Addressed in this version. NSF has added clarification on how auto-calculated sections work and edited the instructions and added the color coding info.</p> <p>Addressed in this version. NSF has provided more written clarity in the event there is a difference between the General Ledger and Job Cost Ledger on the CSA Cost Worksheet. Added to instruction: If there is a difference between the General Ledger and Job Cost Ledger on the CSA Cost Worksheet provide an explanation in the comments field.</p> <p>Addressed in this version. NSF edited tabs and fields to be consistent.</p>

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Cmt #	Section/ Paragraph	Source	Comment	NSF Response/Resolution
F-9	Financial Data Collection Tool: Subcontract & Consultants Worksheets	NSF (OIG-Audit, Maguire)	<p>We note that worksheet does not require a specific classification of subcontracts vs. consultants. This distinction is important and needs to be made for indirect rate application purposes because modified total direct costs (MTDC) include the first \$25,000 of sub grants/Subcontracts, while the remaining portion of Subgrants/ Subcontracts over \$25,000 is excluded. Additionally, the worksheet does not request the type of subcontract (CPFF, firm fixed-price, etc.). It appears the worksheet only provides for cost reimbursement subcontracts, but there is no place for profit which should be collected because it is part of total cost. There should also be a place on the worksheet for firm fixed-price subcontracts. Finally, the worksheet should also include a checkbox to document whether the Uniform Guidance required cost/price analyses in excess of the Simplified Acquisition Threshold (currently \$150,000) are maintained in the file and are available upon request.</p>	<p>No change. This data tool is to provide basic information to the Auditor. No listing of MTDC will be added at this time.</p> <p>Addressed in this version. NSF clarified the use of consultants and where this info is captured. New contract categories were added to included Fixed, Performance based, Cost Reimbursable and T&amp;M.</p>
F-10	Financial Data Collection Tool: Subawards Worksheet	NSF (OIG-Audit, Maguire)	<p>This worksheet should also include a checkbox to document whether the Uniform Guidance required cost/price analyses in excess of the Simplified Acquisition Threshold (currently \$150,000) are maintained in the file and are available upon request.</p>	<p>No change. NSF will not require any checkbox for recipients to state if they are over the Simplified Acquisition Threshold. All documentation on contracts and subawards are required for an Incurred costs audit but not for this tool.</p>
F-11	Financial Data Collection Tool: Indirect Cost Rate Worksheet	NSF (OIG-Audit, Maguire)	<p>We note that worksheet provides "rate applied" and "total expended," but does not request the type of rate applied (e.g., provisional, predetermined fixed, carry forward, etc.), which should be requested. Also, the worksheet only addresses three types of indirect rates (classified as F&amp;A, G&amp;A and ID other). Some organizations may have additional indirect rates that should be disclosed, so the tool should be modified accordingly.</p>	<p>Will be assessed and addressed in later version. NSF has a field for type of rate and a place for other types of cost rates to be listed.</p>



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F-12	Financial Data Collection Tool: Certification of Costs	NSF (OIG-Audit, Maguire)	Suggest expanding certification to include award terms and conditions, NSF policies and recipient policies.	No change. Certification is only for the data supplied. Recipient has already certified to follow Federal regulations and Terms and Conditions when applying and accepting the award.
F-13	Financial Data Collection Tool: CSA Budget Worksheet	AURA	<p>Guidance needed for the level of supporting documentation detail required to provide for "total expenditures to date" on existing CSAs. Is the first report submitted supposed to report inception to date expenses as the current year expenses?</p> <p>On the CSA Budget worksheet, it is unclear if this should only include the 7 Subawards listed from previous sheets or if this is a grand total. This is the problem with only entering a subset of data for the Subcontract/Subawards as there will be a delta between total budget numbers for the CSA and the numbers displayed in other sheets.</p>	<p>No change. All expenditures must have detailed supporting documentation per the Uniform Guidance. This documentation is not required at the time of the submission of this tool but at the time of the Incurred Cost Audit. The first report will begin at the end of the current funding year.</p> <p>Addressed in this version. NSF has expanded the tool to include more than 7 subawards or subcontract.</p>
F-14	Financial Data Collection Tool: Instructions Cell 10	AURA	Instructions do not clearly define if awardees are expected to insert summarized expense total in the cells Users are to complete, or if detail (raw data) behind the summarized expense totals is to be provided. The draft spreadsheet allows for new tabs to be added which could facilitate the importing of detail, but it is unclear if the draft spreadsheet works in the same manner the final version will.	Addressed in this version. NSF has clarified that it will be summarized data (no details or raw data).

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F-15	Financial Data Collection Tool: Instructions Cell 12	AURA	Cell 12 - This cell implies that multiple CSAs should be reported in the spreadsheet tool and the data will be consolidated on this worksheet. Conversations with NSF personnel at the Large Facility Workshop indicate that a separate spreadsheet tool should be submitted for each separate CSA. Clarification is required on this matter. Please note that AURA has separate CSAs under the same NSO CA that are funded from NSF funds and MREFC funds and we suspect these should not be reported as a combined total.	Addressed in this version. NSF has removed the word consolidated as a separate CSA sheet will be added for each CSA.
F-16	Financial Data Collection Tool: Subcontract & Consultants and Sub-Awards Worksheets	AURA	<ul style="list-style-type: none"> <li>-Data as outlined on contracts is not required from the vendors in this format, so now requiring this data would result in additional cost for both the awardee and the vendor.</li> <li>-Having this kind of detail in the proposal\budget stage is not part of current process.</li> <li>-Having to gather data for each contract paid during the reporting period could result in an unmanageable amount of data.</li> <li>-Not all contracts provide this information, requiring it could cause additional expense raising prices of services or goods.</li> <li>-Many contractors that we work with are for profit companies so their costs may not reflect the price we pay for services; how do we report profit?</li> <li>-Verification that the data is accurate will be difficult or costly.</li> <li>-Time involved in gathering, storing and organizing this data would require additional effort by the awardee.</li> </ul>	<p>Addressed in this version. NSF provided more clarity on the required contract information submitted on the instructions tab.</p> <p>Addressed in this version. Recipients are required to track the expenditures for all subrecipients but NSF is only requesting use of the cost categories for subcontracts, consultants and subawards if they match. If recipients track subrecipient funds using other cost categories then add to the ODC cost field and add a note in the Recipient Preparation Notes.</p>