



National Science Foundation
OFFICE OF BUDGET FINANCE & AWARD MANAGEMENT

Large Facilities Manual

New Guidance on Cost Estimating and Analysis

2016 NSF Large Facilities Workshop

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Purpose of Workshop Session

- Get the Word Out
- We Want Your Input
- Purpose of Guidance
- Key Content & Concepts



We Want Your Input

- Public Comment on LFM Revisions
 - May 9: Draft For Public Comment
 - [Federal Register](#)
 - [LFO Website](#)
 - July 8: End of Public Comment Period
 - < July 8 – assured of consideration
 - > July 8 – considered to the extent practicable



Purpose of Guidance

- Improve Cost Estimates – Construction & Operations
- Clarify NSF Expectations
- More Effective and Efficient NSF Cost Analysis
- Better Align w/ Best Practices
- Implement NAPA Recommendation



Key Content & Concepts

- Follow GAO Cost Estimating and Assessment Guide
- NAPA Panel Recommendation: “To further strengthen NSF’s policy on cost estimating and ensure rigor in the process: 4.2 NSF should change current language in the Large Facilities Manual so that it is clear that award recipients are expected to follow the guidance in the Government Accountability Office’s Cost Estimating and Assessment Guide and Schedule Assessment Guide when developing cost and schedule estimates”



Key Content & Concepts

- **“Cost Analyst** – NSF staff from the Cost Analysis and Audit Resolution (CAAR) Branch of the Division of Institution and Award Support (DIAS), which perform cost assurance reviews of proposals and monitor awardee financial practices.”



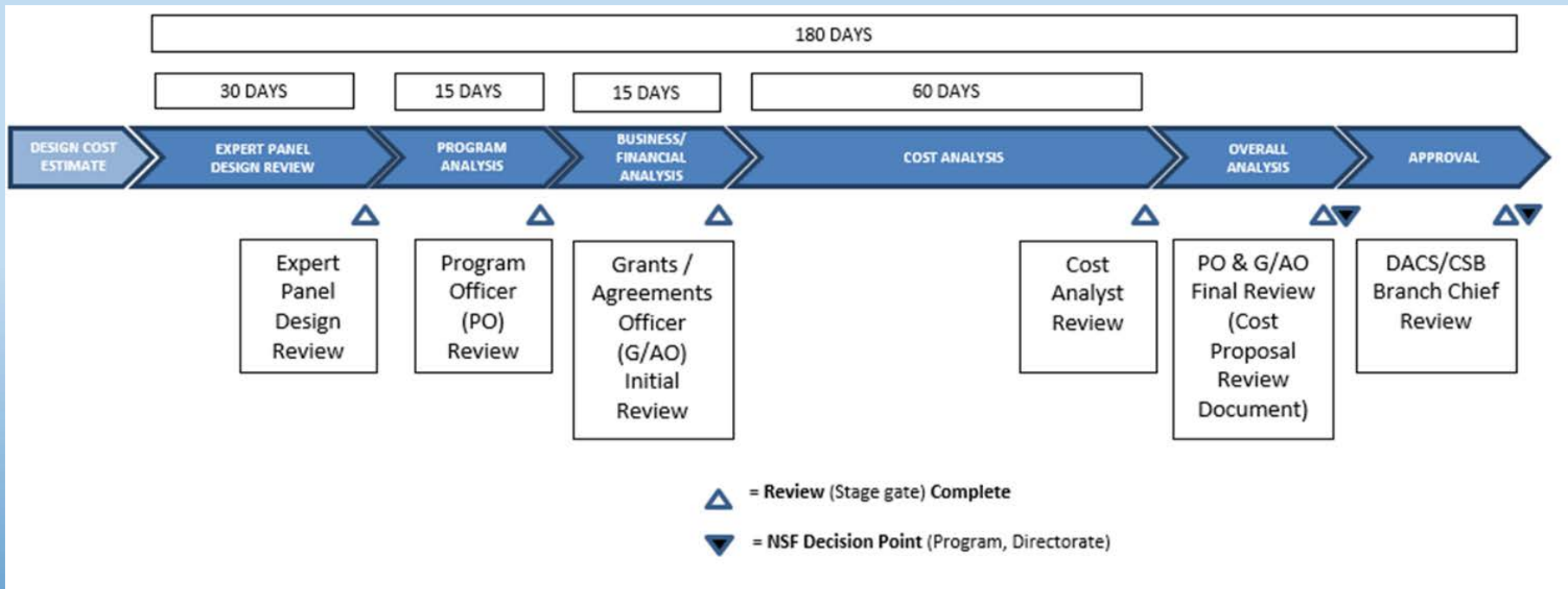
Key Content & Concepts

- Cost Analysis Process and Timeline
 - At CDR, PDR, FDR
 - New Awards above threshold
 - Risk based determination
 - Changes in scope, cost, schedule
 - New risks, complexity
 - Past performance
 - Plan for 90-180 days



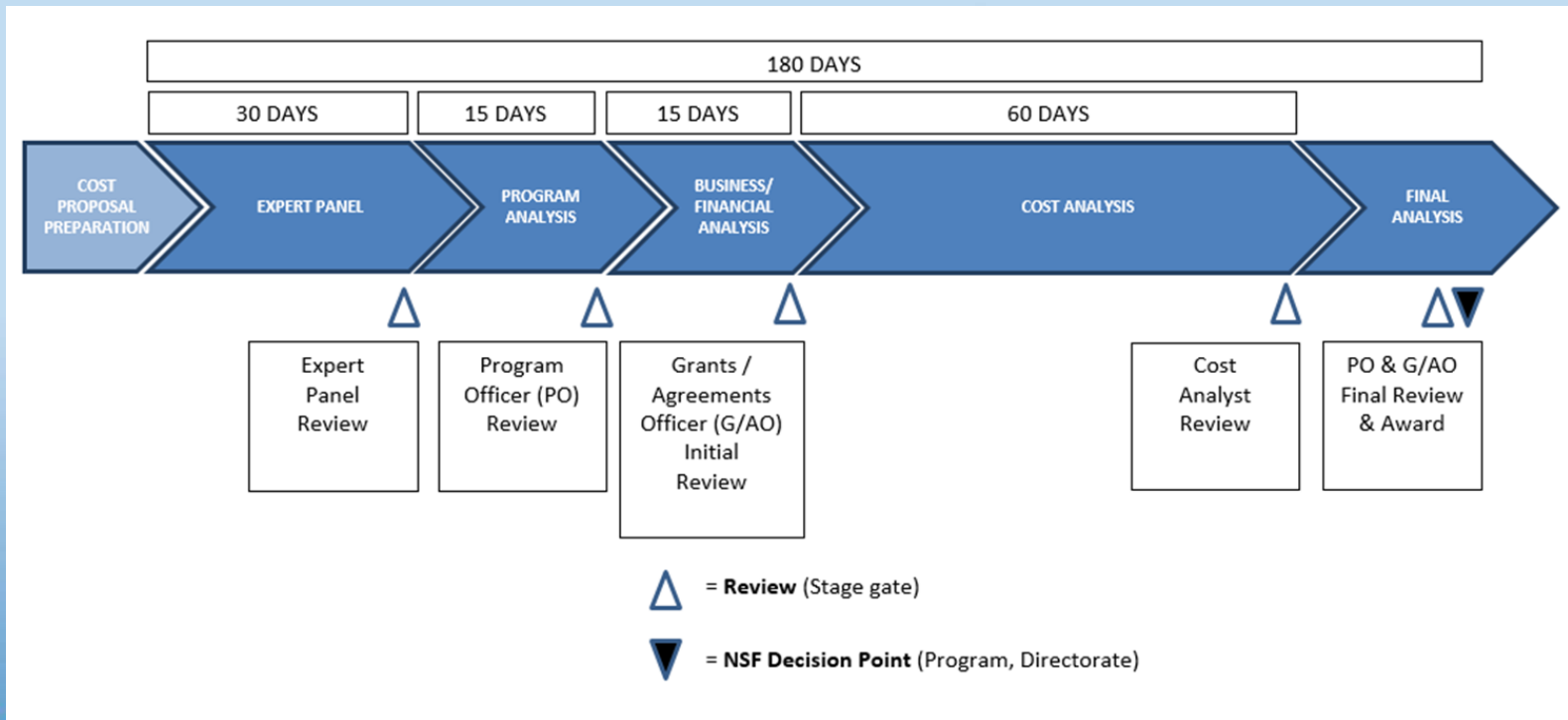
Key Content & Concepts

- Design Phases for Construction Awards



Key Content & Concepts

- Cost Analysis Process for Operations Awards



Key Content & Concepts

- Cost Estimating Plan
 - How implement LFM & GAO cost estimating guidance
 - How cost estimate will evolve over time
 - How the “Cost Model Data Set” will meet the various needs of the project.
 - Ground rules and assumptions, practices, systems, and calculations used to develop the cost estimate



Key Content & Concepts

- Submit Estimate in 2 Formats:
 - Deliverable-based Work Breakdown Structure
 - Standard NSF Budget Format

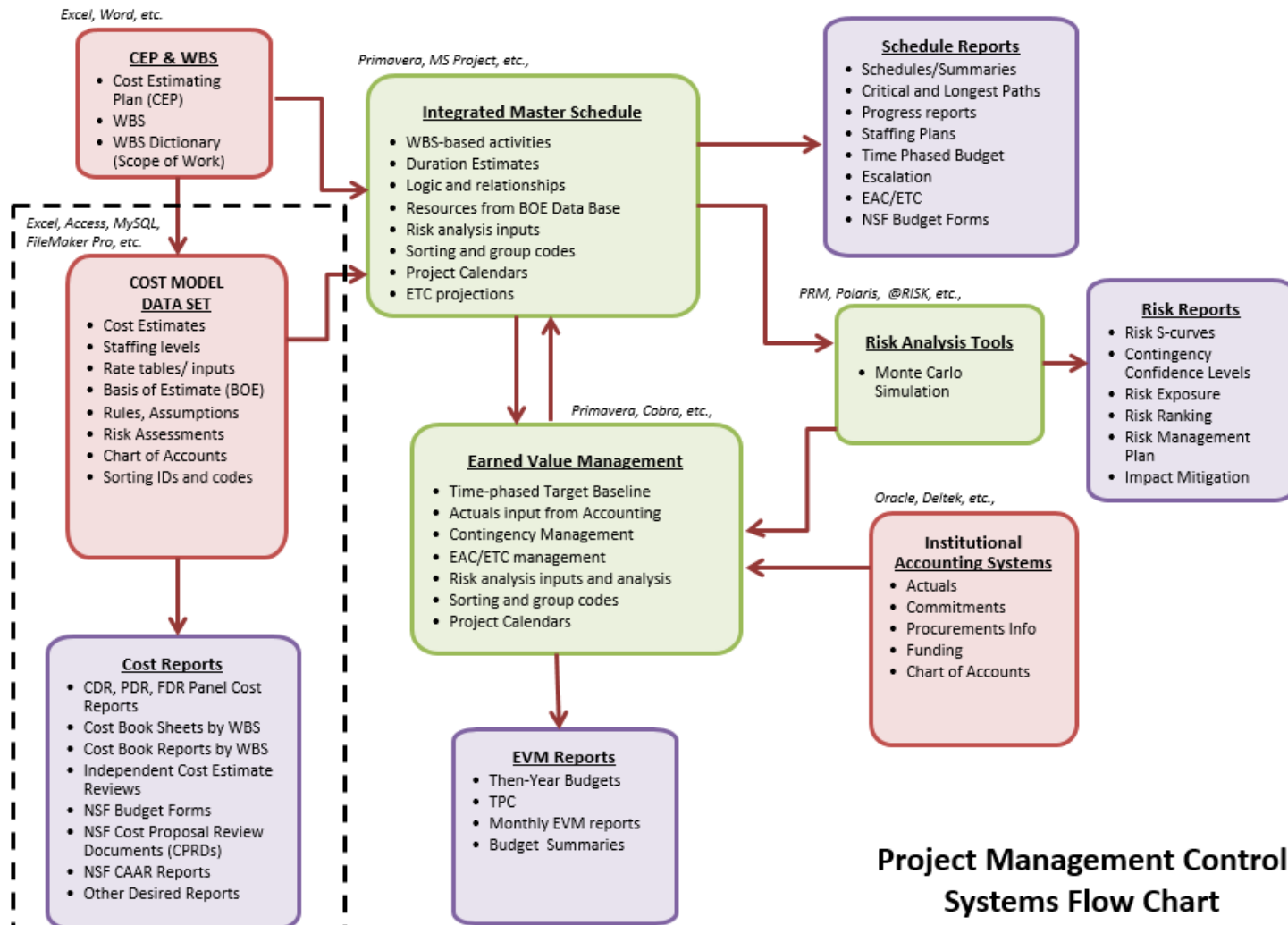
| SUMMARY PROPOSAL BUDGET | | | | FOR NSF USE ONLY | | | |
|--|---|---|--|---|-------------------|-----------------------------|-------------------------------------|
| ORGANIZATION | | | | PROPOSAL NO. | DURATION (MONTHS) | | |
| PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR | | | | AWARD NO. | Proposed | Granted | |
| A. SENIOR PERSONNEL: PI/PO, Co-PIs, Faculty and Other Senior Associates <small>List each separately with name and title. (A.7. Show number in brackets)</small> | | | | NSF-Funded Person-months | | Funds Requested by Proposer | Funds Awarded to NSF (if Different) |
| | 1. | | | CAL | ACAD | SUMR | \$ |
| | 2. | | | | | | \$ |
| | 3. | | | | | | |
| | 4. | | | | | | |
| | 5. | | | | | | |
| | 6. | OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE) | | | | | |
| | 7. | TOTAL SENIOR PERSONNEL (1-6) | | | | | |
| B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS) | | | | | | | |
| | 1. | POSTDOCTORAL ASSOCIATES | | | | | |
| | 2. | OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.) | | | | | |
| | 3. | GRADUATE STUDENTS | | | | | |
| | 4. | UNDEVELOPED/ADJUNCT SYNDICISTS | | | | | |
| | 5. | SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY) | | | | | |
| | 6. | OTHER | | | | | |
| | TOTAL SALARIES AND WAGES (A + B) | | | | | | |
| | C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS) | | | | | | |
| | TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C) | | | | | | |
| D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000) | | | | | | | |
| TOTAL EQUIPMENT | | | | | | | |
| E. TRAVEL | | | | 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS) | | | |
| | | | | 2. FOREIGN | | | |
| F. PARTICIPANT SUPPORT | | | | | | | |
| | 1. STIPENDS \$ | | | | | | |
| | 2. TRAVEL | | | | | | |
| | 3. SUBSISTENCE | | | | | | |
| | 4. OTHER | | | | | | |
| | TOTAL NUMBER OF PARTICIPANTS () | | | TOTAL PARTICIPANT | | | |
| G. OTHER DIRECT COSTS | | | | | | | |
| | 1. MATERIALS AND SUPPLIES | | | | | | |
| | 2. PUBLICATION/DOCUMENTATION/DISSEMINATION | | | | | | |
| | 3. CONSULTANT SERVICES | | | | | | |
| | 4. COMPUTER SERVICES | | | | | | |
| | 5. SUBAWARDS | | | | | | |
| | 6. OTHER | | | | | | |
| | TOTAL OTHER DIRECT COSTS | | | | | | |
| | H. TOTAL DIRECT COSTS (A THROUGH G) | | | | | | |
| I. INDIRECT COSTS (F&A) (SPECIFY RATE AND BASE) | | | | | | | |
| TOTAL INDIRECT COSTS (F&A) | | | | | | | |
| | J. TOTAL DIRECT AND INDIRECT COSTS (H + I) | | | | | | |
| | K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECT SEE GPO 11.D.7.) | | | | | | |
| | L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K) | | | | | | \$ |
| | M. COST SHARING: PROPOSED LEVEL 3 | | | | | | \$ |
| PI/PO TYPED NAME AND SIGNATURE* | | | | DATE | | | |
| ORG. REP. TYPED NAME AND SIGNATURE* | | | | DATE | | | |
| | | | | FOR NSF USE ONLY | | | |
| | | | | NUMBER OF COST REVIEW DISSEMINATIONS | | | |
| | | | | Date Checked | | | |
| | | | | Date of Rate Check | | | |
| | | | | Initials-ORG | | | |



Key Content & Concepts

- **“Cost Model Data Set.** The cost data used as input to software tools and/or project reports to organize, correlate, and calculate different project management information.”





Key Content & Concepts

- NSF Budget Categories
 - Expand upon PAPPG and GPG
 - Explain acceptable justification
 - Put Contingency in “G.6 Other”



Construction Estimates

- Content & Format (WBS!)
- How GAO Guides & Best Practices Integrate w/ LFM & MREFC Process
- Basis of Estimate
 - Level of detail, justification, traceability
- Definitions
 - Cost Book Sheets → Cost Book Report



Office of Budget Finance & Award Management

| Activity Summary | | | | | | Year | | | |
|--|--|--|--|---|--|-------------------------------|---------------|--|---------------------------|
| Institution: WBS: Activity: | Funding Source: WBS Description: Activity Description: | Provide WBS element number and description per WBS Dictionary | | Estimator Name, Date | Estimated By: Date: | FY of Estimate | | | |
| Personnel Costs Detail (A + B + C) + I | Equipment, Travel, Participant Support Costs Detail (D + E + F) + I | Materials/Supplies, Publication, Consultants, Computer Services, Subawards Costs Detail (G1 + G2 + G3 + G4 + G5 + G6) + I | | Total Base | Contingency | Total W/Contingency | | | |
| \$0.00 | \$0.00 | (\$0.00) | | \$0.00 | \$0.00 | \$0.00 | | | |
| Personnel Costs Detail (A + B + C) + I | | | | | | | | | |
| Exp Code | NSF Code | Resource ID - Price Group | Resource Description | Cost Basis* | Labor Hours | Direct Labor | Fringe | Indirect Cost | Total Burdened Labor Cost |
| Label NSF Budget Category Codes, e.g., A for Senior Personnel, D for Equipment, G.5 for Subawards | | Provide Labor Resource Descriptions, e.g. Manager, Mechanical Engineer, Electrical Technician | | | Provide associated Fringe and Indirect Costs | | | | |
| *Cost Basis: CP-Catalog Price CR-Cost Relationship EE-Engineering Estimate HD-Historical Data VG-Vendor Quote VE-Vendor Estimate | | | | | | | | | |
| Equipment, Travel, Participant Support Costs Detail (D + E + F) + I | | | | | | | | | |
| Exp Code | NSF Code | Resource ID - Price Group | Resource Description | Cost Basis* | Material Units | Direct Material | Indirect Cost | Total Burdened Material Cost | |
| Provide Other Direct Cost Resource Descriptions, e.g. Concrete, Design Consultants, Computer Software, Construction Contracts | | | Show Direct Cost Calculations with Labor Hours and Material Units | | | | | | |
| *Cost Basis: CP-Catalog Price CR-Cost Relationship EE-Engineering Estimate HD-Historical Data VG-Vendor Quote VE-Vendor Estimate | | | | | | | | | |
| Materials/Supplies, Publication, Consultants, Computer Services, Subawards, Other Costs Detail (G1 + G2 + G3 + G4 + G5 + G6) + I | | | | | | | | | |
| Exp Code | NSF Code | Resource ID - Price Group | Resource Description | Cost Basis* | Material Units | Direct Material | Indirect Cost | Total Burdened Material Cost | |
| Provide Equipment, Travel, and Participant Cost Resource Descriptions, e.g. Specialized Equipment, Foreign Travel | | | Provide Cost Basis Code for estimate methodology, e.g., expert opinion, analogy, parametric, or engineering build-up | | | | | | |
| *Cost Basis: CP-Catalog Price CR-Cost Relationship EE-Engineering Estimate HD-Historical Data VG-Vendor Quote VE-Vendor Estimate | | | | | | | | | |
| Risk Assessment and Contingency Calculation (G6) | | | | | | | | | |
| Risk: Technology: Cost: Schedule: | Risk Factors | Risk Multipliers | Risk Adjustments | Total Risk Multiplier: Override Multiplier: | | Estimated Contingency Amount: | | \$0.00 | |
| Provide associated Risk number from Risk Management Plan in PEP, Calculations, and Estimated Contingency Amount | | | | | | | | | |
| Statement of Work | | | | | | | | | |
| This activity includes: | | | | | | | | Describe the scope of the specific activity and clarify any items not included and covered elsewhere | |
| Basis of Estimate | | | | | | | | | |
| Provide a narrative explaining the approach to the estimate and any assumptions, research, sources, references, calculations, etc. | | | | Directly attach, reference, or electronically link to any additional supporting information and references, e.g., drawing numbers, technical specification sections, technical requirements, catalog price sheets, vendor quotes, labor rate sources, RSMMeans tables, etc. | | | | | |
| Provide Source Data and Calculations for the Basis of Estimate, e.g., Labor Rates and Unit Prices referencing Source Material | | | | | | | | | |



Operations & Management Awards

- Content & Format (WBS: functional activity and/or deliverable based)
- GAO Best Practices
- Basis of Estimate
- Delineate costs for maintenance, infrastructure changes, utilities, general support services





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QUESTIONS?!?