



*Federal
Emergency
Management
Agency*

Public Assistance Program

**Standard Operating
Procedure**

Cost Estimating Format for Large Projects

9570.8 SOP
November 1998



CEF STANDARD OPERATING PROCEDURE

(All documents referenced below can be located on the FEMA Public Assistance Website at <http://www.fema.gov/r-n-r/tool.htm>).

What information exists for the Cost Estimating Format (CEF) for Large Projects and what is it for?

- The [CEF Information Update \(November 1998\)](#) provides an overview of FEMA's cost estimating methodology for large projects.
- The [Applicant Handbook \(FEMA Publication 323, September 1998\) - Chapter 6, Handling Large Projects](#) describes a subgrantees large project roles and responsibilities in developing large projects.
- The [Cost Estimating Format for Large Projects Instructional Guide, Version 2 \(November 1998\)](#) provides application guidance to users responsible for developing a large project cost estimate.
- An excel-based template, referred to as the [CEF for Large Projects Spreadsheet](#), has been designed to provide more uniformity in estimating costs for large projects, and to make it user friendly and flexible enough to respond to individual project conditions for all types of permanent restorative work.
- The CEF may be revised periodically as data from completed projects becomes available. A standard report has been developed to collect this data. The [CEF - Large Project Report](#) is a word-based spreadsheet that is completed by the Public Assistance Officer for each large project that was estimated using the CEF.

This [Standard Operating Procedure](#) provides an overview of the CEF for Large Projects, and is intended for the users responsible for procuring component factor information, and for developing large projects and their estimate of costs. The procedure also discusses FEMA Headquarters large project reporting requirements.

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Which Large Projects will the CEF be used on?

- The CEF should only be used on large projects for which the permanent restorative work (Categories C, D, E, F, and G) is less than 50% complete, or will take four or more months to reach 90% project completion (pre-punch list/contractor retainage stage). CEF should not be used for large projects that are either greater than 50% complete, or will be 90% complete within four months (use actual eligible costs). Percent complete is derived from the approved design and/or construction timeline for eligible work, using the start and completion dates of the project to determine project duration.

What is the process for preparing an estimate for a Large Project using the CEF?

- Project Officers (POs) are responsible for determining which local factors to use in the development of the project cost estimate. Specific items are unit price sources, city cost indices (if applicable), and local costs for plan checks, building permits, or special reviews. This information will be collected and evaluated at the beginning of each disaster and used uniformly for all CEF analyses. Prepare the CEF for large project as follows:
- Determine the eligible scope of work and base costs (Part A of the CEF), including Special Considerations and Section 406 Hazard Mitigation for large projects that meet the criteria noted in the previous bullet. Part A of the CEF should be completed in accordance with the guidance provided in the Cost Estimating Format for Large Projects Instructional Guide. All work activities needed to perform the eligible scope of work will include a written description of the scope of work, the cost item reference (Construction Specifications Institute [CSI] based), cost code reference (if FEMA cost codes are used), the unit [linear foot (LF), square foot (SF), each (EA), cubic yard (CY), etc. - do not use lump-sum (LS)], the quantity (or measurement), the unit cost and the quantity cost. Each line item's unit price/subtotal cost will be adjusted to reflect the city cost index where the work will take place.
- Document the eligible scope of work on the CEF Fact Sheet. Detailed supporting backup documentation such as site maps (or location plan), photographs, sketches, calculations, measurements, insurance declarations page, anticipated or actual insurance settlement, Section 406 HMP proposal(s), construction permits and clearances, force account (F/A) summary sheets, codes and standards identified in the CEF Notes sheet; and for major construction activities such as water control facilities and large buildings, to include schematic drawings; a set of plans preferably reduced to 11" x 17" containing basic information such as elevations, floor plans, site plan, structural plans and sections, etc., as applicable, are required from the applicant during the large project formulation process. Source documents such as invoices, vouchers, timesheets, purchase orders, item slips, weight slips, plans and specifications, insurance policy, etc. reside with the applicant.
- After the eligible scope of work and its base costs are completed in Part A, the PO will complete Parts B through H (the factors applied to the base cost) of the CEF. Separate summaries will be developed for completed and uncompleted work. Assumptions used in defining factors B through H will be documented in the CEF Notes Sheet.

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- The PO will use the CEF for large projects estimate to prepare the project worksheet (PW) and for cost reconciliation (as applicable) using the large project guidelines noted in the Public Assistance Guide.
 - Funding for *improved projects* will be based on the approved federal share of the CEF estimate, rather than actual costs, because the work actually accomplished on the project will normally be quite different from the work described on the PW. The CEF estimate is based upon the costs that would be associated with repairing the damaged facility to its pre-disaster condition. The improved facility must have the same function and capacity as that of the pre-disaster facility. Also, if the improved project involves a replacement facility, at the same or new site, funding for Section 406 hazard mitigation work will not be eligible.
 - FEMA approved *alternate projects* will be funded at either 90 percent of the Federal share of the approved CEF estimate for the eligible work, without any added Section 406 hazard mitigation measures, or the actual cost of the completed approved alternate project, whichever is less.
- The PW is completed as follows: under the *Project Cost* section of the PW, the PO will print the following information: use *Item #1*; use *Code #9999*; add in the *Narrative* block this statement "See attached CEF spreadsheet for itemized unit-price estimate particulars"; add 1/LS (lump sum) for the *Quantity/Unit*; and use the total estimate value from the CEF calculation to fill-in the *Unit Price* and *Cost* blocks. Appropriate cost adjustments to the CEF line-item #1 may then be applied (e.g. a deduction for anticipated or actual insurance proceeds, or salvage value/depreciation, etc.). The *Total Cost* block will reflect the final eligible cost (100%) after any cost adjustments. The following steps will then be performed:
 1. After the PO completes the PW, the excel file containing the CEF estimate will be printed in its entirety and attached to the PW. Also, all applicable supporting back-up documentation noted above must be attached behind the CEF spreadsheet (that is in turn attached to the PW). When the PW has been completed, the PO will submit the PW and the diskette containing the electronic CEF spreadsheet to the Public Assistance Coordinator (PAC).
 2. When the PAC approves the project, *subsequent to Special Considerations clearance*, the PAC will submit the diskette containing the completed CEF spreadsheet, along with the entire PW package to the Data Coordinator for NEMIS entry. The CEF spreadsheet will then be attached electronically within the National Emergency Management Information System (NEMIS) to the electronic copy of the PW. The back-up documentation will also be scanned into the Case Management File (CMF).
 3. When the electronic NEMIS and CMF functions have been completed, the Data Coordinator will continue processing the PW, including necessary filing operations.
 4. The *Total Cost* block of the PW will be used as the basis for obligating the Federal share of the large project cost.
- As large projects are completed and project documentation is submitted to FEMA by the State, actual eligible costs will be reconciled against estimated costs (resulting in an

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obligation or deobligation of funds for eligible work). Please reference the exceptions for improved and alternate projects noted previously.

- If the PO requires assistance with any part of the CEF, the PO will request a Technical Specialist (a cost estimator or engineer) or a Program Specialist (e.g. environmental, historic, insurance, etc.) from the Resource Coordinator (RC). Reference the CEF for Large Projects Instructional Guide for more detail.

What is the process for preparing an estimate for a Large Project if CEF is not used?

- Prepare the eligible scope of work and quantitative estimate for work completed and work-to-be-completed using the standard damage survey and inspection process. Reference the Public Assistance Guide.
- The supporting backup documentation and source documentation requirements for large projects formulated without CEF are the same as for those that are formulated using CEF (see previous question).
- After the PO completes the PW and it has been entered in NEMIS, all applicable supporting back-up documentation will be scanned into the CMF as discussed previously.
- If the PO requires assistance with any part of the large project formulation process, the PO will request a Technical Specialist (a cost estimator or engineer) or a Program Specialist (e.g. environmental, historic, insurance, etc.) from the RC.

What are the appropriate references for unit prices in preparing Part A base costs?

- POs will request average weighted unit prices (local costs derived from actual contract history) from the applicant or relevant State/regional agency (Department of Transportation-DOT, etc.) in order to prepare the eligible scope of work with the applicant. The average weighted unit price information should be evaluated for compatibility with the eligible scope of work and consistency over a reasonable time period. Use R.S. Means Cost Data (the most current editions available) if the applicant does not have appropriate average weighted unit price data. FEMA Cost Codes or other commercial cost-data estimating resources are a last source of reference for unit prices in preparing Part A base costs. [One copy each of the following R.S. Means Cost Data books (at a minimum) should be available for reference at the Disaster Field Office]:

- ADA Pricing Guide
- Building Construction
- Concrete and Masonry
- Electrical
- Facilities
- Heavy Construction
- Mechanical
- Plumbing
- Repair and Remodeling
- Site Work and Landscape
- Square Foot Costs

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If R.S. Means Cost Data are used in Part A, City Cost indices are to be applied to adjust the R.S. Means unit prices to the nearest City for the declared Counties. The Public Assistance Officer (PAO) or designee, will identify the zip codes included in the declared area, research R.S. Means for the appropriate city cost factors and tabulate them for use by the PO's.

County	Zip Code	City Reference	City Index

How are local costs for Plan Review and Construction Permits (Part F) determined?

- The PAO or designee is responsible for requesting documentation related to Plan Review and Construction Permit costs from the Grantee and for the distribution of the costs in tabular form to the POs for their use (see example below). Alternatively, the PO may request this documentation from the subgrantee. These costs will be determined directly from the controlling jurisdiction in which the subject project is located for the declared counties (e.g. City Building Department, or Office of State Architect, etc., as appropriate). Key items of information include:
 - How is the plan review or construction permitting cost defined?
 - What cost item (construction cost, total project cost, etc.) serves as the basis for calculation of plan review/construction permit costs?
 - What percentage is applied to the base cost?
 - Are these percentages on a sliding scale?
 - Are these fees ever waived in post-disaster situations?

The PAO or designee is responsible for checking the appropriateness of individual factors and ranges (Parts B through H), and for uniform application of these factors during large project formulation. This is especially important with regard to force account efforts, use of contingencies, time frames for escalation, post-disaster inflation adjustments (e.g., when local costs are used in Part A, etc.), and the need for engineering design and construction phase services.

The type of damage experienced will dictate how range selections are made for many of the factors. For example, visual identification of damage may be less difficult after a flood (once floodwaters have receded) than after an earthquake. The PAO may decide that the contingency factors in Part C should therefore be at the higher end of the range for an earthquake than for flooding. *The PAO will be responsible for justifying range selections in writing.*

County	Zip Code	Plan Review and Construction Permit Costs

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How are completed costs included when the CEF is used for estimating the total cost of a Large Project that is less than 50% complete, or will take four or more months to reach 90% completion?

- The PO will prepare a Part A estimate using the CEF for Large Projects spreadsheet for the entire project. It is the responsibility of the PO to separate eligible work from ineligible work. If the applicant had an estimate prepared before the work was completed, compare the actual costs against that estimate, and if reasonable, reconcile the cost differences. Enter the result in Part A "Summary for Completed Work." If no applicant estimate exists, the PO will prepare a CEF Part A estimate of the eligible completed work activities and compare the actual costs against it, and if reasonable, reconcile the cost differences. Enter the result in Part A "Summary for Completed Work." In both instances, the PO will also prepare a Part A CEF estimate for the uncompleted work portion using either average weighted unit prices or R.S. Means. The PO is also responsible for completing Parts B through H, as appropriate, for both the completed and uncompleted work.

What are the CEF large project reporting requirements?

- For every large project estimated by CEF, the PAO (or designee) will prepare a CEF - Large Project Report consisting of:
 - Disaster Number (and preparer's name)
 - Declaration Date (and date prepared)
 - Applicant Name
 - PA ID Number
 - PW Number
 - Category of Work
 - CEF Estimated Cost
 - CEF Actual Post-Construction Cost
 - Dollar Amount of Obligation or Deobligation
 - Reason for Cost Reconciliation
 - Primary Function of the Facility

The report is a word-based spreadsheet that is distributed with the CEF excel-based spreadsheet. Both spreadsheets are located on a diskette attached to the inside-back cover of the Cost Estimating Format for Large Projects Instructional Guide, Version 2 (November 1998).

- Once all large projects that have been estimated by CEF are completed, and the final costs reconciled, the PAO will forward the CEF - Large Project Report (including the reasons for cost adjustments between estimated and post-construction actual costs, as applicable) to the attention of James D. Duffer, RR-IS:

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