Federal Emergency Management Agency

Summary Meeting Notes from First Meeting of the Expert Panel on Cost Estimating for the Public Assistance Program

June 26 and 27, 2001

Crystal City Marriott
Salons B and C
1999 Jefferson Davis Highway
Arlington, Virginia

ATTENDEES

Panel Members

Laurence Zensinger	Panel Co-Chair and Designated Federal Official, Federal Emergency Management Agency (FEMA)
Albert Ashwood	Panel Co-Chair, National Emergency Management Association
Robert L. Edelblut, Sr., PE	National Society of Professional Engineers
Claudette Ford	American Public Works Association
Kaiopua Fyfe, CPE	American Society of Professional Estimators
G. Michael Hoover	Associated General Contractors of America
Norman H. Roush, PE	American Association of State Highway and Transportation Officials

FEMA Presenters and Technical Support

David Duffer	FEMA
Randolph Langenbach	FEMA
Brian Leap	Fluor Federal Services
Jenny Novillo	DMJM
Ken Rock	Earth Tech
Ted Van Kirk	Dewberry and Davis
James Walke	FEMA

Members of the General Public Attending

Miguel Becerril	Puerto Rico Federal Affairs Administration
Martha Braddock	(no affiliation provided)
Roni Brohammer	American Public Works Association
Graeme R. Cox, PE	California Governor's Office of Emergency Services
Jonathan Glazier	National Rural Electric Cooperative Association
Susan Healey	FEMA
Mike Hirsch	FEMA

Bob Hobart	Fluor Federal Services
Melissa Howard	FEMA
Jonathan Hoyes	Dewberry and Davis
MK McDonough	FEMA
Donald Pilon	International Association of Emergency Managers
William Quade	DMJM
Kristin C. Robinson	National Emergency Management Association
James Strange	American Public Power Association
Howard Stronach	FEMA
James Wayne	FEMA
Amy Weinhouse	FEMA

Day #1 (Tuesday, June 26, 2001)

Background

Section 205e(3) of the Disaster Mitigation Act of 2000 (Public Law 106-390), directs the Federal Emergency Management Agency (FEMA) to establish a methodology, consistent with industry practices, for estimating the cost to repair, restore, or replace eligible public facilities that are damaged during a major disaster. To accomplish this objective, FEMA is directed to establish an expert panel (Panel) consisting of industry, Sate, and local representatives to develop cost estimating procedures. The Panel is subject to the requirements of the Federal Advisory Committee Act (FACA). Accordingly, the Director of FEMA signed the Panel's charter on April 2, 2001. The charter was filed with the General Services Administration's Office of the Committee Management Secretariat pursuant to FACA regulations. A notice was subsequently published in the Federal Register (Volume 66, Number 102) on Friday, May 25, 2001 announcing the first meeting of the Panel, which was held in Arlington, Virginia on June 26 and 27, 2001 and was open to members of the general public.

The purpose of the meeting was to provide Panel members with an overview of the Public Assistance Program and FEMA's efforts to better estimate the cost to repair large projects. See Appendix A for the agenda. These efforts include the development of the Cost Estimating Format for Large Projects (CEF) and the pilot testing of the Grant Acceleration Program. FEMA believes the CEF is a good cost estimating tool, which was independently peer-reviewed by the American Society of Civil Engineers. The Panel should consider the merits of the CEF.

Introductory Remarks

- Mr. Zensinger opened the meeting at 9:00 AM, by welcoming participants and inviting everyone to introduce themselves to the group. He stated that the Panel would meet again in September 2001, and if needed, a third meeting would be scheduled for October 2001. A Panel Recommendation Report is due by January 2002. The report will be used to publish a final rule regarding the selected cost estimating methodology and floor and ceiling thresholds, in the Federal Register by November 2002. He stated that members of the general public may speak at

the advisory committee meeting when the floor is open for this purpose from 4:30 PM until the meeting is adjourned, each day the Panel convenes.

- Mr. Zensinger noted that FEMA does not have lots of "psychological lead time" to plan for projects after a disaster. FEMA's goal is to fund projects quickly and accurately and closeout projects as soon as possible.
- The Disaster Mitigation Act of 2000 will make it possible for FEMA to get money to applicants faster.
- Grants to applicants for the repair to pre-disaster condition of facilities damaged by a disaster are authorized under the Stafford Act. This Act defines a threshold, adjusted annually for inflation ($50,600 for FY01) that defines a large project.

Objectives

Specific objectives of the meeting were to:

- Look for better ways to estimate large projects.
- Identify reasonable floor and ceiling thresholds that can be achieved using the Panel's selected cost-estimating methodology, which will also provide a level of assurance to Congress that FEMA can prepare good estimates. This could be deemed as the level of error in cost estimating that is tolerable.
- Develop a work plan on how the Panel will operate and determine the type of technical assistance that is required to support the Panel.
- In order to attain these goals, FEMA desires that discussions among Panel members are open, frank and objective. Technical Assistance Contractors (TACS) will be available to provide assistance for all three meetings of the Panel.

The Public Assistance Program

James Walke gave a presentation on FEMA's Public Assistance (PA) Program and the impacts of the Disaster Mitigation Act of 2000 on the PA program. See Appendix B for the presentation.

The PA Program provides supplemental Federal disaster grant assistance for the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The State determines how the non-Federal share (up to 25%) is split with the applicants. Presentation topics included the application process, eligible applicants, eligible work, project requirements, types of cost data used by FEMA, average project cost, and average project cost for large projects.

The Disaster Mitigation Act of 2000 (DMA2K) amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act which authorizes Federal assistance to State and local governments in carrying out their responsibilities to alleviate the suffering and damage that result from disasters. Presentation topics included DMA2K's immediately effective provisions on the PA Program, consisting of alternate projects, private non-

profit organizations, Small Business Administration, definitions, notification to Congress, and public notice. The DMA2K's delayed provisions on the PA Program were also presented and consisted of reduced Federal share for repetitive damages, management costs, and cost estimating procedure.

The Grant Acceleration Program (GAP)

Randolph Langenbach gave an overview on FEMA's GAP. See Appendix C for the presentation.

GAP was initiated following the Northridge Earthquake where large, complex buildings were damaged. Damages were not apparent in many cases during the initial inspection, and there were many cases of serious underlying structural damages that required sophisticated engineering analysis. GAP was established as a voluntary program to allow participants to receive a fair and reasonable fixed budget amount up-front, thereby accelerating the normal funding procedure for large projects. This reduced FEMA involvement during construction, reduced applicant administrative costs, and allowed FEMA to more quickly settle claims for large, complex building projects. Presentation topics included the purpose of GAP, the prior cost-estimating situation and results, the value of the CEF and GAP process, early CEF development, and the objectives of CEF.

Ted Van Kirk gave an overview on the origins, development and verification of GAP. See Appendix C for the presentation.

Applicants' desire negotiated settlements, as is done in the insurance industry, without having to request supplements for changes in scope or when a need for additional funding is discovered. GAP was set up as a voluntary program that offered incentives to applicants in the use of project savings generated by the program, a known project budget, and less FEMA oversight and involvement in the project. For the Northridge Earthquake, 86 applicants accepted GAP offers. Validation efforts undertaken to date show that GAP is working. Presentation topics included the origins of GAP, how to make GAP work, a comparison of GAP pilot implementation during the Northridge and Nisqually earthquakes, the concept and development of GAP, the test case phase and results of GAP, statistics on pilot closeout efforts to date, and GAP challenges.

General Discussion

There was a general discussion among Panel members following the GAP presentation.

Concerns were expressed about the possibility of applicants being under-funded under GAP. In response, a Northridge applicant's management of repairs under normal FEMA procedures and GAP procedures was shared with the Panel. Under normal procedures, there is no incentive to make cost effective decisions; rather there is a tendency to wait for a FEMA supplemental before proceeding with changed conditions. The GAP provided a budget for the repairs that the applicant managed carefully. This resulted in expeditious repairs and quick cost effective decisions when changes were identified. It

was reiterated that FEMA has not adopted GAP. It has been used only in pilot tests for the Northridge and Nisqually earthquakes. Regardless of the methodology used, FEMA make funds available immediately to begin the recovery process. However, in the case of large complex building projects damaged by an earthquake, the architect/engineering process is complex and lengthy. The process requires much interaction between FEMA, the applicant, and the engineers and designers. It has been FEMA's experience that GAP should provide incentives that reduce administrative costs.

The Cost Estimating Format for Large Projects (CEF)

Brian Leap gave an overview relating to the peer review that was conducted on FEMA's CEF. See Appendix D for the presentation.

CEF is a standardized format for estimating the cost of large projects. It was initially developed following the Northridge Earthquake recovery effort and was applied to large, complex building projects only. The revised, version received an independent peer review by the American Society of Civil Engineers (ASCE) in 1998. The CEF is in the form of a spreadsheet that provides a uniform method for preparing estimates and is explained in much greater detail in the Cost Estimating Format for Large Projects - Instructional Guide (Version 2), November 1998. Presentation topics included the focus of the peer review, the committee, the process, the conclusions and recommendations; the background of the CEF; a description of what CEF is and is not; and the advantages and future goal of CEF.

David Duffer gave a detailed presentation on the CEF. See Appendix D of the presentation.

The revised version of the CEF can be used for all types of infrastructure damage, in all types of disasters. This version has been tested against data from large project closeouts and undergone a peer review by an independent group of industry experts who evaluated the methodology, substantiated component factors, and recommended improvements necessary to apply the CEF nationally.

The CEF provides a worksheet, called Part A, that allows the user to estimate base construction costs. The user then applies a series of factors (Parts B through H) that represent non-construction costs. These expenses can reasonably be expected to occur because they are construction-related costs usually encountered during the course of construction. These factors are applied to the Part A base construction costs to estimate the total cost of completing the project. This "forward-pricing" methodology provides an estimate of the total eligible funding at the beginning of the project. This estimate is used to obligate funds for the project and allows the applicant to more accurately manage the budget with a greater degree of confidence.

Presentation topics included a description of the CEF process and how it fits into the Public Assistance Program, each of the factors that makes up the CEF, how the factors are to be applied to the base construction cost estimate, and how to use the CEF spreadsheet in the estimate calculation. Teams using the CEF will be comprised of

professional engineers and cost estimators who have been in responsible charge of important engineering work or have extensive experience in the construction industry.

General Discussion

Following the CEF presentation, Panel members expressed their general consensus that the CEF is a good tool and discussion focused on how to make the CEF better.

The applicant needs to be involved in developing the cost estimate and all parties involved in the project must have a clear understanding of the scope of work, and that scope of work remains consistent throughout the life of the project. Whatever we do and decide on, it has to be simple and transparent. It must be clear to a lot of people who will be involved in the review process. While the Project Officer is responsible for developing the Project Worksheet in a multi-disciplinary environment, Panel members agreed that the lead estimator is responsible for developing the actual construction cost estimate and should participate in the on-site review of the project conducted by the Project Officer. However, cost estimates need to be built to get an end product; there is no simple solution. Cost estimating is a "build as you go" procedure.

Deployment of multidisciplinary teams has helped in the Nisqually Earthquake recovery process. In general, applicants have been pleased with the quality of estimates. Using an integrated, seamless process where everyone works together as a team has worked well. This can be accomplished by using applicant-provided cost data wherever possible. We are clearly further along in the recovery process now in Nisqually using the CEF, than we would have been without it.

Panel members agreed that the factors used in the CEF are acceptable, and acknowledged that some project savings and overruns will still be realized in the real world as a result of open market conditions.

Plan for Day #2

It was agreed on day 2 that the Panel would think about the CEF factors and floor and ceiling thresholds, and what else the Panel needs to accomplish.

The meeting adjourned at 5:00 PM.

Day #2 (Wednesday, June 27, 2001)

The meeting commenced at 8:00 AM.

Recap of Day #1

The Panel agreed that CEF is a good tool and that the GAP is a good program, but we should not focus further on the GAP in our discussions. Relating to the CEF, we need to talk more about factors and what categories the factors are in.

General Discussion

Following the recap, Panel members focused their discussion on the adoption of a cost-estimating methodology that requires expertise:

- A higher level of expertise (multi-disciplinary) is needed at the early stages of developing an estimate. The challenge is to make this process as easy as possible.
- Additional details for the estimate are filled in later using the same format and approach.
- Factors will be valid and applicable if the core estimate is good.
- Whenever possible, FEMA should use local professionals who are familiar with costs in the area affected by a disaster.
- The CEF format developed by FEMA is good. The spreadsheet prompts people to think about the project and does what you require it to do. The markups seem a bit high, but there is a recognized need for a standard system that must work around the country.
- It's hard to mandate what people should do. We might consider a two-phased approach. It should allow changes later on in the process if complications arise or if new conditions are discovered. Alternatively, FEMA could process two PWs -- one for initial work and architect/engineering services while the complete CEF is being developed.
- Remember that we want to move the entire program in the direction of "improved projects" where we give the applicant money and don't have to track it further. This approach allows applicants to get the money and make decisions.
- The CEF is a good form, but it needs to be used with accuracy in the field. Applicants need it to reserve required matching funds. A good estimate is essential.

Panel members then focused their discussion on the CEF, its component factors, consideration for equipment and contents, and reasonable floor and ceiling thresholds, in order to fulfill the requirements of the charter:

<u>CEF</u>

- CEF should mirror, as closely as possible, standard industry methods, such as those used by the American Society of Professional Estimators (ASPE). ASPE Committee members will be asked to help with this effort. If we remove the disaster factor, we can view the effort as simply giving a developer an estimate for a job. The estimate should be complete, but not all the details need to be known.
- CEF is an incremental-complexity instrument. There is less-risk as more information becomes known and as the process moves forward. CEF provides a template only; not all parts of the spreadsheet need to be filled in.
- It will prove difficult to find people that meet FEMA's criteria for estimators. FEMA must provide good in-house training for estimators so people can be pre-

qualified with the right type and level of expertise to work on a disaster. The GS-11 level currently specified is too low. An alternative could be implementation of the estimating contractor approach, where a lead estimator would be required to possess the necessary Public Assistance Program expertise. This person could provide program guidance to other estimators less skilled in the provisions of the PA Program, while the cost-estimating cadre is being developed.

- It is important to get decision making down to the local level. FEMA and States do not build buildings – we write checks. The locals do all the work. Our job should be to get the money to them as soon as possible. The CEF is a good reference document to make sure that the right items are included in the cost estimate.
- FEMA needs to do a better job educating applicants. We need to have open discussions about the scope of work. Applicants are not overly concerned about the role of the State in FEMA's program.
- What we're really talking about is pre-qualification of estimators. Certified Professional Estimator is a recognized qualification in the industry. In response, the Panel agreed that qualified estimators are needed, but noted that becoming a certified estimator should not be a requirement of the job.
- Panel members agreed that:
  - ✓ Some pre-qualification or certification is required and that a Professional Engineer (PE) license or Professional Estimator Certification is desired.
  - ✓ Additionally, disciplinary expertise is needed that focuses on the specific type of facility being estimated (e.g., bridges, buildings, etc.).
  - ✓ More expertise in the field from FEMA contract staff, as well as with full-time FEMA staff will be required.

CEF Factors

- Factors may be adjusted in the field to reflect local conditions. Factor adjustment is covered on pages 10 and 11 of the CEF Instructional Guide. It is important to remember that:
  - ✓ The factors in the back of the Guide are from RS Means and should be used only as a second or third cost data choice, only when local cost information is not available from the applicant.
  - ✓ We want to include as many line items in Part A as possible. The best option is to get specific cost data for Parts B through H, directly from the applicant, only for those cases in which you are unable to otherwise line item your work activities in Part A, thereby eliminating consideration for most of the other factors (i.e., Parts B-H). Regardless, the Public Assistance Officer (PAO) on each disaster is responsible for obtaining and developing this data, consistent with the established procedure for estimating large projects.
  - ✓ CEF is not a one-size-fits-all methodology. It has been specifically designed to customize a cost estimate for each project. Additionally a team approach or

partnership is absolutely needed, with specialized technical expertise available from any member of the partnership, as required for prudent consideration for the facility being estimated.

Equipment and Contents

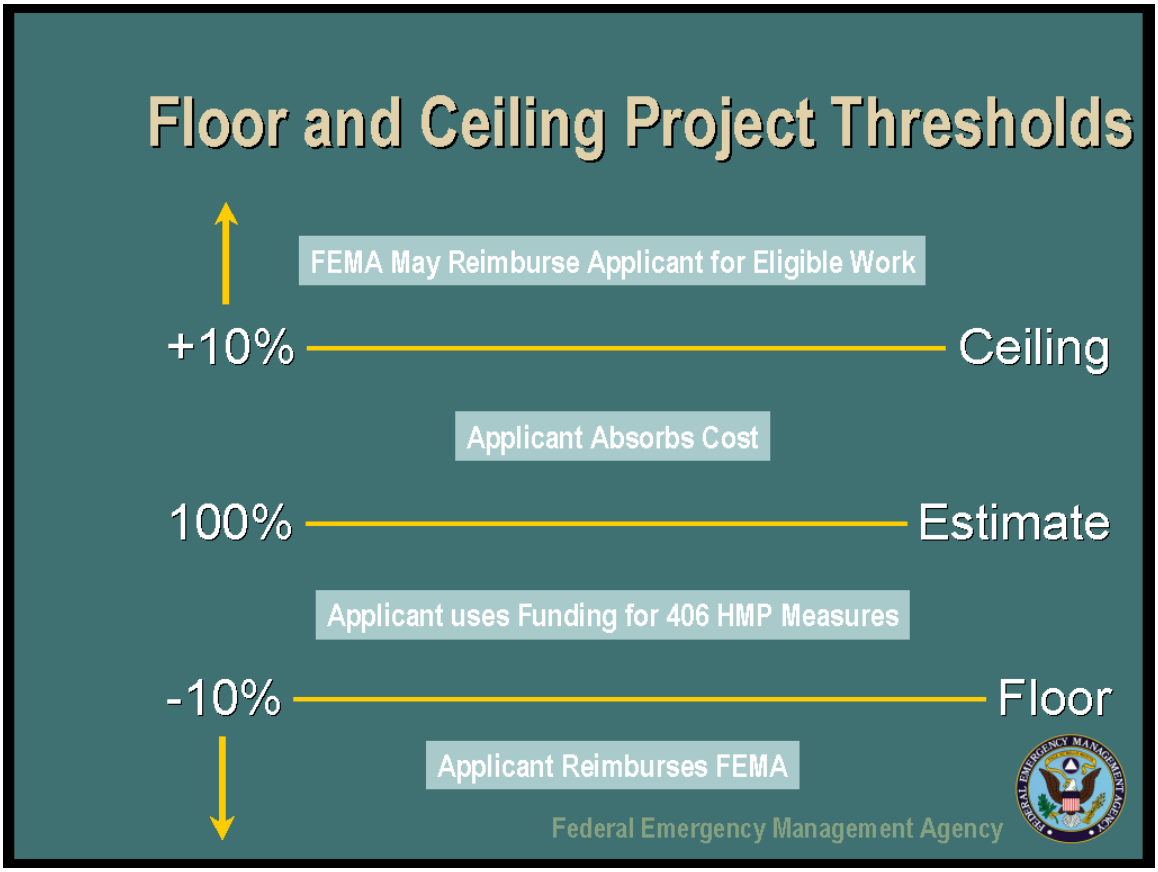
- For equipment and contents, we will require similar expertise as discussed above, but in the areas of equipment and contents (i.e., furnishings, computers, etc.). Contents are generally amenable to the factor approach and could be developed, however, unless specialized equipment is involved, such as a Magnetic Resonance Imaging machine at a hospital, an inventory list depicting the actual purchase price and the date of purchase is still preferred. This is why FEMA's CEF was developed to estimate construction costs (permanent and non-permanent work) only.

Proposed Floor and Ceiling Threshold for Cost Estimates

- FEMA's general experience with CEF to date shows that:
  - ✓ For project costs of $2 to $4 million, the project range is (plus or minus) 10%.
  - ✓ For project costs less than $2 million, we've experienced cost overruns of more than 20%.
  - ✓ For project costs greater than $4 million, we've experienced cost underruns of more than 20%.
- Our mission is to report to Congress on how we're doing. We have two years to test and refine our new system. Our goal is not to convince Congress of anything. The ceiling and floor thresholds will apply to large projects only at this time.
- Applicants need to be part of the process from the outset and FEMA needs to be clear on the methodology.
- We need to be explicit regarding on two issues, eligibility and cost estimating. Eligibility is totally separate from the cost estimating process. Applicant expectations may not always be realistic in the areas of eligible scope of work and eligible project cost.
- Developing costs is a cooperative process. Once everyone agrees on costs, we need to be able to determine the right amount and then walk away. We also need to establish a cutoff date for making changes to a project.
- We need to be careful with this. If there is a bid of $7 million on a project that was estimated at $10 million, then is the underrun returned to FEMA?
- In explanation, FEMA asked Panel members to consider two project scenarios:
  1. if a bid is $13 million, for a job estimated at $10 million
  2. if a bid is $10 million, for a job estimated at $13 million
- After some discussion of estimates and contractor bids based on the two above scenarios, it was apparent that not all agreed on the correct interpretation of the Disaster Mitigation Act of 2000 relating to the establishment of ceiling and floor estimates. To assist further, FEMA sketched the following illustration (that was

subsequently generated with electronic assistance) on an easel pad for the consideration of Panel members. Panel members agreed with the illustration and better understood the legislation.

- Need to remember that in a disaster situation, contractors will be overworked and are likely to be charging higher rates for their services as a result of greater project demand. This may be true even if it's six months after the disaster, or depending on the magnitude of the disaster, the duration could be even longer.



- Panel members reached consensus and recognized that plus and minus 10% are reasonable floor and ceiling thresholds for project cost, as derived from construction industry standards.

  It was understood that some projects in the $50 to $100K range could fall outside the threshold, but there was general agreement that the 10% number is good and that using the same number across the board would make the program easier to administer.

  Should certain projects be excepted on a case-by-case basis, but not as a general rule? Or should the contractor be part of the partnership and be aware of FEMA's cost estimate? All agreed that history shows that contractors tend to bid at or

above the estimate amount and therefore, providing cost estimates to contractors would provide no immediate benefit. Panel members agreed that the selected cost estimating process must allow an opportunity for project settlement right at the start and the establishment of a project completion date. This last incentive helps an applicant to actually complete eligible project work and restore services of a governmental nature to the community.

Review of How the Panel will Operate

1) Develop a work plan.
2) Fulfill the requirements of the charter.
3) Determine if CEF is appropriate. Remember that Congress wants a methodology that we can share with applicants to make sure they get all the money they're entitled to. We don't need to "sell" the plan to Congress, per se.
4) Identify any technical assistance that may be needed.

Structure of Panel Recommendations Report to the Director

The Panel agreed that:

1) The report will acknowledge the fine work done on the CEF.
2) Include information on the GAP and other relevant information from the Northridge Earthquake.
3) Discuss the plus and minus 10% range that has been chosen for the floor and ceiling thresholds.
4) The Panel will submit a draft of the report Laurence Zensinger, Panel Co-Chair and Designated Federal Official and Albert Ashwood, Panel Co-Chair for their review and approval. It will then go to Lacy E. Suiter, Assistant Director of FEMA's Readiness, Response and Recovery Direcotrate, prior to proceeding to Joe Allbaugh the Director of FEMA. If the Director agrees with the recommendations, the report will be used to publish interim and final rules in the Federal Register for public review and comment

General Discussion

- Notes taken from this meeting will be distributed to Panel members. We can then use those notes as a basis for making recommendations that can also be included in the report.
- The Panel discussed curves A and B (used for determining the percentage of Engineering and Design Services for a large project) as contained within Part H of the CEF Instructional Guide. The Panel reached general consensus that the curves are indeed outdated, and that technical support should be used to collect updated information needed for an update. This information should be made available for the next meeting of the Panel.

Recap of Technical Requirements

1) In order for Panel members to officially endorse FEMA's CEF on behalf of their respective professional organizations, the Panel directed that two comparative analyses be performed between FEMA's Cost Estimating Format for Large Projects - Instructional Guide, Version 2 (November 1998) and ASPE's Standard Estimating Practice, Fifth Edition (October 1998). The first comparative analysis will be performed by each of FEMA's Technical Assistance Contractors (TACs) and the second comparative analysis by ASPE's Standards, Certification and Education Boards. The results of the comparative analyses will be made available for Panel deliberations during their second meeting and could be used by the Panel to augment and/or revise FEMA's Cost Estimating Format for Large Projects - Instructional Guide, Version 2 (November 1998).
The independent comparative analysis will consist of:

   a. validating whether or not the CEF is parallel to ASPE's level 3 (design, development/budget appropriation) estimating approach. If the CEF is not parallel to an ASPE level 3 estimate, say so and identify the ASPE level that the CEF is parallel to, and

   b. validating whether or not a CEF estimate (at an ASPE level 3) would provide a level of confidence commensurate with an ASPE level 5 (construction documents/contract drawings/definitive) estimate, such that the CEF estimate (at an ASPE level 3) would be within the ± 10% floor and ceiling thresholds selected by the Panel.

2) The Panel requested FEMA to contact and obtain current data from the National Society of Professional Engineers (NSPE), the American Institute of Architects (AIA), and the American Consulting Engineers Counsel (ACEC) on a proposed update to curves A and B (used for determining the percentage of Engineering and Design Services for a large project) as contained within Part H of the CEF Instructional Guide. This information should be made available for the next meeting of the Panel.

General Public Comments

- Graeme Cox: It is important to remember that State personnel need training too. It is not clear if additional guidance is forthcoming on how and when CEF should be used. For example, do applicants have a choice of whether they want to use it or not? In other words, if CEF is required, can applicants opt out? Thinks it would be appropriate to begin a new process at the start of a disaster, rather than transition half way through a disaster. (Response from FEMA: Before CEF is officially adopted, regulations will be issued for public comment. Comments will be responded to and, if the regulations are adopted, they will be required for everyone. CEF is an estimating methodology and not a substitute for the Grant Acceleration Program.)

- Randolph Langenbach: Want to point out that a substantial change in the scope of work required (e.g., based on new information discovered during the recovery process) would drive a reevaluation of funding for the project.
- Bob Hobart: Training is essential. It is done weekly at Nisqually.
- Jonathan Hoyes: Agree that we need to take another look at the cost curves.
- Claudette Ford: The report should provide a clear explanation about the benefits of CEF to municipalities and others.
- Kaiopua Fyfe: I think we've had some good discussions and interaction. The report should include background information in an executive summary. It would make the benefits to the applicant clearer and make the whole report seem smoother and more holistic. Additionally FEMA needs to develop a database of historical disaster related construction costs for large projects that use the recommended cost estimating procedure.

Closing Administrative Comments

- After Panel discussions, it was agreed that the next meeting will be on September 26 and 27, 2001 (Wednesday and Thursday) in the Washington, DC area.
- The Co-Chairs commended the Panel for being task oriented and completing the Panels' work in two days, rather than in three days as originally planned, and said, "We are impressed by your contributions and gratified that you all have participated in this process. Thank you for everyone's excellent input."

The meeting adjourned at 3:00 PM.

I _____/s/_____ (Laurence W. Zensinger, Designated Federal Official), this 31th day of August, 2001, hereby certify that the advisory committee meeting notes and attachments accurately describe the matters discussed and resolutions made, by the Expert Panel on Cost Estimating for the Public Assistance Program.