



FEMA

COST ESTIMATING PRINCIPLES FOR HAZARD MITIGATION ASSISTANCE APPLICATIONS

In early December 2014, this webinar was delivered to all ten Regions and again in March 2015 to the States. FEMA took all of the comments it received from the two webinars and incorporated them into this presentation. FEMA put this in the FEMA library as a quick and easy reference tool that States and Regions can refer to when working to develop or review cost estimates in HMA applications.

Goals of the Webinar

Provides a general understanding of the principles of reviewing cost estimates for HMA projects (throughout the grant lifecycle).

Provides a process for determining “reasonable costs” as part of grant application review.

Provides a short discussion of the bidding process / contract types

Does not provide cost estimation for developing mitigation plans.

The goal is to provide an understanding of the cost estimating principles. It will allow for a state reviewer to analyze the contractor’s cost estimate during application development and **help to determine whether a cost is allowable, allocable and reasonable relevant to the project.**

Agenda

- **Introduction, Section 1 (What is cost estimating?)**
- **Section 2 (Estimate documentation)**
- **Section 3 (Cost Estimate Examples)**
- **Section 4 (Checklists)**

Training Content

Section 1 – What is cost estimating?

- Location factors
- Eligible construction costs
 - Engineering and Architectural
 - Labor
 - Material
 - Construction equipment
 - Subcontract
- Non-Construction Cost

Section 2 – Estimate Documentation

- Basis of Estimate

Section 3 – Cost Estimate Examples

- Structural Elevation
- Wind Retrofit
- Safe Rooms

Section 4 – Checklists

Section One: What is Cost Estimating?

What is Cost Estimating?

- The goal of today's training is to cover the basics of construction cost estimates for common Hazard Mitigation Assistance (HMA) program project types
- It is an approximation of the probable cost of a product, program, or project, computed on the basis of available information.
- Each subapplicant/subapplication must provide a detailed construction cost estimate (budget) to support components of the project Scope of Work (SOW) and work schedule

What is Cost Estimating? (Continued)

H.4.3 Cost Estimate

The project cost estimate includes a line-item breakdown of all anticipated costs, including, as applicable:

- ◆ Costs for anticipated environmental resource impact treatment or historic property treatment measures
- ◆ Costs for engineering designs/specifications, including hydrologic and hydraulic studies/analyses required as an integral part of designing the project
- ◆ Construction/demolition/relocation costs, such as survey, permitting, site preparation, and material/debris disposal costs
- ◆ All other costs required to implement the mitigation project, including any applicable project-type specific costs identified in the Addendum of this guidance

EXAMPLES OF DIRECT COST CATEGORIES

- Compensation of employees for work performed under the award
- Costs of materials acquired, consumed, or expended specifically for award purposes

Source: 2015 HMA Guidance Part IV.H.4.3

Why is cost estimating Important?

- **Fairness and consistency.**
- **Tax payer dollars.**
- **Program and budget planning. (Federal, State and Local)**

Program and budget planning: Compliance with Uniform Administrative Requirements for Federal Grants (Cost Principles) 2 CFR 200.

Common Cost Indexes

- Engineering News Record (ENR)
- R.S. Means

Different Indexes, Different Results



INFRASTRUCTURE | BLOGS | EQUIPMENT | POLICY | EQUIPMENT | PEOPLE | MULTIMEDIA | OPINION | TECH
CONCRETE | GREEN | MATERIALS | TRENDS | HISTORICAL INDEX

Current Costs

ENR's most recent Construction Cost Index, Building Cost Index, Materials Cost Index, which are updated monthly. Tables include monthly and annual percent changes.

Construction Costs

Annual inflation measured by the CCI increased to 2.7% from 2.5% in November and a low of 2.0% in October.

1913 = 100	INDEX VALUE	MONTH	YEAR
CONSTRUCTION	2036.44	+0.3	+2.7%
COMMON LABOR	21149.34	+0.4%	+2.7%
WAGE \$/HR.	45.18	+0.4%	+2.7%

[Click here to see the construction cost index hist](#)

Building Costs

The BCI's annual escalation rate increased to 2.9% from 2.8% last month, primarily due to a 0.5% rise in the indexes labor component.

1913 = 100	INDEX VALUE	MONTH	YEAR
BUILDING	5490.04	+0.2%	+2.9%
SKILLED LABOR	9434.17	+0.5%	+2.7%
WAGE \$/HR.	52.36	+0.5%	+2.7%

[Click here to see the building cost index histor](#)

Materials Costs

Both steel and lumber prices fell this month, pulling the MCI down 0.3%.

1913 = 100	INDEX VALUE	MONTH	YEAR
MATERIALS	3064.01	-0.3%	+2.8%
CEMENT \$/TON	116.37	+0.1%	+5.0%
STEEL \$/TON	50.20	-0.3%	+1.4%
LUMBER \$/TON	469.59	-0.4%	+7.6%

[Click here to see the material price index](#)



While analyzing indices to compare changes over time is appropriate, a single cost index should be used for a project.

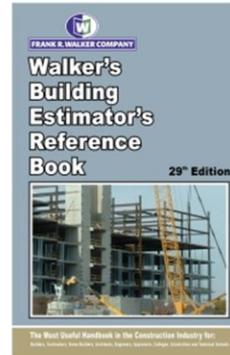
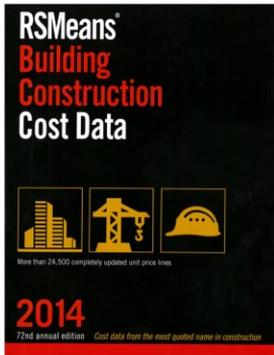
Common Construction Cost Data

- RS Means
- National Electrical Contractors Association (NECA) Manual of Labor Units
- Mechanical Contractors Association of America (MCAA) Labor estimating manual for labor productivities

Construction Equipment Rental Rates:

- Hertz National Rental Account
- Local Equipment Vendors

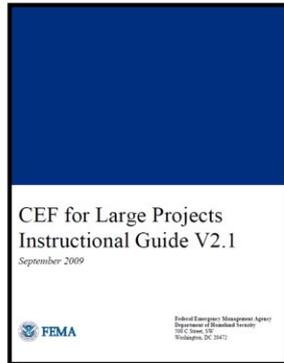
Cost Resources for Estimators



There are a number of industry reference guides for estimating. One of the most popular is RS Means. Means is in its 72nd edition and is published once every year.

Marshall and Swift is another resource:
<https://www.marshallswift.com/>

Cost Resources for Estimators



CEF (Cost Estimating Format) for Large Projects is a tool the FEMA Public Assistance uses but this may be an appropriate source for some mitigation projects (culvert up-sizing for example). <https://www.fema.gov/public-assistance-cost-estimating-format-large-projects>

Commercial Renovation is used for retrofitting.

Location Factors that Affect an Estimate

- **Site:** Land, utilities, visibility, local access, amenities, environmental, historic preservation
- **Accessibility:** Labor, materials, energy, markets, suppliers, customers
- **Social/Environmental:** Capital, subsidies, regulations, taxation, technology
- **Geographic:** short construction seasons, inclement weather

Site: Can be a floodplain/lack of utilities/shoreline erosion areas/island (a place where it is difficult to get materials)

Accessibility: Can be affected if the area has just experienced a large disaster; local labor and materials may not be available, and may be priced higher

Location Factors that Affect an Estimate

How to Use This Data

Localization Factors: Canadian (by City) and U.S. (by Zip), Cont.

United States, KS		United States, LA		United States, MD	
664	0.86	700	0.86	218	0.78
665	0.86	701	0.86	219	0.82
666	0.86	703	0.84		
667	0.86	704	0.81	United States, ME	
668	0.80	705	0.82	039	0.86
669	0.83	706	0.83	040	0.90
670	0.85	707	0.82	041	0.90
671	0.85	708	0.82	042	0.90
672	0.85	710	0.80	043	0.87
673	0.85	711	0.80	044	0.90
674	0.83	712	0.79	045	0.86
675	0.75	713	0.80	046	0.86
676	0.85	714	0.80	047	0.87
677	0.79			048	0.85
678	0.86	United States, MA		049	0.86
679	0.74	010	1.03	United States, MI	
		011	1.03	480	1.01
United States, KY		012	1.01		

Some cost estimating sources provide location factors (like the one displayed here) where the average cost in the US is assigned a location factor of 1 and areas where construction (labor, equipment and material) is less expensive has a location factor less than 1.0.

The first column is the first three numbers of the zip codes.

How do I know if a unit cost is reasonable?

- **Comparability to similar projects (including non-federal projects)**
- **Evaluate using costing resources**
- **Focus on major cost items**

2015 HMA Guidance

H. Cost Review

All costs included in the subapplication should be reviewed to ensure that they are necessary, reasonable, and allocable consistent with the provisions of 2 CFR Part 200. Conducting this cost review at the earliest possible stage allows for improved project scoping and facilitates project development, which facilitates FEMA project review.

Acceptable “detailed documentation” includes bids or invoices clearly identifying relevant line items and associated costs.

How do I know if a unit cost is reasonable? cont.

2 CFR Part 200.404 Reasonable costs.

A cost is reasonable if, in its nature and amount, it does not exceed that which would be incurred by a prudent person under the circumstances prevailing at the time the decision was made to incur the cost. The question of reasonableness is particularly important when the non-Federal entity is predominantly federally-funded. In determining reasonableness of a given cost, consideration must be given to:

(a) Whether the cost is of a type generally recognized as ordinary and necessary for the operation of the non-Federal entity or the proper and efficient performance of the Federal award.

(b) The restraints or requirements imposed by such factors as: sound business practices; arm's-length bargaining; Federal, state and other laws and regulations; and terms and conditions of the Federal award.

(c) Market prices for comparable goods or services for the geographic area.

(d) Whether the individuals concerned acted with prudence in the circumstances considering their responsibilities to the non-Federal entity, its employees, where applicable its students or membership, the public at large, and the Federal government.

(e) Whether the non-Federal entity significantly deviates from its established practices and policies regarding the incurrence of costs, which may unjustifiably increase the Federal award's cost.



Costs incurred must meet other general criteria:

Allowable – 2 CFR Part 200.403

http://www.ecfr.gov/cgi-bin/text-idx?SID=85db6dee53e2409c94c7ddab97b7bb9c&mc=true&node=se2.1.200_1403&rgn=div8

http://www.ecfr.gov/cgi-bin/text-idx?SID=85db6dee53e2409c94c7ddab97b7bb9c&mc=true&node=se2.1.200_1403&rgn=div8

Allocable – 2 CFR Part 200.405

http://www.ecfr.gov/cgi-bin/text-idx?SID=85db6dee53e2409c94c7ddab97b7bb9c&mc=true&node=se2.1.200_1405&rgn=div8

http://www.ecfr.gov/cgi-bin/text-idx?SID=85db6dee53e2409c94c7ddab97b7bb9c&mc=true&node=se2.1.200_1405&rgn=div8

NOTE: A cost that is allocable is not necessarily allowable or reasonable.

NOTE: There used to be 3 circulars from OMB that governed federal contracts. However OMB has superseded and streamlined the OMB Circulars for all federal awards into one document referred to as the Super Circular, codified at 2 CFR 200, effective December 26, 2014.

From the Management Concepts, Cost Principles for Federal Grants manual:

- The following factors should also be considered in determining reasonableness:

1. Is the cost of a type generally recognized as ordinary and necessary for the organization's operation or award performance?
2. What restraints or requirements are imposed by factors such as generally accepted sound business practices and arms-length bargaining?
3. How does the cost compare to market prices for similar goods and services?
4. Did the individuals concerned act with prudence in the circumstances, considering their responsibilities to the organization; its members, employees, and clients; the public; and the government?
5. Did the cost involve significant deviations from established practices of the organization which might unjustifiably increase costs charged to the award?

Major Cost Items

DESCRIPTION	UNIT	QUANTITY	UNIT COST	SUBTOTAL
ASPHALT CONCRETE TYPE S3(PG 64-22 OK)	TON	1561	\$ 60	\$ 93,660
ASPHALT CONCRETE TYPE S4(PG 64-22 OK)	TON	780	\$ 70	\$ 54,600
CONCRETE SIDEWALK (5" THICK)	S.Y.	1976	\$ 65	\$ 128,440
AGGREGATE BASE TYPE B	C.Y.	1336	\$ 50	\$ 66,800
CLASS A CONCRETE	C.Y.	2417	\$ 600	\$ 1,450,200
CLEARING & GRUBBING	L. SUM	1	\$ 30,000	\$ 30,000
COMBINED CONCRETE CURB & GUTTER	L.F.	2112	\$ 20	\$ 42,240
ENGINEERING & CONTRACT ADMIN	L. SUM	1	\$ 858,772	\$ 858,772
INLET FLOW STRUCTURE	EA.	3	\$ 100,000	\$ 300,000
LAND (33 - 50' WIDE LOTS)	AC.	5	\$ 550,000	\$ 2,750,000
OUTLET FLOW STRUCTURE	EA.	1	\$ 200,000	\$ 200,000
SAFETY RAILING	L.F.	2047	\$ 75	\$ 153,525
ACCESS RAMP (8' WIDE)	S.Y.	265	\$ 140	\$ 37,100
REINFORCING STEEL - RETAINING WALL	LB.	134380	\$ 1	\$ 134,380
REMOVAL OF ASPHALT PAVEMENT	S.Y.	29364	\$ 5	\$ 146,820
REMOVAL OF CURB & GUTTER	L.F.	2112	\$ 3	\$ 6,336
REMOVAL OF SANITARY SEWER	L.F.	2410	\$ 25	\$ 60,250
REMOVAL OF SIDEWALK	S.Y.	1173	\$ 7	\$ 8,211
REMOVAL OF STORM SEWER	L.F.	2120	\$ 30	\$ 63,600
REMOVAL OF STRUCTURES & OBSTRUCTIONS	L. SUM	1	\$ 50,000	\$ 50,000
REMOVAL OF WATERLINE	L.F.	1600	\$ 25	\$ 40,000
SANITARY SEWER RELOCATION	L.F.	2320	\$ 95	\$ 220,400
SAWCUT PAVEMENT	L.F.	220	\$ 5	\$ 1,100
STORM SEWER RELOCATION	L.F.	120	\$ 90	\$ 10,800
STRUCTURAL EXCAVATION UNCLASSIFIED	C.Y.	3347	\$ 20	\$ 66,940
TRAFFIC STRIPE (PLASTIC) (4" WIDE)	L.F.	8448	\$ 1	\$ 8,448
TYPE A - SALVAGED TOPSOIL	L. SUM	1	\$ 15,000	\$ 15,000
UNCLASSIFIED EXCAVATION	C.Y.	94915	\$ 15	\$ 1,423,740
SPILLWAY STRUCTURE	EA.	2	\$ 25,000	\$ 50,000
WATER PUMP & SUMP	EA.	1	\$ 13,200	\$ 13,200
WATERLINE RELOCATION	L.F.	830	\$ 100	\$ 83,000
			TOTAL	\$ 8,567,562



The main focus of this slide is to bring your attention to whether or not the costs pointed out in the next paragraph are reasonable. Other questions that you should raise are: What does land (33 – 50' wide lots) entail? What does unclassified excavation mean? These costs are over 1 million dollars and should have more detail as to why these costs are so high.

The major costs of a project are often found in a relatively few line items, for example in this minor flood control project \$5.5 million of the \$8.5 million dollar cost is found in 3 items (red outline).

Note there are some lump sums in this estimate (clearing and grubbing) that should be presented as unit costs, this would likely result in a request for additional information.

Please watch for these in your review of local estimates. FEMA might bounce this back.

Eligible Costs

- **Engineering and Architectural**
 - Costs for engineering & design of a project must be factored into the job
 - Engineering service could be required for inspections
- **Labor**
 - Wages paid to the field personnel who work on the project
- **Material**
 - Material price that is incorporated into a project. Includes all specified requirements & delivery charges
- **Construction Equipment**
 - The cost of equipment that a contractor uses to perform the work.
- **Subcontracts**
 - The total contractual cost to the general contractor for using a subcontractor to complete portions of the work

Labor costs might vary based on one or more factors including trade, union/open shop and/or job market.

Eligible Costs (Continued)

- **Indirect Costs**

- Bonding, permits, etc.

- **Pre-Award Costs**

- Incurred after the HMA application period has opened, but before a grant is awarded.
- Costs can cover Benefit Cost Analysis (BCA) development, Environmental/Historic Preservation (EHP) data gathering (not Environmental Impact Statement (EIS) preparation), subapplication or design development.
- Does NOT cover implementation costs incurred before the subaward is awarded.
- Are NOT reimbursed if a subaward is not awarded

It is VERY important to remember that if a project is not awarded, any pre-award costs that have been incurred will not be reimbursed.

Contingencies

Contingencies
2015 HMA Guidance Part IV. D.3.4

A contingency cost is an allowance in the total cost estimate to cover situations that cannot be fully defined at the time the cost estimate is prepared but that will likely result in additional eligible costs. Allowances for major project scope changes, unforeseen risks, or extraordinary events may not be included as contingency costs.

For project applications, cost estimates may include contingencies; however, the recommended total contingency range is 1 to 5 percent. Contingency costs may be raised to 7 percent for historic properties as defined under the NHPA. A Contingency cost should be included as a line item in the budget section of a project application. As with other line items in the budget, the subapplicant should justify the contingency estimate based on the nature of the proposed project. The total project cost, which may include contingencies, will be the one used to compute the BCA.



The difficulty of construction activities varies among HMA project types. New construction is inclusive; that is, something is created where nothing existed before. Conversely, repair and retrofit projects, which must be accomplished within the physical and operational constraints of existing facilities, tend to consist of tasks that are more detailed and sequenced, and require closer supervision throughout the process. Therefore, new construction may have a lower contingency than projects that retrofit existing structures.

The contingency cost is an allowance in the total cost estimate to cover situations that cannot be fully defined at the time the cost estimate is prepared such as the following:

- Steep embankments
- Unstable soil conditions
- Difficult subsurface construction conditions requiring such activities as rock excavation
- Urban or remote rural sites
- Special building code requirements
- Availability of adequate energy, skilled craft labor, and building materials
- The community's special requirements and restrictions
- Environmental considerations

A contingency cost should be included as a line item in the budget section of a project application. As with other line items in the budget, the subapplicant should justify the

contingency estimate based on the nature of the proposed project.

Cost escalation due to inflation is generally not considered a contingency because there are many industry publications that provide inflation factors to assist with cost estimations. Non-Federal entities can add these inflation factors to their cost estimate to account to address the period before construction starts (such as solicitation for a bid, design work, permitting). Cost escalation due to unforeseen factors – such as impacts to supply chains (i.e. wildfire limiting lumber availability) could be factored under contingencies.

Documentation is needed for contingency costs.

Contingencies continued

Contingencies

2015 HMA Guidance Part IV. D.3.4

Contingency funds are not automatically available for use. Prior to their release, contingency funds must be re-budgeted to another direct cost category. Post-award changes to the budget require prior written approval from FEMA (see Part VI, D.3). The written request should demonstrate what unforeseen condition related to the project arose that required the use of contingency funds.

Estimate Components

- **Description**
- **Quantity**
- **Unit Measure**
- **Material cost**
- **Labor costs**
- **Equipment costs**
- **Subcontract costs (if applicable)**
- **Non-Construction Costs**
- **Total cost**

Common Quantities of Measure

- **Each – EA**
- **Linear Foot – LF**
- **Square Foot – SF**
- **Cubic Foot – CF**
- **Cubic Yard – CY**
- **Ton – TN**

Section One: Questions and Comments

Section Two: Estimate documentation (Basis of Estimate)

Estimate Contents

- **The Scope of Work identifies the eligible mitigation activity, as described in Part IV, H.1:**

H.1 Required Components

The application must include a description of the activities and anticipated outcomes as a means for FEMA to determine whether the activities are eligible, whether the Applicant can complete the activities within the POP, and whether the proposed costs are reasonable.

A scoping narrative describes the proposed activity and includes three elements:

- ◆ SOW
- ◆ Schedule
- ◆ Cost estimate

The scoping narrative stipulates the deliverables, identifies the tasks required to complete the proposed activity, and defines the tasks to be accomplished in clear, concise, and meaningful terms. All cost elements must match tasks and provide sufficient detail for FEMA to determine whether the subapplication is eligible. The scoping narrative will become part of the conditions of the award.

All activities must be identified in the scoping narrative prior to the close of the application period.

These are required components of the scoping narrative.

When developing the scoping narrative, which contains the Scope of Work, Schedule and Cost Estimate, it's critical that all three of these components support each other because they are interrelated.

Therefore, the cost estimate must be consistent with the Scope of Work and Schedule, and vice versa.

Source: 2015 HMA Guidance Part IV.H.1

A well prepared basis of estimate will:

- Document the overall project scope.
- Communicate the estimator's knowledge of the project by demonstrating an understanding of scope and schedule as it relates to cost.
- Alert the project team to potential cost risks and opportunities.
- Provide a record of all documents used to prepare the estimate.
- Act as a source of support during dispute resolutions.
- Establish a realistic baseline for the scope, quantities and cost , which should eliminate cost overruns.
- Indicate fluctuations between estimates throughout the project lifecycle.
- Facilitate the review and validation of the cost estimate.
- Identify non-eligible items and specify that they are bid as an add or deduct alternate

Significant cost overruns might require the BCA to be reassessed.

As States, understanding how cost estimates were put together will allow for a well developed budget for a project.

ELEVATION - MASONRY FOUNDATION ONE FOOT ABOVE BFE (BID FORM)							
LABOR		MATERIAL		EQUIPMENT		SUBCONTRACT	
LINE	DESCRIPTION	QTY	UNIT	MH/UNIT	MAN HOURS		
1	Project Manager	20	HRS	1	20		
2	Superintendent	120	HRS	1	120		
3	Mobilize Equipment	1	EA	16	16		
4	Cut openings in foundation for lifting beams	8	EA	6	48		
5	Sever foundation anchors	12	EA	0.5	6		
6	Detach porches	1	EA	8	8		
7	Install mat jacks, beams, pre-lift	1	LS	250	250		
8	New pressure treated 2 x 6 plates	180	LF	0.05	9		
9	Secure house to foundation with strapping	1	EA	16	16		
10	Place new porches	1	EA	48	48		
11	Raise 1 ft above FEMA BFE (total 3.5 ft)	1	EA	300	300		
12	Debris removal cleanup	1	EA	48	48		
8a	New pressure treated 2 x 6 plates	180	LF				
9a	Secure house to foundation with strapping	1	EA				
10a	Place new porches	1	EA				
3a	Mobilize Equipment	1	EA				
4a	Cut openings in foundation for lifting beams	8	EA				
5a	Sever foundation anchors	12	EA				
10b	Place new porches	1	EA				
11a	Raise 1 ft above FEMA BFE (total 3.5 ft)	1	EA				
13	Disconnect power and water services	1	EA				
14	Plumbing water reconnects	1	EA				
15	Trenching for jacking pits	13	CY				
16	Extend masonry foundation 8" CMY (180x3.5)	630	SF				
17	New deck 10 x 10	100	SF				



This bid form example (based on the elevation project that will be shown in Section 3) shows the inclusion of costs that are not eligible cost items under an HMA grant, but could be an “add alternate” to the elevation project if the homeowner elects to install new porches and decks (not replacing an existing porch/deck) during the mitigation project. This is acceptable as long as the cost is clearly broken out and not included as part of the HMA subgrant application. (This is not a recommended practice)

2015 HMA Guidance Addendum E.4.2 Eligible Structure Elevation Costs

Construction of new stairs, landings, and railings to access the elevated living space per minimum code or local ordinance.

Ineligible cost lines: 10, 10a, 10b, 17.

Recommended Practice

- **Be factually complete.**
- **Be able to support facts and findings.**
- **Identify estimating team members and their roles.**
- **Describe the tools, techniques, and data used to develop the cost estimate.**
- **Identify other projects that were referenced or benchmarked during estimate preparation.**
 - **Comparability to line items (not to include dollar amounts) in similar projects .**
- **Establish the context of the estimate and support estimate review and validation.**

As an applicant, you should ensure that these items are included and justified prior to submission to FEMA.

Section Two: Questions and Comments

Section Three: Cost Estimate Examples

Cost Estimate Examples

1. **Structural Elevation (Residential)**
2. **Community Safe Room**
3. **Wind Retrofit**

Minimum Line Items For a Budget

ALL construction project types require, at minimum, the following cost item categories:

- **Engineering and Architectural Design**
- **Labor**
- **Material**
- **Construction Equipment**
- **Subcontractors (if applicable)**

Miscellaneous is not an acceptable line item.
It cannot be entered into NEMIS or eGrants.

Examples - Elevation

The following three (3) slides demonstrate:

- 1) A contractor's cost estimate
- 2) What the entry in NEMIS will look like
- 3) What the entry in eGrants will look like

ELEVATION - MASONRY FOUNDATION ONE FOOT ABOVE BFE (contractor's cost estimate)													
LINE	DESCRIPTION	QTY	UNIT	LABOR			MATERIAL		EQUIPMENT		SUBCONTRACT		
				MH/UNIT	MAN HOURS	RATE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL
1	Project Manager	20	HRS	1	20	\$60	\$1,200						
2	Superintendent	120	HRS	1	120	\$50	\$6,000						
3	Mobilize Equipment	1	EA	16	16	\$50	\$800						
4	Cut openings in foundation for lifting beams	8	EA	6	48	\$50	\$2,400						
5	Sever foundation anchors	12	EA	0.5	6	\$50	\$300						
6	Detach porches	1	EA	8	8	\$50	\$400						
7	Install mat jacks, beams, pre-lift	1	LS	250	250	\$50	\$12,500						
8	New pressure treated 2 x 6 plates	180	LF	0.05	9	\$50	\$450						
9	Secure house to foundation with strapping	1	EA	16	16	\$50	\$800						
10	Place new porches	1	EA	48	48	\$50	\$2,400						
11	Raise 1 ft above FEMA BFE (total 3.5 ft)	1	EA	300	300	\$50	\$15,000						
12	Debris removal cleanup	1	EA	48	48	\$50	\$2,400						
8a	New pressure treated 2 x 6 plates	180	LF				\$0.78	\$140					
9a	Secure house to foundation with strapping	1	EA				\$200	\$200					
10a	Place new porches	1	EA				\$200	\$200					
3a	Mobilize Equipment	1	EA						\$1,000	\$1,000			
4a	Cut openings in foundation for lifting beams	8	EA						\$25	\$200			
5a	Sever foundation anchors	12	EA						\$5	\$60			
10b	Place new porches	1	EA						\$200	\$200			
11a	Raise 1 ft above FEMA BFE (total 3.5 ft)	1	EA						\$8,000	\$8,000			
13	Disconnect power and water services	1	EA								\$750	\$750	
14	Plumbing water reconnects	1	EA								\$1,500	\$1,500	
15	Trenching for jacking pits	13	CY								\$10	\$130	
16	Extend masonry foundation 8" CMY (180x3.5)	630	SF								\$20	\$12,600	
17	New deck 10 x 10	100	SF								\$27	\$2,700	

(Elevation)

As an applicant or subapplicant, this is the level of detail that you might receive from a contractor. The items in this example have been grouped together and color coded to help show how these items can be entered in NEMIS and eGrants, which is the next two slides. It will summarize the categories and total expenses.

Questions/concerns the applicant should consult with the subapplicant for more clarity.

1. Why are the following items NOT included?

- a. Engineering and Architect Design
- b. Permits
- c. Soil Sampling
- d. Surveys / Elevation Certificates
- e. Elevation of existing stairs/decks

d. Was American with Disabilities Act (ADA) entrances for ingress/egress taken into consideration?

2. The following items are NOT eligible.

a. New porches. Reason: new construction (would be eligible if elevating an existing porch)

– Source: 2015 Guidance Addendum E.4.3

b. New deck. Reason: new construction (would be eligible if elevating an existing

deck)

– Source: 2015 Guidance Addendum E.4.3

Related to the ineligible costs (deck) if the subapplicant intends to conduct additional (non-FEMA funded work) during the mitigation project, this is acceptable so long as the ineligible costs are not included in the subgrant application. (This is not a recommended practice)

Eligible environmental costs (such as asbestos abatement for residential properties) may be a separate line item.

In this estimate, Overhead & Profit (OH&P) are included in the individual unit prices.

Document reasons for including contingency.

Location in 2015 Guidance: Part VI D.3.4

Recommended range is between 1-5%

NEMIS Entry

UNCLASSIFIED

11/11/12
ngentia

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Chg Source Chg Desc Print NEMIS Exp

Authorization

Applicant Information Problem & Risk Data Project Info Work Schedule **Cost Estimate** Match Sources Cost Effectiveness Maintenance Assurance Public Notice Attachments Eligibility Review Property Site Inventory Lat Lon

Do not include Administrative Cost. These are calculated when funds are obligated for approved projects.

Item Name	Unit Qty	Unit of Measure	Unit Cost	Cost Estimate
Project / Construction Management	1	LS	\$7,200	\$7,200
Labor	1	LS	\$20,500	\$20,500
Elevation	1	LS	\$15,000	\$15,000
Debris Removal Cleanup	1	LS	\$2,400	\$2,400
Material	1	LS	\$540	\$540
Equipment	1	LS	\$10,460	\$10,460
Disconnect / Reconnect Power and Water Services	1	LS	\$2,260	\$2,260
Subcontracting	1	LS	\$15,430	\$15,430
	0	NA	\$0	\$0

Total Project Cost Estimate \$73,780

Import New Delete

Save Verify Submit Amend Close

Ready 11-4-15 13:39:12

Start NEMIS / HMEGP Versio...

Not Acceptable

One (1) Home Elevation	1	LS	\$73,780
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FEMA

36

The previous slide is what the state would typically see in a contractor's quote. This slide is an example of how to group each line item from the contractor's quote and how it can be entered in NEMIS. The item descriptions are based on the eligible elevations costs that is available in the 2015 Guidance Addendum E.4.2.

While the budget in NEMIS may show few line items and a lump sum, if it is supported by a detailed estimate – that is appropriate. What is not acceptable is one line item showing one (1) home elevation as a lump sum for \$73,780.

This is an example only. It may not necessarily illustrate what each NEMIS elevation entry will represent.

eGrants Entry

Project Application

Elevation - Masonry Foundation 1ft above BFE

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Cost Estimate

Application 73% Complete

Please provide a detailed item budget that reflects elements identified in the [Scope of Work](#). The budget and Scope of Work must be linked. All costs should be reasonable and based on industry standards. Maintenance Costs are the responsibility of the sub-applicant or owner of the area to be mitigated and should not be included.

To add a line item, click the [Add Item](#) button. To update or delete a line item, click the appropriate link under the *Action* column. When you are finished, click the [Save and Continue](#) button below.

Note: Fields marked with an * are required.

[Add Item](#)

[Help](#)

202.1 - Elevation of Private Structures – Riverine

Federal Share: \$ 55,335

Item Name	Cost Classification	Unit Quantity	Unit of Measure	Unit Cost (\$)	Cost Estimate (\$)	Action
Labor	Construction And Project Improvement	410.00	Hour	\$50.00	\$20,500.00	Update Delete
Material	Construction And Project Improvement	1.00	Each	\$50.00	\$540.00	Update Delete
Equipment	Construction And Project Improvement	1.00	Each	\$10,460.00	\$10,460.00	Update Delete
Elevation	Construction And Project Improvement	300.00	Hour	\$50.00	\$15,000.00	Update Delete
Disconnect/reconnect power & water	Construction And Project Improvement	1.00	Each	\$2,250.00	\$2,250.00	Update Delete
Debris removal clean up	Construction And Project Improvement	48.00	Hour	\$50.00	\$2,400.00	Update Delete
Sub-contracting	Construction And Project Improvement	1.00	Each	\$15,430.00	\$15,430.00	Update Delete
Project / Construction Management	Construction And Project Improvement	1.00	Each	\$7,200.00	\$7,200.00	Update Delete
				Total Cost	\$73,780.00	

Total Cost Estimate: \$73,780.00

This slide is an example of how to group each line item from the contractor's quote and it how can be entered in eGrants.

This is an example only. It may not necessarily illustrate what each eGrants elevation entry will represent.

Examples – Safe Room

The following three (3) slides demonstrate:

- 1) A contractor's cost estimate
- 2) What the entry in NEMIS will look like
- 3) What the entry in eGrants will look like

NON-RESIDENTIAL SAFE ROOM TORNADO SINGLE-USE (contractor's cost estimate)								
LINE	DESCRIPTION	QTY	UNIT	LABOR	MATERIAL	EQUIPMENT	SUBCONTRACT	OTHER
1	Water Distribution/Service	1	EA	\$356	\$1,212	\$166	\$14	
2	Sanitary Sewerage	1	EA	\$1,410	\$2,100	\$673	\$171	
3	Toilet Accessories	1	EA	\$209	\$1,186			
4	Plumbing	1	LS				\$7,007	
TOTALS				\$1,975	\$4,498	\$839	\$7,192	
5	Foundation w/ Excavation	1	LS	\$4,694	\$4,189	\$1,729		
6	Slab on Grade	7	CY	\$376	\$1,239		\$85	\$20
7	Walls	20	CY	\$13,436	\$10,830	\$187	\$328	\$47
8	Elevated Slab Roof	24	CY	\$5,300	\$7,417	\$592	\$4,016	\$56
9	Protector Plates	1	LS	\$197	\$450			
10	Bathroom Door	1	EA	\$104	\$1,800			
11	FEMA Doors	4	EA	\$522	\$10,025			
12	Bathroom Wall	1	LS	\$181	\$234			
13	Sidewalk & Curb	1	LS				\$1,950	
TOTALS				\$24,810	\$36,184	\$2,508	\$6,379	\$123
14	Ventilation	1	LS				\$5,161	
15	Service Grounding	1	LS	\$96	\$108			
16	Service Disconnect & Panelboard	1	EA	\$761	\$1,360			
17	Emergency Lighting Systems	21	EA	\$817	\$2,129			
18	Service Disconnect to Panelboard	1	LS	\$181	\$143		\$37	
19	Lighting & Receptacle Branch	140	LF	\$755	\$244			
20	Receptacles	1	EA	\$39	\$36			
21	Lighting Control	3	EA	\$114	\$104			
22	Feed & Connect (HVAC-1)	1	EA	\$395	\$374		\$37	
23	Feed & Connect (water heater)	1	EA	\$248	\$95			
TOTALS				\$3,406	\$4,593		\$5,235	
24	Signage	1	EA		\$245			
TOTALS					\$245			

(Non-residential Safe Room)

As an applicant or subapplicant, this is the level of detail that you might receive from a contractor. The items in this example have been grouped together and color coded to help show how these items can be entered in NEMIS and eGrants, which is the next two slides. It summarizes the categories and total expenses.

Questions/concerns the applicant should consult with the subapplicant for more clarity.

1. Why are the following items NOT included?
 - a. Engineering and Architect Design
 - b. Permits
 - c. Was American with Disabilities Act (ADA) entrances for ingress/egress taken into consideration?
 - d. Soil Inspection
 - e. Is sidewalk, curb and parking lot an eligible line item? If the contractor's response is that it is needed for ADA compliance then this would be an eligible line item.
 - f. What does the subcontract costs include if the labor, materials and equipment have been listed separately?
 - g. What does the 'other' expenses include?

NEMIS Entry

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City District City Group Plans NEMIS Exit

Authorization

Applicant Information Problem & Risk Data Project Info Work Schedule **Cost Estimate** Match Sources Cost Effectiveness Maintenance Assurance Public Notice Attachments Eligibility Review Property Site Inventory List/Log

Do not include Administrative Cost. These are calculated when funds are obligated for approved projects.

Item Name	Unit Qty	Unit of Measure	Unit Cost	Cost Estimate
Toilet and Hand Washing Facilities - Labor	1	LS	\$1,975	\$1,975
Toilet and Hand Washing Facilities - Materials	1	LS	\$4,498	\$4,498
Toilet and Hand Washing Facilities - Equipment	1	LS	\$839	\$839
Toilet and Hand Washing Facilities - Subcontract	1	LS	\$7,192	\$7,192
Foundation and Structural Systems - Labor	1	LS	\$24,810	\$24,810
Foundation and Structural Systems - Materials	1	LS	\$26,184	\$26,184
Foundation and Structural Systems - Equipment	1	LS	\$2,508	\$2,508
Foundation and Structural Systems - Subcontract	1	LS	\$6,379	\$6,379
Foundation and Structural Systems - Other	1	LS	\$123	\$123
Electrical and Ventilation - Labor	1	LS	\$3,406	\$3,406
Electrical and Ventilation - Materials	1	LS	\$4,593	\$4,593
Electrical and Ventilation - Subcontract	1	LS	\$5,235	\$5,235
Signage	1	LS	\$245	\$245
		NA	\$0	\$0

Total Project Cost Estimate: \$97,987

Is this project part of the initiative? Yes No

Input New Delete Save Verify Submit General Close

Ready Start NEMIS / HMGP Versio... 8/4/15 13:53:47

Not Acceptable

One (1) Non-Residential Safe Room	1	LS	\$97,987
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40

FEMA

(Safe Room)

The previous slide is what the state would typically see in a contractor's quote. This slide is an example of how to group each line item from the contractor's quote and it how can be entered in NEMIS. The item descriptions are based on the Building Systems and Components list that is available in the 2015 Guidance Addendum C.4.3.

While the budget in NEMIS may show few line items and a lump sum, if it is supported by a detailed estimate – that is appropriate. What is not acceptable is one line item showing one (1) non-residential safe room as a lump sum for \$97,987.

This is an example only. It may not necessarily illustrate what each NEMIS safe room entry will represent.

eGrants Entry

Project Application

Non-Residential Safe Room

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Cost Estimate

Application 73% Complete

Please provide a detailed item budget that reflects elements identified in the Scope of Work. The budget and Scope of Work must be linked. All costs should be reasonable and based on industry standards. Maintenance Costs are the responsibility of the sub-applicant or owner of the area to be mitigated and should not be included.

To add a line item, click the Add Item button. To update or delete a line item, click the appropriate link under the Action column. When you are finished, click the Save and Continue button below.

Note: Fields marked with an * are required.

202.1 - Safe Room (Tornado and Severe Wind Shelter) - Public Structures						Federal Share: \$ 73,490.25	
Item Name	Cost Classification	Unit Quantity	Unit of Measure	Unit Cost (\$)	Cost Estimate (\$)	Action	
Washing Facilities - Labor	Construction	1.00	Each	\$1,975.00	\$1,975.00	Update	Delete
Washing Facilities - Materials	Construction	1.00	Each	\$4,498.00	\$4,498.00	Update	Delete
Washing Materials - Equipment	Equipment	1.00	Each	\$839.00	\$839.00	Update	Delete
Washing Materials - Subcontract	Contractual	1.00	Each	\$7,192.00	\$7,192.00	Update	Delete
Foundation and Structural - Labor	Construction	1.00	Each	\$24,810.00	\$24,810.00	Update	Delete
Foundation and Structural - Materials	Construction	1.00	Each	\$36,184.00	\$36,184.00	Update	Delete
Foundation and Structural - Equipment	Equipment	1.00	Each	\$2,508.00	\$2,508.00	Update	Delete
Foundation and Structural - Subcontract	Contractual	1.00	Each	\$6,379.00	\$6,379.00	Update	Delete
Foundation and Structural - Other	Construction	1.00	Each	\$123.00	\$123.00	Update	Delete
Electrical and Ventilation - Labor	Construction	1.00	Each	\$3,406.00	\$3,406.00	Update	Delete
Electrical and Ventilation - Materials	Construction	1.00	Each	\$4,593.00	\$4,593.00	Update	Delete
Electrical and Ventilation - Subcontract	Construction	1.00	Each	\$5,235.00	\$5,235.00	Update	Delete
Signage	Contractual	1.00	Each	\$245.00	\$245.00	Update	Delete
Total Cost					\$97,987.00		

Total Cost Estimate: \$97,987.00

This slide is an example of how to group each line item from the contractor's quote and it how can be entered in eGrants.

This is an example only. It may not necessarily illustrate what each eGrants elevation entry will represent.

Examples – Wind Retrofit

The following three (3) slides demonstrate:

- 1) A contractor's cost estimate
- 2) What the entry in NEMIS will look like
- 3) What the entry in eGrants will look like

Wind Retrofit - Advanced with Replacing Roof Cover (Gable)									
LINE	DESCRIPTION	QTY	UNIT	LABOR		MATERIAL		SUBCONTRACT	
				MAN HOURS	TOTAL	UNIT PRICE	TOTAL	MAN HOURS	TOTAL
ADVANCED MITIGATION PACKAGE									
Strengthen Soffits									
1	Remove & Replace Soffit	184	LF		\$1,827	9.93	\$1,827		
2	2 x 4 Lumber	124	BF	37	\$285	3.05	\$378		
Remove Roof Covering & Secure Roof Deck									
3	Remove Roof Covering & Secure Roof Deck	3,100	SF	16	\$913	0.31	\$961		
Strengthen Connections of Attached Structures									
4	Supporting Roof Members & Horizontal Beams	30	EA		\$402	13.963	\$419		
5	Beam to Column Connection	3	EA	21.231	\$342	119.91	\$360		
6	Column to Foundation Connection	3	EA		\$342	119.91	\$360		
Bracing Gable End Walls									
7	2 x 4 Lumber & Fasteners	254	BF	20.484	\$891	4.26	\$1,082		
Developing a Continuous Load Path									
8	Roof to Wall Connection	116	EA		\$1,553	13.963	\$1,620		
9	Stud to Top Plate Connection	174	ES		\$3,056	18.14	\$3,156		
10	Wall to Foundation Connection	174	ES		\$2,330	13.963	\$2,430		
11	Remove & Replace Siding	464	SF		\$2,088	4.501	\$2,088		
Strengthening Overhangs at Gable End Walls									
12	Hurricane Clip	26	EA	16	\$457	18.14	\$472		
13	Joist Hanger	26	EA		\$457	18.483	\$481		
Secondary Water Barriers									
14	Bituminous Membrane	3,100	SF	15.283	\$369	0.384	\$1,190		
15	Bond Break Underlayment	3,100	SF		\$252	0.14	\$434		
Asphalt Shingle Roofing									
16	Standard Strip Shingles	3100	SF	46.5	\$2,085	1.834	\$5,685		
Drip Edge									
17	Aluminum Drip Edge	230	LF	11.5	\$460	4.874	\$1,121		
TOTALS						\$18,109		\$24,064	
Engineering and Architech Design									
18	Professional Engineer Services			8	MH			8	\$1,200
TOTALS									\$1,200
ENTRY DOORS									
19	Entry Door	2	EA	8	\$146	234.21	\$468		
20	Entry Door Removal	2	EA		\$146	73.21	\$146		
TOTALS						\$292		\$614	
GARAGE DOORS									
21	Garage Doors 16' x 7'	1	EA	4					\$2,000
22	Garage Door Removal	1	EA		\$146				
TOTALS						\$146			\$2,000
WINDOWS									
23	Remove Existing Window	96	SF	27.52	\$696	7.252	\$696		
24	Double Hung Window	96	SF		\$501	99.521	\$9,554		
TOTALS						\$1,197		\$10,250	

As an applicant or subapplicant, this is the level of detail that you might receive from a contractor. The items in this example have been grouped together and color coded to help show how these items can be entered in NEMIS and eGrants, which is the next two slides. It summarizes the categories and total expenses.

Questions/concerns the applicant should consult with the subapplicant for more clarity.

1. Why are the following items NOT included?
 - a. Permits
 - b. Equipment to do the labor (i.e. forklift).
 - c. Man Hours for Developing a Continuous Load Path

NEMIS Entry

UNCLASSIFIED

File Disaster Projects Funding Plans Repository Applications Admin Window Help

NEMIS

Authorization

Applicant Information Problem & Risk Data Project Info Work Schedule **Cost Estimate** Match Sources Cost Effectiveness Maintenance Assurance Public Notice Attachments Eligibility Review Property Site Inventory List On

Do not include Administrative Cost. These are calculated when funds are obligated for approved projects.

Item Name	Unit Qty	Unit of Measure	Unit Cost	Cost Estimate
Advanced Mitigation Package - Labor	1	LS	\$18,109	\$18,109
Advanced Mitigation Package - Materials	1	LS	\$24,964	\$24,964
Engineering and Architech Design	1	LS	\$1,200	\$1,200
Entry Doors - Labor	1	LS	\$292	\$292
Entry Doors - Materials	1	LS	\$614	\$614
Garage Doors - Labor	1	LS	\$146	\$146
Garage Doors - Subcontract	1	LS	\$2,000	\$2,000
Windows - Labor	1	LS	\$1,197	\$1,197
Windows - Materials	1	LS	\$10,250	\$10,250
	3	NA	\$0	\$0

Total Project Cost Estimate: \$57,872

Is this project part of the initiative? Yes No

Input New Delete Save Verify Submit Amend Close

Ready Start NEMIS / HMGP Versio... 8/4/15 14:05:02

Not Acceptable

Wind Retrofit	1	LS	\$57,872
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44

(Wind Retrofit)

The previous slide is what the state would typically see in a contractor's quote. This slide is an example of how to group each line item from the contractor's quote and it how can be entered in NEMIS. The item descriptions are based on the FEMA P-804 Wind Retrofit Guide for Residential Buildings.

While the budget in NEMIS may show few line items and a lump sum, if it is supported by a detailed estimate – that is appropriate. What is not acceptable is one line item showing one Wind retrofit as a lump sum for \$57,872.

This is an example only. It may not necessarily illustrate what each NEMIS wind retrofit entry will represent.

eGrants Entry

Project Application

Wind Retrofit - Advanced with Replacing Roof Cover

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Application 73% Complete

Please provide a detailed item budget that reflects elements identified in the Scope of Work. The budget and Scope of Work must be linked. All costs should be reasonable and based on industry standards. Maintenance Costs are the responsibility of the subapplicant or owner of the area to be mitigated and should not be included.

To add a line item, click the Add Item button. To update or delete a line item, click the appropriate link under the Action column. When you are finished, click the Save and Continue button below.

Note: Fields marked with an * are required.

[Help](#)

205.8 - Retrofitting Public Structures - Wind

Item Name	Cost Classification	Unit Quantity	Unit of Measure	Unit Cost (\$)	Cost Estimate (\$)	Action
Advanced Mitigation Pkg - Labor	Construction	1.00	Each	\$18,109.00	\$18,109.00	Update Delete
Advanced Mitigation Pkg - Materials	Construction	1.00	Each	\$24,064.00	\$24,064.00	Update Delete
Engineering and Architech Design	Contractual	1.00	Each	\$1,200.00	\$1,200.00	Update Delete
Entry doors - Labor	Constuction	1.00	Each	\$292.00	\$292.00	Update Delete
Entry doors - Materials	Personnel	1.00	Each	\$614.00	\$614.00	Update Delete
Garage doors - Labor	Construction	1.00	Each	\$146.00	\$146.00	Update Delete
Garage doors - subcontract	Contractual	1.00	Each	\$2,000.00	\$2,000.00	Update Delete
Windows - Labor	Construction	1.00	Each	\$1,197.00	\$1,197.00	Update Delete
Windows - Materials	Constuction	1.00	Each	\$10,250.00	\$10,250.00	Update Delete
				Total Cost	\$57,872.00	
Total Cost Estimate: \$57,872.00						

 FEMA 45

This slide is an example of how to group each line item from the contractor's quote and it how can be entered in eGrants.

This is an example only. It may not necessarily illustrate what each eGrants wind retrofit entry will represent.

Additional information

- **For elevation:**

- The 2015 HMA Unified Guidance provides additional examples of eligible and ineligible costs in addendums E.4.2 and E.4.3, respectively.

- **For safe room:**

- The 2015 HMA Unified Guidance provides additional examples of eligible and ineligible costs in addendum C.4.4.
- For additional information, refer to FEMA P-320 and FEMA P-361.

- **For wind retrofit:**

- For additional information, refer to FEMA P-804.

Section Three: Questions and Comments

Section Four: Checklists

Estimating Checklist

1. **Date**
2. **Job Name**
3. **Project Type**
4. **Scope of Work**
5. **Basis of estimate document**
6. **Quantities for all line items of work**
7. **Unit prices applied to all line items**
8. **Description**
9. **Unit of measure**
10. **Equipment / Labor / Material / Subcontractor**
11. **Non Construction Costs (contingencies, bonds, permits...)**
12. **Do math check**

Estimating Checklist cont.

Reasons for sending estimate back for rework:

1. Missing important info on previous checklist
2. Lump sum cost items with no quantities
3. Inaccurate math or calculations in the estimate
4. Contingency line item – where justification has not been provided.
5. Ineligible costs
6. Unreasonable costs

*This list is not limited as other inconsistencies may arise.

Section Four: Questions and Comments