

**National Earthquake Hazards Reduction Program (NEHRP)  
Advisory Committee on Earthquake Hazards Reduction (ACEHR)  
National Institute of Standards and Technology  
Gaithersburg, Maryland  
September 6, 2017**

**Teleconference Meeting Summary**

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**Advisory Committee Members:**

Laurie Johnson, Chair	Laurie Johnson Consulting
Jane Bullock	Bullock & Haddow LLC
Craig Davis	Los Angeles Department of Water & Power
Greg Deierlein	Stanford University
John Gillengerten	Consulting Structural Engineer
James Goltz**	CA Emergency Management Agency
Nathan Gould	ABS Consulting
Lisa Grant Ludwig	University of California, Irvine
Robert Herrmann	Saint Louis University
Ryan Kersting	Buehler & Buehler Structural Engineers, Inc.
Ronald Lynn	Nevada State Contractors Board
Peter May	University of Washington
Lori Peek**	University of Colorado-Boulder
Glenn Rix	Geosyntec Consultants, Inc.
David Simpson	IRIS Consortium
Ralph Archuleta**	University of California, Santa Barbara; Ex-officio member of ACEHR as Chair of the U.S. Geological Survey (USGS) Scientific Earthquake Studies Advisory Committee (SESAC)

\*\*Not in attendance

**NEHRP ICC Member-Agency Representatives and NIST Support:**

Howard Harary	NIST, Engineering Laboratory (EL) Director and ACEHR Designated Federal Officer
Jason Averill	NIST/EL, Chief, Materials and Structural Systems Division
Steven McCabe	NIST/EL, NEHRP Director
Michael Mahoney*	FEMA Senior Geophysicist, FIMA, Risk Management Directorate, Building Science Branch
Joy Pauschke	NSF Program Director, Division of Civil, Mechanical & Manufacturing Innovation
Bill Leith	USGS, Senior Science Advisor for Earthquake and Geologic Hazards
Tina Faecke	NIST/EL, NEHRP Secretariat
Carmen Martinez	NIST/EL, Information Technology Support
Steve Potts	NIST/EL, Materials and Structural Systems Division

\*Mike Mahoney was on the phone for Ed Laatsch and Bill Blanton.

## **Summary of Discussions**

Howard Harary, Director of the NIST Engineering Laboratory, called the meeting to order, thanking the members for their work on finalizing the ACEHR report since their last meeting in Boulder, CO. He turned the meeting over to Laurie Johnson, ACEHR Chair, who asked Tina Faecke to call the roll of the ACEHR members and other attendees.

Johnson confirmed there was a quorum present and reminded the group that a copy of their draft report on the effectiveness of the NEHRP was linked within today's meeting agenda posted on the NEHRP website. Johnson stated the purpose of the meeting was to go through each recommendation and either approve as is, or edit. She asked the members for authority to review grammar and references later, and they approved.

The report is divided into five main sections:

- Executive Summary
- Introduction
- NEHRP Past and Future
- Program Management, Coordination, and Implementation
- Program Effectiveness and Needs.

A reference page was included at the end of the report. Johnson planned to cover each report section during the call.

### **I. Executive Summary**

Johnson stated since this section summarizes the recommendations and main body of the report, she suggested discussing the other sections first and then she will update the Executive Summary afterwards. The Committee approved her approach. A comment was made to highlight the recommendations in a text box to differentiate them from the other text. It was suggested that this would be more interesting to the reader than just having a list. Johnson agreed and said she would make that format change.

A question was asked whether the first overarching recommendation should include the word "National" so that it reads: "ACEHR urges Congressional reauthorization of the **National** Earthquake Hazards Reduction Act?"

- Leith indicated the initial law was the Earthquake Hazards Reduction Act of 1977. Subsequent reauthorizations are amendments to that act, so it is correct as written.
- Grant-Ludwig noted that it could be confusing because the next section uses acronym NEHRP.
- Harary clarified that NEHRP is the program reauthorized in the Act.
- Leith suggested the wording should be reauthorization of the Act.
- Bullock confirmed and added If there is a need for clarification – the report should specify reauthorization of Act and the NEHRP.

- Johnson agreed to insert the words “and the NEHRP.” The revised recommendation reads: “ACEHR urges Congressional reauthorization of the Earthquake Hazards Reduction Act **and the National Earthquake Hazards Reduction Program (NEHRP)**”? All members were in favor of the revision to the first overarching recommendation.

## II. Introduction

The *Introduction* section summarizes the history of the ACEHR, its membership, and the intent of the report. Johnson asked if there were any comments; none were made. All members were in favor of the *Introduction* as written.

## III. NEHRP Past and Future

This section summarizes the progress of the NEHRP since its inception 40 years ago, and noted the costs and extent of damages that earthquake risks pose to the U.S. Johnson asked for comments on this section.

- A request was made for a confirmation and reference for the \$64 billion loss figure for the 1994 Northridge, California earthquake, and the \$22 billion in disaster relief.
- Bullock committed to forward the report to Laurie which cited that information, and noted that it’s also on the FEMA website.
- Davis asked that the report clarify whether the costs are in present or 1994 dollars.
- Bullock will verify whether the source makes that distinction.

## IV. NEHRP’s Future in Question

This section summarizes four sets of forces that the ACEHR is concerned have diminished the program’s viability. These forces are:

- 1) The lack of reauthorization since 2004 and insufficient annual appropriations;
- 2) Variation in the level of financial commitments of the four NEHRP agencies;
- 3) Dilution of critical earthquake-risk-reduction research and implementation needs within the broader programmatic communities;
- 4) Variation in the implementation of modern seismic building codes, gaps in earthquake engineering in critical infrastructure and lifeline systems and seismic rehabilitation of existing buildings.

Johnson requested comments on this section. Averill noted that under bullet 3 – there’s a suggestion that the community resilience program somehow dilutes the earthquake engineering program. (Bullet 3 as drafted reads: “*The dilution of critical earthquake risk reduction research and implementation needs within broader resilience and multi-hazards programs (e.g., NIST community resilience planning program and NSF Natural Hazards Engineering Research Infrastructure (NHERI)). These, along with cutbacks at FEMA, particularly for state and local program funding, have impeded NEHRP’s effectiveness.*”) Averill stated that he sees these programs as complementary – the Community Resilience Program extends the work that NEHRP does. Averill didn’t agree that it’s diluting the earthquake effort.

- May suggested the Committee select a different word than “impeded.” He noted the concern is the potential dissipation of effort which varies over time and by agency, suggesting NSF as a clear example. He thought the concern is not so much effort, but funding. He noted that in some instances it’s been helpful, and in some instances, we don’t know.
- Harary added his concern that community resilience was given as an example, when resources have gone up in NEHRP at NIST.
- May noted that the variety of NEHRP funding mechanisms have gone to broader funding mechanisms and that it’s harder to see what the impact is. Johnson noted she can see NIST’S point that they have a Community Resilience Program, but also recently received increased funding for NEHRP.
- May agreed, adding that doesn’t mean it won’t change in the future – but the concern is real.
- Johnson indicated the concern is with the words “dilution” and “impeded.” She suggested the Committee should start talking about multi-hazards and not specific hazards, maintaining the concern that it “doesn’t” dilute.
- Bullock suggested the Committee make a strong statement for each recommendation that if Programs are complementary, there should be no dilution of resources. She suggested taking the agencies out of it, and say it’s an overall concern.
- Johnson recommended taking the examples out because the report talks about them later. She recommended leaving dilution in without the examples, because that’s what the committee is concerned about. In the second sentence say “restricted” so the Paragraph would read: *“The dilution of critical earthquake risk reduction research and implementation needs within broader resilience and multi-hazards programs of some NEHRP agencies. These, along with cutbacks at FEMA, particularly for state and local program funding, have ~~impeded~~ restricted NEHRP’s effectiveness.”* She asked if there was agreement.
- There was some agreement, and some concern that it did not read well, and that it needs to reflect opportunity costs – multi-hazards programs at an opportunity cost of earthquake programs. Johnson indicated she will revise the wording to reflect the Committee’s concerns.

Johnson asked if there were other comments on this section? Davis suggested numbers be included for the fourth set of forces:

- Gaps in seismic building codes across and within states, and
- Gaps in the earthquake engineering of critical infrastructure and lifeline systems and the seismic rehabilitation of existing buildings.

## V. Overarching Needs

This section describes two overarching needs that the ACEHR assess as critical for a full-scale reinvigoration and renewal of the NEHRP:

- 1) Congressional reauthorization of the Earthquake Hazards Reduction Act; and
- 2) An assessment of the nation’s earthquake risk reduction progress to date.

Johnson will amend Overarching Need 1 to reflect reauthorization of the Act and the NEHRP, as discussed at the beginning of the call. It would read: “ACEHR urges Congressional reauthorization of the

Earthquake Hazards Reduction Act *and the NEHRP.*” All Committee members were in favor of this change. She then asked for additional comments on Overarching Need 1. None were offered.

Johnson asked for comments on Overarching Need 2. Bullock thought the paragraph was excellent, and wanted to add language conveying the need for the assessment of the program to take place immediately. Johnson asked what the Committee thought of adding “ACEHR also urges conducting this assessment immediately commensurate with the reauthorization”?

With that addition, Overarching Need 2 would read: “Commensurate with the NEHRP reauthorization, ACEHR calls for the immediate conduct of an assessment of the nation’s earthquake risk reduction progress to date in order to guide future NEHRP direction and funding levels.” Bullock thought it tied the two concerns together well. Johnson asked for the Committee’s vote – all were in favor.

## **VI. Emerging Trends and New Developments in Science and Engineering**

Context – This section summarizes ACEHR’s charge to review emerging trends and new developments in the science and engineering of earthquake hazards reduction in three fields:

- 1) Geosciences;
- 2) Engineering, and
- 3) Social Sciences.

Johnson reminded the Committee that they agreed in July they would not have a lengthy discussion in this section, but a sharper focus. Johnson asked for comments on the section.

- Davis liked the way it was written.
- Deierlein suggested an edit in the first sentence of the *Engineering* section by replacing the phrase “building rating system” with “building seismic rating system.”
- Johnson agreed, and noted that it had been written that way previously, and will be returned.
- Another suggestion in the first sentence of the *Engineering* section was the phrase “invest in structural resilience” be replaced with “invest in building resilience.” The commenter suggested that there are other things beyond structural resilience that people could do. No opposition was offered.

A discussion of the intent of computer modeling lifeline systems took place.

- Johnson indicated that when written it was more than just building and lifeline systems, it included community scale resilience, as we need to be able to model all those systems.
- One member suggested it could be a paragraph under the Social Sciences section; another suggested it branches across the geosciences, engineering and social sciences.
- Johnson proposed an ending paragraph after the Social Sciences section, which will talk about all systems, and integration across all three areas of emphasis. All Committee members agreed, and there were no other comments on this section.

## **VII. Program Management, Coordination and Implementation**

This section describes the ACEHR’s recommendations on how the Interagency Coordinating Committee (ICC) and the NEHRP Secretariat can improve agency-level leadership for a well-coordinated program.

## **Recommendations to the Interagency Coordinating Committee**

There are two recommendations to the NIST Director regarding the ICC.

**ICC Recommendation 1** – “ACEHR calls upon the NIST Director, as Chair of the ICC, to revitalize the ICC as a mechanism for advancing NEHRP within the respective agencies.”

Johnson asked if there were comments on ICC Recommendation 1. All members were in favor. Davis, however, added the Committee should point out where good things are happening. One is the rapid replacement of the Secretariat. Johnson agreed, and asked the Committee if they were comfortable commending the rapid appointment of a NEHRP Director, and the hard work done in the Secretariat in coordinating and leading. All Committee members were in favor.

**ICC Recommendation 2** – “ACEHR calls upon the NIST Director, as Chair of the ICC, to work with the ICC to ensure appropriate and coordinated program budgets.

Johnson reviewed ICC Recommendation 2 – to ensure: budgets are appropriate and coordinated; staff are replaced when they retire or leave, and a workforce is developed that is more reflective of the populations in earthquake-exposed communities across the nation. All Committee members were in favor of the section as written.

## **Recommendations to the NEHRP Secretariat**

There are three recommendations to the NEHRP Secretariat.

**NEHRP Secretariat Recommendation 1** – “ACEHR recommends that the NEHRP Secretariat develop an updated Strategic Plan and implementation strategy necessary for NEHRP to fulfill its mission.”

- Johnson asked if there were any comments on this section. Harary proposed that since NEHRP is a multi-agency program, ACEHR and NEHRP lead the development of a strategic plan, as opposed to the draft language which recommends the NEHRP Secretariat “develop” a strategic plan and implementation strategy. He elaborated that we want the strategic plan to be a product of all agencies, not just a product of the Secretariat.
- Bullock asked whether the Committee really needs the assessment done, adding that the value of the strategic plan now is not clear, without having the assessment done.
- Johnson noted that developing a strategic plan takes a lot of energy on the part of all four agencies and asked if we can tie the strategic plan to completion of the national implementation assessment?
- Leith responded that he wanted to make the same point – do the assessment first, then develop a revised strategic plan.
- May added that meanwhile agencies need to move ahead. The assessment could take years, even if funded. He noted that currently there is not a coordination plan or implementation plan, and the Committee has seen examples of gaps that have occurred because of that.
- Another member added that the program needs something more than just muddling through without a plan. What will happen in the interim if the assessment is under way. Can’t the two be done simultaneously?
- Bullock responded that she understood the point. If we look at what was affected under the previous strategic plan, there wasn’t a lot affected because the money wasn’t there. Strategic

plans take on a kind of importance, we're in an uncertain time right now about the future of this program. To the extent agencies have done incredible work it's because of the people, not because they had a strategic plan. FEMA couldn't do a strategic plan that talks about going forward with state assistance programs if they don't have an authorization.

- Another Committee member added that they didn't think a strategic plan would help agencies get any more money. The most important thing after reauthorization is the assessment.
- Another Committee member added that if you're going to manage a program, you need a basis. A strategic plan would help show what's being done - and what's not being done, what the gaps are - and what the trade-offs are. Sharing information and a process for talking about what we can do - and cannot do, and a point for conversation about what the different agencies are doing.
- Johnson proposed adding a sentence to the end of the paragraph saying strategic planning is a process and we encourage the NEHRP Secretariat and agencies to begin a process sooner rather than later, but could be informed by an assessment, and should include an assessment in the final version.
- McCabe added his surprise at the tone of the discussion. He stated that the existing strategic plan remains an effective guiding statement of the work that needs to be done. A significant number of things are left on the table that need to be done because they are without funding. He suggested that updating the plan is fine. The latest version of the reauthorization included an assessment by the General Accounting Office that gets funneled into this process. He suggested the Committee might want to include a sentence that the strategic plan, as it exists, still has many valuable things remaining to be tackled.
- Johnson recommended the Committee acknowledge that the plan has not been fully implemented due to budget and other challenges, and new knowledge and advancements not in the plan are making it outdated in some respects. The Committee proposed they be included in the updated strategic plan process, but also want the revised strategic plan to be informed by an assessment. All Committee members agreed.
- Johnson suggested the following revised recommendation language: "ACEHR recommends the NEHRP Secretariat lead the NEHRP agencies in the development of an updated Strategic Plan and implementation strategy necessary for NEHRP to fulfill its mission." One Committee member was opposed, but offered no comment about it when requested.

**NEHRP Secretariat Recommendation 2** – "ACEHR recommends that the NEHRP Secretariat, with the four NEHRP agencies, take an active role in facilitating a workshop to discuss risk-based rating systems for the seismic performance of buildings in the U.S."

- Johnson suggested a slight change to the language in that "ACEHR recommends that the NEHRP Secretariat, with the four NEHRP agencies, take an active role in facilitating a workshop on risk-based *seismic* performance *ratings* in the U.S."
- Johnson noted the distinction was based on prior comments about rating systems. When Johnson asked for approval, one Committee member opposed. They commented that where it says, "take an active role in facilitating a workshop. . ." the language is ambiguous and non-committal.

- Johnson suggested “...facilitate a workshop to advance the use of risk-based rating systems for the *seismic* performance of buildings in the U. S.” All members were in favor. One member added that this should be linked to the section on NIST.

**NEHRP Secretariat Recommendation 3** – “ACEHR recommends that the NEHRP Secretariat, with the four NEHRP agencies, develop a uniform policy regarding the dissemination of information on NEHRP research and implementation efforts.”

- Johnson asked for comments. None were offered. All members were in favor of the recommendation as written.

## **VIII. Program Effectiveness and Needs**

### **Agency Recommendations - FEMA**

**FEMA Recommendation 1** – “ACEHR urges the Federal administration, and the leaders of FEMA and the Department of Homeland Security, to take action to provide FEMA’s earthquake program with the resources needed to fully meet the agency’s responsibilities required by law. The persistent underfunding of FEMA jeopardizes the effectiveness of the entire Program.”

- Johnson asked for general comments on the recommendation.
- Davis asked who the term “Federal administration” refers to?
- Johnson clarified it refers to the Executive Branch. Bullock added that we didn’t want to include language about political leadership.
- Johnson suggested using the term “Administration” to elevate this to a general comment about resourcing the program. Bullock and Blanpied agreed.
- Johnson will read through the report because “Federal administration” was the fallback term used in several places and will replace it with “Administration”. All Committee members were in favor.

**FEMA Recommendation 2** – “ACEHR recommends that FEMA continue to make seismic building code development, adoption, and enforcement a priority.”

- Johnson asked for comments. None were offered. All Committee members were in favor of the recommendation as written.

**FEMA Recommendation 3** – “ACEHR continues to recommend that FEMA return to a directly-funded, state-based program for earthquake hazard mitigation, planning, education and preparedness efforts and to reconsider the current state grant matching formula.”

- Johnson asked for comments. None were offered. All Committee members were in favor of the recommendation as written.

**FEMA Recommendation 4** – “If the decade-long trend of underfunding of FEMA earthquake related activities persists, ACEHR recommends that FEMA review its areas of responsibility, prioritize those efforts that have maximum impact on seismic resilience, and identify efforts that may no longer be needed or must be discontinued in order to make meaningful and timely progress on the most crucial efforts.”



- Johnson noted that the August 30, 2017 version of the report added some text provided by FEMA, regarding having a table.
- Davis stated in reference to where it reads: “ACEHR recommends that FEMA review its areas of responsibility, ...” that in the August 19<sup>th</sup> version, there was language indicating the cutback jeopardized the NEHRP mission.
- Johnson offered to add a statement below this recommendation, similar to what the Committee said about persistent underfunding. There was agreement that they should be linked. All Committee members agreed.

### **Agency Recommendations - NIST**

Johnson asked for general comments on the NIST recommendations. None were offered.

**NIST Recommendation 1** – “ACEHR recommends NIST initiate development of uniform seismic performance objectives, assessments, and design criteria for lifeline systems consistent with those available for building systems.”

- One Committee member was struck by the notion of uniform requirements for lifeline systems. He noted there’s a big diversity of systems and stakeholders, adding that the notion that we could do the same thing for lifelines and buildings is difficult. He asked if the same criteria can be applied?
- Davis responded that the Committee could recommend a uniform set of performance objectives, but doesn’t recommend the same requirements for power as water.
- Johnson proposed cutting the word “uniform” so the first part of the recommendation reads: “NIST initiate development of a nationally applicable set of standards and design criteria?”
- One Committee member stated that the latter part of the draft recommendation – “consistent with those available for building systems” gives building systems too much credit, and recommended stopping the recommendation at “lifeline systems.”
- Johnson proposed rewording the recommendation to read: “ACEHR recommends that NIST initiate development of *nationally-applicable* seismic performance objectives, assessment *procedures*, and design criteria for lifeline systems.” All Committee members were in favor.

**NIST Recommendation 2** – “ACEHR recommends that NIST assess the seismic performance of buildings in the eastern and central United States that have been designed primarily for code-compliant wind loads.”

- Johnson asked for comments on the recommendation. None were offered. All Committee members were in favor of the recommendation as written.

**NIST Recommendation 3** – “ACEHR recommends that NIST develop a proof-of-concept initiative to use a building seismic rating system to evaluate the expected performance of a portfolio of buildings.”

- Johnson asked for comments. Kersting responded that the recommendation was meant to discuss a portfolio of buildings that represent building types.
- Johnson proposed that the recommendation read: “ACEHR recommends that NIST develop a proof-of-concept initiative to use a building seismic rating system to evaluate the expected performance of a portfolio of building types.” All Committee members were in favor.

## **Agency Recommendations - NSF**

Johnson asked for general comments on the NSF recommendations.

- One Committee member asked if the Global Seismographic Network (GSN), referenced in the second paragraph of the section, was also a network used for measuring nuclear blasts, indicating that if it is, it would be beneficial to point it out here.
- Another member responded affirmatively, that is one of the four roles of the GSN: monitoring for earthquakes, monitoring for tsunamis, contributing to the understanding and characterization of earth systems, and monitoring for underground explosions.
- Davis added that we should acknowledge where we think things are good, and suggested adding a sentence to the beginning of the paragraph that “ACEHR acknowledges and commends NSF for persistence in completing a number of earthquake hazard reduction achievements”. Then, add “ACEHR recommends the following...”
- Deierlein recommended that where NSF research is the basis for code changes, add a phrase that emphasized the importance of developing new technologies to simulate and mitigate earthquake effects on buildings for developing new design and code provisions.

**NSF Recommendation 1** – “ACEHR recommends that NSF prepare a synthesis report that identifies how current NEHRP-related investments contribute to NEHRP strategic goals and plans.”

- Johnson asked for comments on the recommendation. None were offered. All Committee members were in favor of the recommendation as written.

**NSF Recommendation 2** – “ACEHR recommends that NSF work with the NEHRP Secretariat to devise a reporting and information-sharing approach that provides a better basis for coordinating NSF NEHRP-related activities with other NEHRP agency activities.”

- Johnson asked for comments on the recommendation. None were offered. All Committee members were in favor of the recommendation as written.

**NSF Recommendation 3** – “ACEHR recommends that NSF fund a workshop or other forum on past and future opportunities for multidisciplinary research initiatives to contribute to the success of NEHRP.”

- Johnson asked for comments on the recommendation. None were offered. All Committee members were in favor of the recommendation as written.

**NSF Recommendation 4** – “ACEHR recommends that NSF more fully engage NEHRP partner agencies and external organization to anticipate and foster the translation of research accomplishments into demonstrable advances for earthquake resilience.”

- Johnson asked for comments on the recommendation. None were offered. All Committee members were in favor of the recommendation as written.

A closing comment on the NSF section was made, referencing Deierlein’s earlier suggestion about technologies that simulate earthquake effects on buildings – that the report use the term “built environment”, instead of just “structures.” The member added that NSF doesn’t support research on bridges, and may not support research on pipelines or fire. It was recommended that report not

address research covered by national or state agencies, but that the term “built environment” is general enough.

### **Agency Recommendations - USGS**

Johnson asked for general comments on the section – none were offered.

**USGS Recommendation 1** - “ACEHR recommends that the USGS continue to use advisory panels and other community-based forums to target immediate and long-term needs and strategies to meet its obligations under NEHRP.”

- Johnson asked for comments on the recommendation. None were offered. All Committee members were in favor of the recommendation as written.

**USGS Recommendation 2** – “ACEHR supports the continued development and implementation of the Advanced National Seismic System (ANSS) which should be a line-item in the USGS budget. A primary ANSS product is an earthquake early warning system for the U.S. West Coast (ShakeAlert).”

Johnson asked for comments.

- Deierlein responded that the last sentence that draws attention to early warning is important because it’s a new and popular program, but it could overwhelm the rest of what ANSS is. Deierlein asked if the second sentence could be stricken?
- Johnson responded the Committee’s intention was that we do call it out because of concern about future funding.
- A discussion took place about ANSS being a line item in the USGS budget. The suggested revised recommendation reads: “ACEHR supports the continued development and implementation of the Advanced National Seismic System (ANSS) *and it’s becoming* a line-item in the USGS budget. A primary ANSS product is an earthquake early warning system for the U.S. West Coast (ShakeAlert).” All members were in favor of the recommendation as re-written.

**USGS Recommendation 3** – “ACEHR recommends that the USGS continue to support and develop online products that address community needs for information about earthquake hazards.”

- Johnson asked for comments on the recommendation. None were offered. All Committee members were in favor of the recommendation as written.

**USGS Recommendation 4** – “ACEHR recommends that the USGS maintain its strong research program internal and external, commensurate with the extraordinary developments in data acquisition, and which addresses critical knowledge gaps.”

- Johnson asked for comments – all were in favor adding the clause “internal and external programs.” The revised recommendation reads: “ACEHR recommends that the USGS maintain its strong internal and external research programs, commensurate with the extraordinary developments in data acquisition, and which addresses critical knowledge gaps.”

**IX. Public Input Period**

Members of the public did register to listen, and no-one responded to Johnson's request for public input.

**X. Follow-up Items**

May asked about the possibility of a face-to-face Committee meeting before the end of the calendar year. Johnson indicated the topic has not been discussed. Harary added that he is in favor of face-to-face meetings, noting budget constraints. Harary and Johnson will hold a phone call to discuss the next meeting.

**XI. Adjournment**

Harary thanked Johnson and the Committee members, and adjourned the meeting officially at 4:48 p.m. EDT.