

**National Earthquake Hazards Reduction Program (NEHRP)
Advisory Committee on Earthquake Hazards Reduction (ACEHR)
August 7-8, 2024 Hybrid Meeting Summary**

Attendees (listed alphabetically by category)

ACEHR Members

Lucy Arendt, Chair	St. Norbert College
Ann Bostrom	University of Washington
Jeffrey Briggs	Missouri State Emergency Management Agency
Robert Carey*	Utah Division of Emergency Management
David Cocke	Structural Focus
Michael Hamburger	ACEHR ex-officio as SESAC Chair
Thomas Heausler	Consulting Structural Engineer
Tara Hutchinson*	University of California, San Diego
Anne Meltzer	Lehigh University
Danielle Mieler	City of Alameda
Jonathan Stewart	University of California, Los Angeles
Douglas Wiens	Washington University in St. Louis

NEHRP Agency Representatives

Christina Aronson**	Federal Emergency Management Agency
Luciana Astiz	National Science Foundation
Jason Averill*	National Institute of Standards and Technology
William Blanton**	Federal Emergency Management Agency
Joannie Chin*	National Institute of Standards and Technology
Tina Faecke (DFO)	National Institute of Standards and Technology
Jonathon Foster	Federal Emergency Management Agency
John “Jay” Harris	National Institute of Standards and Technology
Gavin Hayes	United States Geological Survey
Andrew Herseth	Federal Emergency Management Agency
Steven McCabe	National Institute of Standards and Technology
Jacqueline Meszaros	National Science Foundation
Siamak Sattar	National Institute of Standards and Technology
Mai (Mike) Tong	Federal Emergency Management Agency

Speakers and Registered Guests

Laurie Baise	Tufts University
Karyn Beebe	International Code Council
Rachel Davidson*	University of Delaware
Amythest Devlin	United States Department of Housing and Urban Development
Jenny Riker	United States Geological Survey
Jerry Shen	Federal Highway Administration
Harold Tobin	University of Washington

* Attended remotely Wednesday only **Attended remotely Thursday only

I. Call to Order and Welcome Remarks

As Designated Federal Officer (DFO) for ACEHR (or Committee), Ms. Tina Faecke called the meeting to order at 9:00 a.m. MDT, took roll call for the Committee members, and confirmed the quorum requirement was satisfied. She announced the meeting will be recorded, reviewed some meeting logistics, and then turned the meeting over to the ACEHR Chair, Dr. Lucy Arendt, who

reviewed the meeting agenda and goals. She also acknowledged Faecke's 50 years of service working at the National Institute of Standards and Technology (NIST).

II. Public Input Period

Committee DFO Faecke reported that nobody registered to speak and turned the meeting over to the Acting NEHRP Director, Dr. John Harris.

III. NEHRP (or Program) Updates

Harris reviewed the NEHRP agency reporting cycle, noting this meeting is an extension of the June 2024 virtual meeting, and then provided a brief update on the status of the NEHRP Reauthorization, the NEHRP Management Plan, the Interagency Committee on Seismic Safety in Construction (ICSSC) since the June 12-13, 2024 ACEHR meeting. He also provided a brief overview of the 116 total ACEHR assessment recommendations since 2006 and their potential alignment with the FY2022-2029 NEHRP Strategic Plan. Harris' update is available at <https://www.nehrp.gov/pdf/Presentation%20-%20ACEHR%20Aug%202024%202B%20-%20Program%20Office.pdf>.

Dr. Siamak Sattar, acting Earthquake Engineering Group Leader at NIST, provided a brief update on NIST's continued efforts in support of the FEMA Functional Recovery Task Committee. In early October 2024, NIST will host a workshop on functional recovery at NIST in Gaithersburg, MD to gather more information on the appropriate target recovery times for buildings that support various community functions. This workshop will fill the gap in the data collected since 2020 and provide recommendations to the NEHRP Provisions Update Committee (PUC) for the development of the functional recovery category table.

Dr. Jacqueline Meszaros, science and technology advisor, presented an update on the NSF-NIST Disaster Resilience Research Grant (DRRG) Program sunset webinar held on July 9, 2024, and noted the symposiums would continue through 2026. She also announced a third agreement between the U.S. and Japan was renewed for five years to work together on research to mitigate infrastructure damage from natural hazards.

Dr. Luciana Astiz, Geosciences Directorate program director, gave an overview of the Cascadia Region Earthquake Science Center (CRESCENT) Partnerships and Applications Workshop held in late June and the Statewide California Earthquake Center (SCEC) Annual Meeting, September 8-11. The NSF update is available at <https://www.nehrp.gov/pdf/2b%20-%20NSF%20Update%20ACEHR%20Aug%202024%20to%20post.pdf>.

Dr. Gavin Hayes, senior science advisor for earthquake and geologic hazards, announced that USGS Circular 1542 (previously USGS Circular 1242) will be officially released soon. He shared information on two upcoming events:

- **National Seismic Hazards Model (NSHM) workshop for Puerto Rico and the U.S. Virgin Islands, August 28-29, 2024, in San Juan, Puerto Rico**
- **USGS Subduction Zone Science meeting, January 8-9, 2025, at the University of Washington in Seattle**

Panel meetings for the USGS FY25 Earthquake Hazards Program (EHP) external grants are ongoing. Since the total number of proposals received continues to decline, USGS plans to conduct an internal and external evaluation.

Mr. Andrew Herseth, structural engineer and NEHRP technical lead in FEMA's Earthquake and Wind Programs Branch provided an update on FEMA's functional recovery and code change efforts.

Mr. Jonathon Foster, senior program manager in FEMA's Earthquake and Wind Programs Branch, provided an update on FEMA's NEHRP State Assistance Grant Program and outreach efforts.

Discussion:

The Committee asked for additional information regarding activities referred to as "beyond code". Harris referenced Executive Order 13717 *Section 1, Policy*, stating that "agencies are encouraged to consider going beyond the codes and standards set out in this order to ensure that buildings are fully earthquake resilient". However, we need to define "resilience" and determine how we will measure resilience to achieve what the White House is encouraging. Functional recovery can be viewed as designing "beyond code". An alternative way of stating "beyond code" might be "beyond prescriptive code requirements for the use of the building".

Arendt asked FEMA if their grant application notice or recent statutory language will need to be revised with regards to engaging tribes and to inform ACEHR of any challenges FEMA predicts as they improve coordination with tribes. FEMA reminded the Committee of their recent implementation plan for engaging tribal governments developed in response to the Government Accountability Office's recommendation.

The Committee suggested that NEHRP provide a simplified "status" report on previous ACEHR recommendations, identifying the redundancy and excluding those "out of scope" or "not applicable". Arendt proposed reviewing Tina's cumulative ACEHR recommendations list and identifying prior recommendations that are no longer relevant. If there are multiple versions of prior recommendations on similar topics, ACEHR should identify which version is current. Faecke offered to reformat the cumulative list of ACEHR recommendations to an Excel spreadsheet for ACEHR to review and consolidate prior to the next ACEHR meeting. A Committee member suggested that ACEHR create a written procedure for developing their biennial report for future reference. ACEHR noted future recommendations should be actionable or fully implemented instead of being under consideration for ten years, and asked for consensus on the best strategy. The Committee agreed that continuity of mission, equity, integrity of science, and the value of independent expertise within the Program should also be highlighted in the next ACEHR report. ACEHR won't have time during this meeting, but Arendt suggested the Committee discuss benefits, if any, of a national risk assessment, while considering material already developed such as FEMA's mitigation needs assessment.

Several comments were made by the Committee expressing their appreciation and gratitude to the agencies on the thinking, organization, and references back to the NEHRP Strategic Plan in their activity updates.

IV. Scientific Earthquake Studies Advisory Committee (SESAC) Update

Dr. Michael Hamburger, SESAC Chair and ACEHR ex-officio member, provided a brief informal update of the SESAC activities. SESAC is planning to schedule regular monthly

teleconference open meetings to review the current USGS EHP activities, discuss future priorities, and significant earthquake events. International collaboration is on SESAC's radar.

V. Federal Highway Administration Resilience Presentation

Mr. Jerry Shen, senior bridge engineer, provided an overview of the U.S. Department of Transportation Federal Highway Administration (FHWA) seismic and multi-hazard resilience program activities. His presentation is available at https://www.nehrp.gov/pdf/5%20-%20FHWA_SeismicMHRResilience_ACEHR_Aug2024_to%20post.pdf.

Discussion:

With regards to the National Bridge Inventory, Harris asked how bridges get prioritized for potential retrofit. In response, Shen noted the National Bridge Inventory is a product of the National Bridge Inspection Program but currently doesn't address seismic risk. However, when the new "Specifications for the National Bridge Inventory" (SNBI) is fully implemented, there will be an item for basic information indicating whether retrofitting is needed and whether a retrofit measure is in place. Retrofit assessment is the responsibility of each state. FHWA published the Seismic Retrofitting Manual for Highway Structures for owner agencies to consider adopting for retrofit prioritization and evaluation in lieu of agency-developed documents. The manual provides a screening and prioritization method that infers seismic vulnerability based on several National Bridge Inventory data items. The Committee asked if FHWA utilizes information produced from the USGS products related to landslides and liquefaction. Shen responded they currently don't have the fragility for landslides to bridge the USGS information with their post-hazard damage prediction and notification. Looking at the pie chart showing the state versus local and federal bridges, Arendt inquired how best practices and research findings are communicated among federal, state, local entities that don't have the resources or motivation to understand these areas. Shen noted FHWA communicates and interacts directly with the American Association of State Highway and Transportation Officials (AASHTO) and they participate in each other's meetings. FHWA also provides training to the State Departments of Transportation and others are also welcome to attend. Reports published by FHWA are provided to the National Transportation Library open to the public. There are four new National Highway Institute web-based training courses related to resilience as well. FHWA is aware of bridge aging, but they don't know how it impacts seismic performance.

VI. ACEHR Meeting Schedule Feedback

One primary purpose of the revised NEHRP reporting cycle is to provide sufficient time for the agencies to efficiently update ACEHR for preparing their assessment report. There was Committee consensus this revised schedule enhances their time together, but doesn't allow time for onboarding new ACEHR members. It was also noted the ACEHR reporting period doesn't align with the NEHRP biennial report. The Committee suggested tying the formal agency updates to the ACEHR recommendations by providing continual progress on ACEHR recommendations and anticipated timeframes. Agencies should also consider reporting final deliverables in response to the recommendations as well as any programmatic challenges.

VII. ACEHR Biennial Report Discussion

Arendt reminded the Committee of the draft 2025 report outline available at https://docs.google.com/document/d/1_1F_ZxQhkImbr9ohgeV14RMdbIXRQtvNhgN2qyvjvI_0/e/dit?tab=t.0 and asked everyone to be prepared tomorrow to discuss the following:

- **appropriate location for highlighting NEHRP achievements;**
- **new content areas, if any, for recommendation topics; and,**
- **emerging topics to highlight or bring to the attention of the agencies.**

VIII. Closing Remarks

Arendt expressed her sincere gratitude to each of the agencies for their excellent updates and also thanked everyone for their engagement, participation, and commitment.

IX. Adjournment for the Day

Faecke reminded everyone to bring their NIST visitor badge with them tomorrow and then officially adjourned the meeting at 5:00 p.m. MDT.

ACEHR MEETING SUMMARY – Day Two

August 8, 2024

I. Call to Order and Meeting Goals

Committee DFO Faecke called the meeting to order at 9:00 a.m. MDT, took roll call for the Committee members, and confirmed the quorum requirement was satisfied. She reminded everyone the meeting will be recorded.

Arendt reminded the Committee of the two presentations and mentioned that she plans to finish their 2025 report discussion before lunch.

II. Housing and Urban Development Presentation

Ms. Amythest Devlin, Program Analyst, Office of Multifamily Housing and Office of Recapitalization, within the U.S. Department of Housing and Urban Development gave an overview of their Green and Resilient Retrofit Program (GRRP). Her presentation is available at [https://www.nehrp.gov/pdf/6%20-%20HUD Resilience pres ACEHR%20Aug%202024 to%20post.pdf](https://www.nehrp.gov/pdf/6%20-%20HUD%20Resilience%20Aug%202024%20to%20post.pdf).

Discussion:

Harris asked for clarification on federally-owned housing compared to federally-assisted housing. Devlin explained this HUD program is only allowed for assisted housing under the Section 8 PBRA program, the Section 202 program, the Section 811 program, or the Section 236 program. The Committee asked what tool HUD uses for the earthquake assessment. The tool utilizes several external tools including FEMA NRI, FEMA FIRM, and ASCE 7. When applicable to a property (properties exposed to moderate or higher seismic hazards), evaluators will additionally utilize FEMA P-154. A question was raised regarding how climate and other hazard issues balanced for the resilience assessment. Devlin responded this is the first time HUD is using funding simultaneously with climate and energy efficiency issues, but their priority focuses on protecting the integrity of the property. While energy efficiency is a high priority, many of those issues fall into the cost-sharing or owner-paid category with an economic return compared to GRRP focusing on things that won't be rewarded but will protect the asset and considered "critical" as a high-impact resilience item. Bostrom noted the resiliency tool is linked to the Federal Emergency Management Agency National Risk Index (NRI) and wanted to know if HUD has plans to address NRI. In response, Devlin said GRRP looked at Census-tracked data,

but the U.S. territories didn't have data. The HUD resiliency tool relies on the assessor to go to the external platform and look for a resource, creating an assessment system where data doesn't age out and evaluators are always looking at the most current data available in the external tools.

III. Cascadia Region Earthquake Science Center (CRESCENT) Presentation

Mr. Harold Tobin, Professor and Paros Endowed Chair in Seismology and Geohazards and Director, Pacific Northwest Seismic Network, Department of Earth and Space Sciences at the University of Washington provided an overview of their new NSF-funded initiatives in Subduction Zone Research: Geohazards, Science, and Society. His presentation is available at https://www.nehrp.gov/pdf/7%20-%20Univ%20of%20WA_CRESCENT_ACEHR%20Aug%202024_to%20post.pdf.

Discussion:

A question was raised about Program management and Mr. Tobin noted their biggest challenge involves multiple communities with different scientific groups and overlapping topics, but managing the traffic flow is a challenge they want rather than the alternative. The Statewide California Earthquake Center (SCEC) and CRESCENT are also working together.

One Committee member asked how the uncertainty of the ground motion model ties into the CRESCENT work. Specifically, to what extent are your research initiatives leading to improved technology for predicting ground motion and as you prioritize, are you thinking about how those different potential activities are more or less important than the ground motions they produce? Tobin agreed that ground motion is the unknown driver for these initiatives. The modeling being done attempts improving the nested resolution for site-specific ground motion predictions and experts are involved to identify engineering ramifications.

Looking forward, the Committee asked how Tobin sees collaboration and coordination in terms of earthquake hazards that might magnify this initiative to the next step, like offshore instruments. In response, Tobin noted that two USGS coastal and marine science centers are involved and continue to be strong collaborators; however, additional Congressional funding for USGS would increase collaboration and direct partnerships. Due to the infrequent damaging (costliest) events in the U.S. such as the 2001 Nisqually earthquake, retrofitting is lagging especially for school buildings. The Committee noted that education and outreach being done is setting the stage and will help to raise awareness and understanding prior to the next large event.

IV. 2025 ACEHR Biennial Report Discussion

Arendt proposed holding a three-hour virtual meeting in November to briefly discuss their report content and assign Committee members specific sections of the report prior to meeting in person after the new year. The reformatted cumulative ACEHR recommendations spreadsheet will be provided for review by the Committee in advance of the November meeting. SESAC also plans to hold an in-person meeting in November, dates to be determined.

A concern was raised as to how much the Committee is assessing the Program per the charter as opposed to reporting without that assessment structure in mind. Arendt reminded everyone of the NEHRP Management Plan which will provide the performance measures to make those required assessments. The Committee is also challenged to do Program evaluations outside of the qualitative assessment, given the resources agencies have been provided. Related to this, another question was raised asking if the agencies conduct surveys to receive feedback from

stakeholders, customers, and grant recipients. Per the Paperwork Reduction Act of 1980, agencies don't conduct formal surveys imposing a burden on businesses and citizens. Instead of considering stakeholder and customer feedback for each agency, Arendt suggested ACEHR focus their assessment at a high level on effective Program collaboration instead of collating data from individual agencies.

The following suggestions/topics were highlighted by the Committee for consideration in the 2025 biennial report or possible future ACEHR meeting presentations:

- **agency achievements in response to ACEHR recommendations up front in the report;**
- **for each recommendation, ACEHR should consider including a paragraph titled "assessment", defining the need for the recommendation;**
- **impact of COVID and post-COVID work culture changes affecting collaboration or the agency mission, particularly for young personnel hired during COVID;**
- **agency challenges/needs that ACEHR could highlight and support;**
- **agency personnel availability or possible hiring issues; and**
- **inviting organizations as speakers for future meetings to assist ACEHR with their Program assessment, such as the city of Los Angeles Resilience Office.**

V. Closing Remarks

Arendt expressed her appreciation for the time and investment of the Committee participants and NEHRP agency representatives and asked Faecke to send out a doodle poll for a three-hour virtual meeting in November 2024.

VI. Adjournment

Faecke thanked everyone for their participation and adjourned the meeting at 2:00 p.m. MDT.

We hereby certify that to the best of our knowledge this meeting summary is accurate and complete.

Ms. Tina Faecke, Designated Federal Officer, NIST Advisory Committee on Earthquake Hazards Reduction (ACEHR)

Dr. Lucy Arendt, Chair, NIST Advisory Committee on Earthquake Hazards Reduction (ACEHR)

Lucy A. Arendt, Ph.D.