# National Earthquake Hazards Reduction Program (NEHRP) Advisory Committee on Earthquake Hazards Reduction (ACEHR) February 8-9, 2023 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

Susan Dowty\* International Code Council

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

Ellen Rathje, Vice-Chair\* University of Texas, Austin

Jonathan Stewart University of California, Los Angeles Douglas Wiens Washington University in St. Louis

**NEHRP Agency Representatives** 

David Applegate\* United States Geological Survey

Christina Aronson Federal Emergency Management Agency

Luciana Astiz National Science Foundation

William Blanton Federal Emergency Management Agency
Tina Faecke 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 Elizabeth Hearn\* National Science Foundation

Andrew Herseth Federal Emergency Management Agency
Theresa McAllister\* National Institute of Standards and Technology
Steven McCabe National Institute of Standards and Technology

Jacqueline MeszarosNational Science FoundationSethuraman Panchanathan\*National Science FoundationJessica Robin\*National Science Foundation

Siamak Sattar\* National Institute of Standards and Technology

Jennifer Wade\* National Science Foundation

**Others** 

Richard Briggs\* United States Geological Survey

Tanya Brown-Giammanco National Institute of Standards and Technology

Dara Goldberg\* United States Geological Survey
Rebecca Hermanowicz Department of Commerce

Katherine Johnson\* National Institute of Standards and Technology

Linda Rowan\*\* Congressional Research Service

Matthew Speicher\* National Institute of Standards and Technology

Harold Tobin University of Washington

\*Attended Wednesday only \*\*Attended Thursday only

## I. Welcome

As Designated Federal Officer (DFO) for ACEHR (or Committee), Ms. Tina Faecke called the meeting to order at 8:30am MST, took roll call for the Committee members, and confirmed the quorum requirement was satisfied. She announced the meeting will be recorded and then introduced the USGS Director, Dr. David Applegate, who thanked the Committee for their engagement and active participation and emphasized the importance of the Committee's assessment.

After his introductory remarks, Dr. Applegate handed the meeting over to the NSF Director, Dr. Sethuraman Panchanathan for his introductory remarks. After his remarks, the meeting was handed over to the ACEHR Chair, Dr. Lucy Arendt, who reviewed the meeting agenda and goals. Upon Arendt's request, the Committee had no initial comments or questions. Arendt announced that the NIST Director appointed Dr. Ellen Rathje as the ACEHR Vice-Chair.

# **II. Annual Ethics Briefing**

Ms. Rebecca Hermanowicz from the Department of Commerce Ethics Law and Programs Office gave the annual briefing on ethics rules for Special Government Employees, and thanked the Committee for completing their online financial disclosure forms in January.

# III. NEHRP (or Program) Update

Dr. John Harris, Acting NEHRP Director, provided a brief update on the status of the NEHRP Strategic and Management Plans, the Interagency Coordinating Committee meeting plans, the two U.S. Government Accountability Office (GAO) Assessment Reports, and the Interagency Committee on Seismic Safety in Construction (ICSSC). He also reviewed prior ACEHR recommendations aligned with the Strategic Plan. Harris' update is available at <a href="https://nehrp.gov/pdf/Program%20Update%20and%20Program%20Activity%20Overview%20Feb%202023%20ACEHR.pdf">https://nehrp.gov/pdf/Program%20Update%20and%20Program%20Activity%20Overview%20Feb%202023%20ACEHR.pdf</a>.

#### **Discussion:**

The Scientific Earthquake Studies Advisory Committee (SESAC) Chair and ACEHR ex-officio member, Dr. Michael Hamburger, asked if there is an equivalent advisory committee specifically focused on earthquakes within FEMA and NSF to review and assess their activities. ACEHR and SESAC are legislatively mandated by the Earthquake Hazards Reduction Act of 1977, as amended; no other NEHRP agency advisory boards were identified. Secretarial department approval is required to form formal advisory committees such as SESAC and ACEHR based on statutory requirements. Even though FEMA and NSF don't have equivalent formal advisory committees, there is a working relationship with the Science for Disaster Reduction Interagency Working Group under the National Science and Technology Council's Subcommittee for Resilience Science and Technology. That working group brings together civilian and defense agencies that develop and apply science and technology to reduce the impacts of natural and technological hazard events, but there is no formal NEHRP seat at the table.

A representative from the Office of Science and Technology Policy also participates in our NEHRP Program Coordination Working Group meetings. NSF doesn't have an official advisory committee, but any submitted proposals are reviewed by panels which provide advice to the Program Directors on which activities to support. In addition, the Natural Hazards Engineering Research Infrastructure (NHERI) informally plays an important function in developing a science

plan and reaching out broadly to engage the community in developing that plan and providing science advise to NSF.

The Committee asked if the NEHRP agencies have any planned COVID-related activities. This is one area that is being considered for a future workshop.

An explanation was requested from the Committee for "unacceptable seismic risk". Within RP-10, we provided a minimum target regarding safety. We currently don't have targets identified for economic losses or recovery time. We try to reference currently published information, such as ASCE 41, with the freedom that an agency can go beyond. The agencies translate legislation and may initiate new activities, such as functional recovery, not identified in legislation but the agencies may not receive the funding necessary to implement new activities.

# III. NEHRP Activity Updates by Strategic Plan Goals

Harris provided a brief overview of the revised reporting process for the major NEHRP activities since the August 24, 2022 ACEHR meeting based on the updated goals. A list of new activities or ongoing activities with noteworthy outcome/impact since the August 2022 ACEHR meeting are linked within the meeting agenda below each agency update presentation link. These activities are categorized by the strategic goals/objectives they support as well as if they support a focus area or ACEHR recommendation. Each agency will highlight one or two projects from their list. Time was allocated for open dialogue after each agency update.

NSF Updates - NSF program activity updates were given by Dr. Luciana Astiz, Program Director, Earth Science Division, Geoscience Directorate and Dr. Jacqueline Meszaros, Science and Technology Advisor, Natural Hazards, Disasters and Resilience, Division of Civil, Mechanical and Manufacturing Innovation Division, Directorate for Engineering. A pie chart was presented displaying the 24 NEHRP-related projects awarded by Directorate since the last ACEHR meeting in addition to a bar graph showing the awards by NEHRP goals and objectives. A link to the complete listing with abstracts of NEHRP-related awards in addition to a list of highlighted awards are provided within the meeting agenda.

Astiz highlighted three Geoscience Directorate awards and a new award to examine how permafrost changes in the artic are affecting infrastructure vulnerability to earthquakes. In the Computer Information Directorate, there was a CIVIC award to develop 'digital twins' for schools to respond to disasters including earthquakes.

Technology Innovation and Partnerships (TIP) is a new NSF Directorate organized to ensure more use-inspired research and translation of research results in the practice, created by Congress. Meszaros reviewed two TIP awards relevant to NEHRP, iCorps and POSE. She also highlighted four Engineering Directorate awards: repairable precast concrete buckling-restrained braced frames for functional recovery; magnetorheological fluids for viscous dampers for seismic resilience; a study of seismic cracking of earthen dames; and a study of co-seismic slope failures. A new cooperative agreement for the NHERI Decadal Visioning was issued. This will yield a plan for NHERI's evolution during the period 2025-2035 based on extensive stakeholder input.

The UCSD Shaketable operating cooperative agreement was renewed. The NHERI DesignSafe achieved CoreTrustSeal certification, which certifies that the facility is trustworthy and safeguards its

data in a sustainable way. The process of certification led DesignSafe to improve a number of its policies, services, and infrastructure.

Panels have commenced to review the second round of joint NSF/NIST Disaster Resilience Research Grant (DRRG) proposals. NSF's update is available at <a href="https://nehrp.gov/pdf/ACEHR%20NSF%20Presentation%20Feb2023.pdf">https://nehrp.gov/pdf/ACEHR%20NSF%20Presentation%20Feb2023.pdf</a>.

#### **Discussion:**

The Committee shared their appreciation to NSF for sharing the full list of awards in addition to providing a nice overview. A question was raised regarding the funding rate of the applications received compared to the total number of awards. The actual number of applications is confidential information; however, the overall funding rate for NSF is approximately 30 percent. Meszaros provided a link to the NSF Merit Review Reports where you can browse the funding rates at a high level over time <a href="https://www.nsf.gov/nsb/publications/pubmeritreview.jsp.">https://www.nsf.gov/nsb/publications/pubmeritreview.jsp.</a>
ACEHR members indicated that they think that having more information about funding rates generally would be beneficial for the community. However, NSF has chosen not to share funding rates generally, not just NEHRP funding rates. With regard to reporting on NEHRP-relevant work, there are additional complications. NEHRP-relevant projects can be funded by anyone in the Foundation so they are hard to track. There is a NEHRP-related code in the NSF system, but not all Program Directors include the codes when doing reviews or making awards. Reports basically have to be created by hand for each ACEHR meeting, twice a year.

Is disaster-relevant work being done in the new TIP Directorate at NSF? Meszaros indicated that conversations between the Engineering and TIP Directorates have been opened. Are there any efforts to communicate or coordinate the earthquake disaster issues within NSF other than Astiz and Meszaros? Astiz said there are regular conversations regarding NEHRP among internal staff and management. Having the NSF Director present opening remarks for this meeting shows that there is awareness and appreciation, if not constant attention.

FEMA Updates – Mr. Jonathon Foster, Earthquake Program Specialist in FEMA's Earthquake and Wind Programs Branch, provided the FEMA NEHRP State Assistance Grant Program updates. Under the Individual State Earthquake Assistance funding opportunity, non-competitive grant awards are anticipated for 23 states and territories in fiscal year (FY) 2023 totaling approximately \$2.1 million (M) for FY 2024 activities. Under the Multi-State and National Earthquake Assistance funding opportunity, competitive grant awards are anticipated for nonprofit organizations and institutions of higher education totaling approximately \$1.2M. The Notice of Funding Opportunity (NOFO) for both programs should be posted by May 1, 2023, and three webinars to review the NOFOs are planned for late April or early May. The 18-month grant period of performance for both types is planned to begin on August 1, 2023. All new grant awards and funding opportunities under NEHRP will be managed in FEMA Grants outcomes (FEMA GO), instead of the Non-Disaster Grants Management System. FEMA GO will allow users to apply, track, and manage all disaster and non-disaster grants and will improve oversight and monitoring. The next National Earthquake Program Manager (NEPM) meeting will be held March 21-13, in Portland, OR.

Mr. Andrew Herseth, structural engineer in FEMA's Earthquake and Wind Programs Branch provided the NEHRP technical team update, highlighting the seismic building codes and

standards activities and seismic resistant design guidance publications. The FEMA update is available at https://nehrp.gov/pdf/FEMA%20ACEHR%20Presentation.pdf.

#### **Discussion:**

There was a brief discussion regarding FEMA's decision to reduce the lifelines activity due to a reduction of appropriations. Clarification was requested for "developing building code commentary text to be submitted for consideration by the International Code Council (ICC) related to the seismic provisions". FEMA is working on commentary text for the seismic provisions in the International Building Code (these are outside of the reference standard, ASCE/SEI 7).

NIST Updates - An update for the Earthquake Engineering Group (EEG) at NIST was provided by Dr. Siamak Sattar, Acting EEG Leader, Materials and Structural Systems Division. He highlighted two stakeholder workshops: Transportation Systems and Functional Recovery (September 28, 2022) and Seismic Practice Needs for Buildings and Lifeline Infrastructure in the Central and Eastern United States (October 17-18, 2022). Sattar's presentation is available at <a href="https://nehrp.gov/pdf/NISTNEHRPACEHRPresentationFeb2023">https://nehrp.gov/pdf/NISTNEHRPACEHRPresentationFeb2023</a> Final.pdf.

### **Discussion:**

The Committee asked if the recommendations in the NIST - Applied Technology Council (ATC) workshop report on Central and Eastern US practice needs will lead to a request for proposals? NIST may consider adding seismic practice needs in the next DRRG solicitation and will also discuss this topic with USGS for possible collaboration. As background, NIST received funding from Congress in 2016 to solicit research proposals in support of disaster resilience. In 2020, NIST partnered with NSF to submit a joint solicitation. Some awards are managed solely by NIST and some are managed by NSF. In 2022, another joint solicitation was announced and the panels are being managed by NSF. A news release announcing the NIST/NSF awards totally more than \$7.6 million is available at <a href="https://www.nist.gov/news-events/news/2022/05/nist-nsf-award-more-76-million-support-disaster-resilience-research">https://www.nist.gov/news-events/news/2022/05/nist-nsf-award-more-76-million-support-disaster-resilience-research</a>. Each summer, a Disaster Resilience Symposium is held providing the grantees an opportunity to summarize their project. Recordings of the DRRG symposiums are available at <a href="https://www.nist.gov/resilience/disaster-resilience-federal-funding-opportunity-ffo">https://www.nist.gov/resilience/disaster-resilience-federal-funding-opportunity-ffo</a>.

Dr. Steven McCabe provided an update on the Engineering Laboratory and NIST leadership changes since the August 2022 ACEHR meeting.

**USGS Updates** - Dr. Gavin Hayes, Senior Science Advisor for Earthquake and Geologic Hazards, provided the USGS update. Hayes provided an overview of the National Seismic Hazard Model (NSHM) and an update on the USGS fiscal year 2023 appropriations increase. His presentation is available at <a href="https://nehrp.gov/pdf/NEHRP\_Presentation\_USGS.pdf">https://nehrp.gov/pdf/NEHRP\_Presentation\_USGS.pdf</a>.

Hayes provided a brief summary of the Turkey earthquake and shared some ShakeMap and PAGER data from the USGS website, including the interactive analysis of data, and reported the first interagency earthquake coordination call was initiated by USGS. Inventory and impacts that support the economic losses calculations are frequently updated. He noted this region in Turkey has not experienced an earthquake of this size in a very long time. There are many buildings in Turkey that pre-exist the Turkish codes.

Hayes also reported that an interagency earthquake coordination call was initiated with federal and non-federal partners for the Ferndale earthquake that occurred in December 2022. Overall, that event wasn't massively impactful; there were only some minor structural and infrastructural impacts. The Committee asked Hayes to share his Ferndale presentation slides with them since he didn't present them during the meeting because of the focus on the Turkey earthquake. Mitigation is key to reducing losses in future earthquakes, so hopefully we won't see the same impacts as we have with the Turkey earthquake.

## **Discussion:**

The Committee asked about the USGS stance on induced seismicity with respect to hazard and risk assessments. Hayes reported that induced seismicity has been removed from the regular long-term national seismic hazard modeling effort. In the past, USGS had one-year induced seismicity forecasting and would like to renew that effort but it requires additional funding.

A question was raised regarding the United States Agency for International Development (USAID) and the role of USGS and other agencies regarding the recent Turkey earthquake. USAID's Bureau for Humanitarian Assistance has been actively engaged in the humanitarian recovery activities to support those recovery operations on the ground. A regional management team was established in the DC area to manage their response operations. The management team holds daily briefings involving government agencies, primarily focused on the humanitarian response aspects. Once their team transitions into more scientific aspects, USGS and other agencies will get more involved. Currently, USGS provides information on the aftershocks, their impacts and what to expect moving forward. The language in the updated USGS 1242 document (soon to be published) is guiding what USGS is doing now and it provides more flexibility for the NEHRP agencies in the post-earthquake investigation coordination arena and how we interact with partners and how the process is managed.

Committee Feedback on Program Activity Update Reporting – The Committee agreed that having the agencies highlight two or three major activities in addition to providing their full list of activities is very useful. The remote participants said their video and audio experience during this hybrid meeting was excellent and they felt fully engaged. The Committee noted that receiving these updates from all four NEHRP agencies can be overwhelming and may require some breathing room between the updates. The Committee appreciated having the agency updates directly correlate to ACEHR's recommendations, and suggested each agency include a standardized summary slide with budget information. USGS has a line item in their budget specifically for NEHRP activities, but the other NEHRP agencies don't. Within the Senate appropriations report, FEMA is informed that they must spend no less than a certain amount for NEHRP. NSF doesn't report enacted amounts, only actual numbers based on NEHRP relevant awards made within the reporting period. They also exclude personnel and NSF headquarters administrative expenses. NIST doesn't have a specific line item either. Faecke shared the NEHRP budget charts from the website.

More synergistic activities are being reported and those sorts of collaborations are important and should be highlighted as a recap or summary. A suggestion was made for the agencies to present issues or concerns that require input from the Committee as opposed to only reporting on activities being done. It would be helpful for the agencies to include a list of upcoming issues that the Committee might want to address in their biennial report.

Scientific Earthquake Studies Advisory Committee (SESAC) Update – Dr. Michael Hamburger, SESAC Chair and Indiana University professor, introduced himself and provided an informal update. A copy of the 2022 SESAC annual report is available at <a href="https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/media/files/sesac">https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/media/files/sesac</a> 22report.pdf.

#### **Discussion:**

Hayes noted the National Earthquake Prediction Evaluation Council (NEPEC) was established based on Presidential authorization instead of Congressional legislation which means it is no longer a federal advisory committee. Therefore, USGS plans to move NEPEC under SESAC as a subcommittee, providing more flexibility.

## IV. Subduction Zone Presentations

The first presentation on Advancing Subduction Zone Science (SZS) was given by Dr. Richard Briggs, Research Geologist, Earthquake Hazards Program at USGS in Golden, CO. His presentation is available at <a href="https://nehrp.gov/pdf/Briggs\_SZSRoadshow\_GHSC\_ACEHR.pdf">https://nehrp.gov/pdf/Briggs\_SZSRoadshow\_GHSC\_ACEHR.pdf</a>. The second presentation on SZS was given by Dr. Harold Tobin, Professor, Department of Earth and Space Sciences, University of Washington. His presentation is available at <a href="https://nehrp.gov/pdf/Tobin-NEHRP-ACEHR.pdf">https://nehrp.gov/pdf/Tobin-NEHRP-ACEHR.pdf</a>.

#### **Discussion:**

The Committee asked for an expansion of the academic collaboration efforts mentioned in Chile. Tobin said the academic SZ4D group plans to work together with Chile, which has a good seismographic geodetic network, to potentially build an onshore and offshore array of instrumentation, including long-term deployments of ocean bottom seismometers and pressure sensors, to densify their network in order to identify specific seismic gaps or boundaries between gaps. There have been several meetings to determine the priorities, but funding is needed before proceeding. Is an informal collaboration planned for expanding subduction zone efforts within USGS and NSF? USGS submitted a request for internal and external funding in support of a subduction zone research center. In collaboration with USGS, Dr. Douglas Wiens encourages the other agencies to discuss what Subduction Zone in Four-Dimension (SZ4D) should also be doing in Alaska and Cascadia. Wade noted that NSF has been collaborating with USGS on SZ4D and NSF recently made an award to SZ4D to begin the planning work and follow-up research coordination work. Astiz said the updated NEHRP Strategic Plan includes subduction zone science as a focus area.

# V. Earthquake Sequence Characterization Presentation

Dr. Dara Goldberg, Research Geophysicist, Earthquake Hazards Program at USGS in Golden, CO gave a presentation on Earthquake Sequence Characterization. Her presentation is available at <a href="https://nehrp.gov/pdf/Goldberg\_EarthquakeSequences.pdf">https://nehrp.gov/pdf/Goldberg\_EarthquakeSequences.pdf</a>.

# **Discussion:**

The Committee asked how USGS decides when a large earthquake occurs after a previous earthquake, whether the first event is a foreshock, an earthquake on a neighboring structure, or if it is an aftershock, and does that matter when characterizing the sequence. Goldberg said the distinction really isn't that important if it occurs on a neighboring structure soon after. USGS can perform stress change calculations to see whether earlier earthquakes have contributed to the stress field, promoting that earthquake toward failure. It gets complicated when you have productive aftershock sequences because you have the contribution of hundreds of earthquakes

that are contributing to the stress changes in that area. How much of this sequencing process will be automated and down to what magnitude will you be producing this product? Automation hasn't been completely defined yet. This initial intent is for this product to be linked to the existing aftershock forecasting product which has many of the same calculations embedded within it, currently generated for domestic events of magnitude 5.5 and above. Hayes confirmed USGS is making progress in determining why some sequences are stronger than others. The Committee agrees this area provides a great opportunity for agency collaboration and outreach education, based on available resources.

# VI. Closing Remarks

Prior to meeting tomorrow, Arendt encouraged everyone to review the topics and tone of the previous ACEHR reports available on the NEHRP website at <a href="https://nehrp.gov/committees/reports.htm">https://nehrp.gov/committees/reports.htm</a>.

Rathje noted the NEHRP website is outdated and needs a major face lift. Faecke developed a new landing page but needs to wait for the NIST web master to upload the page. McCabe reported that a draft statement of work for an external contract was prepared to include updating the website, but was cancelled due to a lack of funding. The Committee offered to provide suggestions for improving the website in addition to raising this issue to upper management, if necessary. Highlighting agency activities and communication is critical, and the website plays a huge role in these areas.

Arendt thanked everyone for their engagement, participation, and commitment.

## VII. 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 pm MST.

## **ACEHR MEETING SUMMARY – Day Two**

February 9, 2023 (8:30am-2:00pm MST)

# I. Call to Order and Opening Remarks

Committee DFO Faecke called the meeting to order at 8:30am MST, took roll call for the Committee members, and confirmed the quorum requirement was satisfied. She reminded everyone the meeting will be recorded and asked that questions from remote participants be entered in the chat.

Arendt reminded the Committee their task today is to discuss what might be included their 2023 report, which is due to the NIST Director by September 30. She noted they will only have two virtual ACEHR meetings, May 8-9 and August 2-3, to finalize their report.

## **II. Public Input Period**

Committee DFO Faecke reported that no one from the public registered to speak.

## III. 2023 ACEHR Biennial Report Discussion

Arendt shared a Google document outlining high-level topics/questions regarding the report and provided a link for those participating remotely. She reminded the Committee that their report ties into the scope of activities and objectives of the ACEHR charter. Who is our audience and what is our goal? What do we want to say? How do we want to say it? Arendt briefly reviewed the structure of the 2021 report. She reminded the Committee that recommendations need to be actionable given the agency resources available since they must be formally responded to; therefore, we need to be aware of what we say and how we say it. Arendt also asked the Committee to think about what process to use in creating their report. The Committee asked the agencies to identify which 2021 recommendations were impactful for the agencies to accomplish or modify their mission. Harris responded the component of time is important for reporting alignment. Haves said the recommendation to support research in earth science, engineering, and social science to further develop earthquake early warning capabilities is already a goal for USGS. Mr. David Cocke suggested possibly having two sections, (1) supporting existing activities and (2) emphasizing the gaps in research and implementation. Meszaros noted that having the Committee highlight the ways the NEHRP agencies comply with the GAO recommendations in spirit, given the nature of each organization, would be impactful for the agencies.

The Committee asked if it is appropriate for them to request information from the agencies on their strategic decisions, why they were made, and then provide feedback on their direction. Harris reminded the Committee of their role and responsibility to assess the agencies' activities, not oversee or manage them. As mentioned earlier, the NEHRP Interagency Coordinating Committee oversees and manages NEHRP's direction. The individual agency representatives select which topics to highlight during ACEHR meetings, but welcome input from the Committee if they want other activities highlighted in future meetings. Meszaros suggested the Committee help amplify what is included in the updated NEHRP Strategic Plan, assuming the final version will be publicly available soon. As the NEHRP agencies develop their management plan, the Committee will be involved. A revised agency program update approach was suggested by Cocke to include a longer discussion period between agency updates to give the Committee more time to digest the information presented. In addition, instead of the agencies only providing a "fire hose" of information, could the agencies identify the gaps or include areas of concern where the Committee could help support or strengthen activity impacts? The agency program updates convey the goals and objectives of the new Strategic Plan. Meszaros said it would be helpful, however, for the agencies to have an open discussion with the Committee on the important gaps to help the communities make progress. Hamburger suggested three things the agencies should consider including in their agency update: (1) gaps (objectives that haven't been met); (2) organizational challenges (what is preventing efficient or effective progress); (3) partner agency collaboration (how can they contribute more effectively).

Mr. Jeffrey Briggs asked what the NEHRP performance measures are particularly around collaboration, which is fundamental for the Committee to assess the Program's effectiveness. For example, the agencies should report on measurable outcomes: what they are trying to achieve, did they meet or exceed them, did anything go wrong, and what would they change in future years. Harris noted those performance measurements will be incorporated in the management plan. Hayes noted that GAO made similar comments on NEHRP performance

measures, and USGS has departmental-level performance measures that could be incorporated into their program update. Dr. Anne Meltzer noted that time and resources are finite; therefore, the Committee should be mindful not to make recommendations that are burdensome for the agencies.

Arendt noted to have a clear sense of tone and expectation, we need to identify who the audience is for the ACEHR report. Faecke noted the report is hand delivered to the NIST Director, who shares it with Congressional staff via the NIST Congressional and Legislative Office. The report is also posted on the NEHRP website and shared with the NEHRP Interagency Coordination Committee, which includes the NEHRP agency directors. Faecke emailed a Google analytic report for the NEHRP website to the Committee members, but Dr. Jonathan Stewart requested statistics on the number of downloads for prior ACEHR reports. Meszaros mentioned the annual Office of Management and Budget (OMB) and Office of Science and Technology Policy's (OSTP) Research and Development (R&D) Priorities Memo. If the report captures the interest of those offices, it might help shape that memo. Meltzer suggested highlighting the complimentary nature of the different agencies that are part of NEHRP as opposed to assessing individual agencies.

Arendt noted two goals of this report as assessing agency activities and progress, considering the tools and resources available, and making a persuasive case on one or more specific topics. We want this report to be a concise and to-the-point document. McCabe noted the Committee should recognize the impact of stating an investment today could avoid future loss of life and structures. Arendt noted that only presenting facts without telling stories is not as effective for our audience. Committee members are encouraged to make their points, but if the majority of the Committee believes that a point should be omitted or instead included in an appendix, Arendt asked that members consent to accept that. The Committee asked if previous recommendations that weren't included in the final report could be revisited again.

In advance of the May virtual meeting, Arendt will organize the thoughts highlighted during this meeting and will develop an outline including bullet points for consideration as a draft report is developed during the May meeting.

## IV. Closing Remarks

Arendt expressed her appreciation for the time and investment of the Committee participants, NEHRP agency representatives, and the three special presenters. The next ACEHR meeting will be held virtually from 1:00-4:00 pm EDT each day on May 8 and 9.

# V. Adjournment

Faecke thanked everyone for their participation and adjourned the meeting at 2:00 pm MST.