August 1, 2023

NATIONAL TSUNAMI HAZARD MITIGATION PROGRAM (NTHMP) PLENARY SESSION: NRI WORKSHOP

Meeting Minutes

Attendees from NHRAP
- Casey Zuzak, FEMA
- Annie Sheehan, FEMA
- Patrick McGuire, PTS Compass
- Doug Bausch, CDS
- Lauren Fricke, PM Team

Notes
- The National Risk Index (NRI) is a tool used to compare comprehensive risk across the country. It highlights areas based on their risk to 18 natural hazards and acts as a starting point for further research. The NRI is managed by the Natural Hazards Risk Assessment Program (NHRAP), a group within FEMA's Risk MAP program that translates institutional risk assessment data into a format that is useable for communities.
- The Community Disaster Resilience Zones (CDRZ) Act is a new piece of legislation that requires FEMA to maintain a tool – the NRI – and use it to define disaster zones across the country with the overall goal of increasing resilience actions. It is crucial for NRI to incorporate the best data and representation for all its hazards because it will be used to select the zones.
- The purpose of the NRI workshop at NTHMP was to brainstorm solutions to previously identified issues with the NRI's current tsunami data and methodology. These include the patchwork method of delineating zones due to data availability, incomplete historic data leading to frequency variations, missing events in loss data, and missing factors when calculating hazards exposure.
- Three outcomes were identified for the workshop: (1) to understand what data is needed to improve tsunami characterization, (2) to discuss what data in each state/territory would be most appropriate, and (3) to discuss how to best capture losses for people and the built environment. The NRI team acknowledges that this is the first step in a longer engagement between FEMA and the tsunami community and does not expect to achieve all three outcomes in one day.
- Ultimately, the tsunami community hopes to deliver geodatabases of Census blocks based on presence in different hazard zones with updated values of annualized frequency, historic loss ratios for population, and improved exposure values for populations and buildings to improve tsunami hazard in the next NRI release. There is additionally the potential to publish a collaborative article between FEMA and NTHMP.
- The NRI calculates expected annual loss (EAL) by multiplying annualized frequency, exposure, and historic loss ratios. NTHMP expressed concern over the use of this equation and its inherent bias toward high frequency, low impact events. To address this, the NRI team plans to break the tsunami hazard into small sub-hazard categories.
- Tsunami is a unique hazard. Whereas a typical hazard's representative case would be a moderate event, tsunamis can be represented by two separate subtypes. First, the moderate event, and second, the rare, catastrophic event of low frequency and high losses. The best representative case for a tsunami then falls somewhere between these two options. The NRI team proposes a sub-hazard model focusing on near-shore and distant events to address both sub-hazards.
- The NRI completes a nationwide analysis for hazards. This is a challenge as some national datasets, such as NSI, have larger error rates than the smaller communities' datasets. However, the NRI must ensure the data and its analysis is equal across the country and can be updated on a regular basis, so individual state datasets, even with improved accuracy, will not always be the final data used.

- The NRI technical documentation is intended to share how methodology is calculated rather than why decisions were made. However, NTHMP members felt that the technical documentation was a good place for uncertainties and use limitations to be better explained.
- NTHMP members emphasized the number of people living on boats, none of which are included in Census numbers. Significant concern exists over their ability to evacuate and the combined loss of a home and a business if marinas are destroyed. Additional concerns included overlooking visitor populations, a lack of accounting for cascading impacts, and the use of Hazus for NRI calculations.
- NTHMP members asked about potential updates to the volcano hazard, sea level rise, and the inclusion of landslides. FEMA is open to discussion if the data is available.
- Breakout session brief outs

Next Steps
- NTHMP and the tsunami community will review their scenarios and datasets and compile a list of potential data sources, aiming for a December handoff back to FEMA.
- FEMA will take back NTHMP's feedback and look at how it can be incorporated into NRI (see Items and Topics to Follow Up On below).

Items and Topics to Follow Up On

- Time dependent recurrence interval – frequency. Reach out to Jay Patton and Art Frankel for follow up, and consider that not all scenario events will be independent. This is low priority because it would require a fundamental change.
- Uncertainty in the technical manual. Goals: identify where NRI does currently address/consider uncertainty (immediate short-term), publish numbers of percent confidence within range (short-term), margins of error for EAL (long-term).
- NSI data. Look into the difference between NRI's NSI data and the Pacific Northwest's improved NSI data.
- Space weather as a hazard to NRI.
- El Nino sea level rise for Puerto Rico and Guam. Consider creating an FAQ to address this.
- Bias toward high-frequency, low damage hazards.
- Debris fields. Request was made for NRI team to reach back out within next month or so.
- Impacts to buildings and populations. How to measure these impacts and how evacuations affect them.
- Align hazards with more scenario based EAL model.
- Consider what data and method(s) will be used for completing tsunami Hazus runs.
- Follow up with Puerto Rico contact.
- Follow up with Stefan from the East Coast. He has a GoogleDrive with relatively high resolution data for tsunamis.
- Add Census places. This would require aggregating up from census blocks, and will likely end up with a prototype of just EAL.

NRI Hazards to Improve (in descending level of priority)

FEMA

- Volcano
- Landslide (may want to push this back further)
- Tsunami (mari-time data, blackberry bushes)
- Hurricane (following Hazus 6.1)