

NTHMP Review Committee Consensus Statement

The NTHMP has established a unique partnership among multiple states and federal agencies that has been developed over the past decade, has set challenging goals, and met many of them. This program has institutionalized a partnership between federal and state members that is unmatched by other hazard and risk management programs. The reviewers unanimously agree on the following points:

- NTHMP was established well before the Sumatra tsunami and its goals have been validated by the impacts of that event. Recognition of a broader regional vulnerability to tsunamis, coupled with the success of the NTHMP provided the foundation for the Tsunami Warning and Education Act.
- Despite modest budget allocations, the program has achieved much because the state and federal agency partners have made investments of time and effort that go beyond normal expectations.
- All state and federal NTHMP representatives were highly engaged in the activities of the program and committed to its success.
- The program has expanded beyond a narrow focus on mitigation to include community resiliency. The reviewers endorse this expanded interpretation of the program's goals
- The representatives recognize that the technology developed and used by the program must be tied to education and awareness in order to be effective.
- The program has allowed states to experiment with alternative methods of achieving tsunami safety. This has resulted in a variety of innovative approaches that now provide an opportunity to develop assessment tools for evaluating their relative effectiveness.
- Since products such as inundation maps have been implemented at the local level, NTHMP is in a unique position to establish performance standards and standardized assessment tools for evaluating its effectiveness.
- There is a strong need for the National Academy of Sciences' review of the forecast/warning system and an external review of the *TsunamiReady* community program.
- The expansion of the NTHMP from the five Pacific states to 29 coastal states, commonwealths, and territories and the passage of the Tsunami Warning and Education Act offers a unique opportunity to strengthen the organizational structure of the program and enhance tsunami resilience in the United States.
- The lessons learned from the existing program should now be transferred to the additional 24 members that have joined the expanded program.

- The overarching goal for all partners is to continue to demonstrate the program's value over the next five years and to achieve a sustainable program.

Dr. John L. Aho's Assessment

I concur with the preceding NTHMP Review Committee Consensus Statement and offer the following additional comments on the NTHMP's achievement of its current goals.

General Comments

It was a distinct privilege to work with the members of review committee and to interact with the outstanding professionals on the NOAA and NTHMP team. The team should be proud of their accomplishments to date and I look forward to hearing of future successes.

The format for the review meeting, including presentations with the closed review panel sessions that followed, was an excellent way to encourage open dialogue. I would hope that NOAA uses a similar meeting format in future review meetings.

I noted that there is some concern among the NTHMP stakeholders over future management approaches and whether the stakeholders would have the opportunity for appropriate input into future decisions affecting the NTHMP. Careful consideration should be given to these concerns and to ensuring that policy that affects the stakeholders is opening conveyed to them. Any new approach to management of the NTHMP should emphasize place emphasis on stakeholder satisfaction.

I believe that it is **extremely important** that NOAA and the NTHMP team hold a team chartering meeting in the near future. Chartering is the act of guiding a team through the process of defining itself: its purpose, goals, behaviors, roles, responsibilities, and other elements that give a team the clarity of purpose essential for high quality performance. The benefits of chartering are threefold:

- ✚ Increases the probability that the team will be successful and will achieve high-quality performance
- ✚ Empowers team members, maximizing their effectiveness and influence
- ✚ Monitors team performance so that members can track goals, diagnose problems, and take corrective actions.

The essential elements of the chartering process include:

- ✚ Define the team
 - Vision
 - Purpose
 - Boundaries
 - Organizational linkage

- ✚ Clarify team purpose
 - Membership
 - Mission
 - Measures of success
 - Organizational priorities
 - Critical success factors

- ✚ Define responsibilities
 - Team and individual responsibilities
 - Shared responsibilities

- ✚ Develop team operating guidelines

- ✚ Define interpersonal behavior guidelines
 - Core values
 - Guiding principles
 - Rules of interpersonal conduct
 - Protocol for resolving interpersonal conflict

I have used this approach (typically a one-day meeting) with great success to charter design teams, engineering advisory boards, the Alaska Seismic Hazards Safety Commission, and other agencies. It is a wonderful way to get a team working together for common goals.

It should be remembered that goals should be specific, measurable, and achieving. Examples of the current NTHMP goals that probably had no possibility of being met were inundation maps in 75% of the at-risk communities and 25% of at-risk communities being designated TsunamiReady.

The chartering meeting described above is an excellent way, as a team, to identify and prioritize goals, define appropriate measures of success, and to develop an implementation plan.

Bathymetric Grid Data. The requirement for NOAA assistance in acquiring bathymetric grid data was evident during the NTHMP committee and state's presentation. It is my understanding that NTHMP was never intended to be the sole developer of grids. Because of the importance of grid development to inundation mapping development, the states cannot develop inundation maps without the grids, and since the development of the mapping is a major NOAA goal:

- ✚ Grid development for NTHMP member states should return to NOAA as the responsible entity.
- ✚ NTHMP should prioritize community grid development following the states recommendations.
- ✚ NOAA should fund grid development outside of the NTHMP

This approach to grid development **must not be ignored** since it is vitally important to the development of inundation maps which are integrally tied to other NTHMP goals.

Goal 1: Tsunami inundation maps. Inundation mapping is important and serves as the foundation for mitigation and outreach activities. Since the PMEL MOST model has been tested and verified against benchmarks and observation data it is desirable for modeling calculations. This code should be made available for use by qualified modelers. The argument that the code is too complicated for use by qualified professionals is not justifiable. Elena Suleimani at the University of Alaska Geophysical Institute is a prime example of a qualified modeler who could use the code appropriately for developing inundation maps for Alaska.

Inundation maps should be based on both models and paleotsunami mapping-i.e. height and inland extent of tsunami sand, etc.

Goal 2: Consistent evacuation maps. Consistent evacuation maps (symbols, resolution, etc.) should be produced but allow for necessary state and local variations in geography, facilities, community needs.

Goal 3: Warning dissemination times. Goal appears to have been met.

Goal 4: Tsunami impact forecasts. No comment.

Goal 5: Graphical displays. A common standard should be established for the quality and type of graphical displays to be used and a method should be established for their distribution.

Goal 6: Local warning systems. Goal has been met.

Goal 7: False alarm rates. Definite improvements have been made and the tsunami warning centers are continuing to address this goal. A more clear definition of “false alarm” is required in order to clearly identify the measurement of success for this goal.

Goal 8: Community resilience. It does not appear that this goal has been achieved. Performance measures need to be defined and assessment and evaluation tools developed.

Goal 9: TsunamiReady program participation. The certification process should be reevaluated for its appropriateness and procedures should be developed to ensure that the population of a community understands the aspects of “tsunami ready and, finally, methods should be developed that ensure a community continues the efforts necessary to maintain the certification. The NOAA TsunamiReady program should be integrated with state and FEMA mitigation programs. A process should be developed to convey the value of the program to local governments.

Goal 10: Public outreach. Public outreach is an important aspect of the NTHMP and should be closely tied to the TsunamiReady program. There should be strict guidelines within the TsunamiReady program that require certified communities to have a regular, monitored, program of public outreach to maintain certification.

Goal 11: Tsunami resistant/resilient construction guidance. Progress is being made on this goal with the recent 90% review of the ATC64 document. There are several areas to emphasize concerning use of the document:

1. Since this will be the only manual dealing with design of tsunami resistant evacuation structures, how will users be trained? There are enough uncertainties in the equations that are to be used and how loads will in fact impact the structure that only well-trained individuals should use the manual.
2. Since people will be directed to go to these structures in the case of a tsunami the structures must be designed to a higher standard than current codes prescribe.
3. Emphasis must be placed on the necessity of interaction being the tsunami modeler and the structural designer to properly determine wave heights, velocities, etc.
4. The appropriate load combinations (D, L, and T_s) and multiplier on the tsunami load are important determinations as well as establishing the appropriate safety floor level above the anticipated tsunami wave height.

Goal 12: Tsunami hazard integration into business continuity plans. This is a difficult goal to measure. Perhaps some pressure should be placed on the communities that are designated TsunamiReady to ensure that information is available to the businesses in their community and to periodically check on whether businesses are distributing that information to their clients.

Goal 13: Coordination with the National Response Plan. No comment