



RESEARCH SUMMARY

A National Strategic Computing Reserve to Aid Disaster Response

Access to federal computing resources can help research communities provide significant societal benefits during and after natural and manmade catastrophes. However, determining how such resources should be allocated and managed can be complex. This summary describes a tabletop exercise where experts discussed how to harness Federal computing resources for relevant research communities during two hypothetical disasters.

During the COVID-19 pandemic, public-private high-performance computing resources proved invaluable. These resources, assembled under the name of the High-Performance Computing Consortium (HPCC), contributed to various research projects (e.g., potential drug therapies, air flow simulations and hospital usage models) between 2020 and 2022. In 2024, stakeholders within the federal government, national laboratories, and academia gathered to conduct a tabletop exercise (TTX), applying the principles of the HPCC to broader hypothetical disasters. The results of these scenarios, captured in a recent [report](#) by IDA researchers Dylan Cohen and Kush Patel, have far-reaching implications for how federal computing

resources should be used before, during and after disasters.

After the success of the HPCC, officials within the National Science Foundation called for a more permanent body that captured the goals, values and approaches of this early 2020s concept. The National Science and Technology Council consequently issued a blueprint for a National Strategic Computing Reserve (NSCR) with the purpose of organizing contributions from agencies including relevant data, a trained workforce, consistent communications,

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scientific models and community training. The NSCR would provide computing resources in times of crisis to help save lives and property, and to mitigate the threat of a catastrophe. The NSCR differs from the HPCC by bringing together more federal agencies to enable a broader, more thorough response to a wider variety of crises.

While the HPCC represented an outline for the NSCR, formal policies and procedures were still required to fully realize the organization. In 2024, the Networking and Information Technology Research and Development Program's National Coordination Office asked IDA's Science and Technology Policy Institute (STPI) to facilitate NSCR's first TTX. This exercise was designed to identify the optimal organizational structure of the NSCR and to stimulate cross-organizational coordination.

On August 21, 2024, STPI assembled 20 experts representing agencies and organizations such as the National Aeronautics and Space Administration (NASA), the Federal Emergency Management Agency (FEMA), the National Institutes of Health (NIH), U.S. Geological Survey, University of Utah, University of California San Diego and the Department of Defense (DOD). Group discussions entailed three exercises focused on two hypothetical scenarios: a large-scale liquid natural gas leak in the Chesapeake Bay and a volcanic eruption in the Pacific Northwest.

After analyzing the results and data produced by the TTX, STPI found:

- The NSCR could fulfill many roles across crises of different scales, but a final focus and scope remains to be determined.
- Successful noncrisis operations of the NSCR could include serving as a repository for

relevant information or as a coordinating entity for interagency cooperation.

- A lack of proper authorities would be an obstacle for cooperation between agencies in support of the NSCR; thus, those authorities should be established prior to crises.

STPI recommended that follow-up TTXs include detailed scenarios to game out the details of NSCR operation, suggested soliciting additional input from academia and the private sector, and proposed conducting broader community engagement events. These steps would help prepare the NSCR to provide societal benefits by making computing resources available to researchers during future disasters.

This summary is based on [IDA Product 3003599](#).



Dylan H. Cohen (dcohen@ida.org) and Kush K. Patel (kpatel@ida.org) are researchers at the Science and Technology Policy Institute, an IDA-managed federally funded research and development center. Dylan holds master's degrees in technology and public policy and in planetary science from the Massachusetts Institute of Technology. He also holds bachelor's degrees in physics and in public policy from the University of Chicago. His areas of expertise are science and technology policy, research integrity, strategic planning, and space policy. Kush holds a bachelor's degree in history from the University of Texas at Austin. His areas of expertise are research security, research and development infrastructure, and U.S.-China S&T competition.