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Community Resilience Program: Overview of Select Projects and Tools

NIST Research Brief NIST RB 3

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Jennifer Helgeson¹, Christopher Clavin^{1*}, Maria Dillard^{1*}, Juan F. Fung^{1*}, Christina Gore^{1*}, Kenneth Harrison^{1*}, Therese McAllister^{1*}, Kelly Anderson^{2#}, David Butry^{1#}, Tasnim Faiz^{2#}, Michael Gerst^{1#}, Donghwan Gu^{2#}, William Hughes^{1#}, Dylan Sanderson^{1#}

¹ Engineering Laboratory, National Institute of Standards and Technology, USA

² University of Maryland, College Park, MD, USA

* *Project Leadership (alphabetical order)*

Project Researchers (alphabetical order)

Acknowledgment of additional technical contributions on select highlighted research.

See those products for additional details.

Research Summary

The National Institute of Standards and Technology (NIST) manages the Community Resilience Program (CRP), which assists communities and other interested and affected parties on developing solutions for resilience and recovery at the nexus of buildings and built infrastructure systems and the socioeconomic functions they support. The CRP, part of NIST's broader disaster resilience work, complements efforts by others in the public and private sectors. By providing science-based tools, guidance, and metrics, NIST seeks to empower communities to better prepare for, withstand, and recover from acute shocks, chronic stressors, and compound impacts.

The NIST CRP defines community resilience as the ability of a community to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. This definition emphasizes the interconnectedness of various aspects of a community, including social, economic, and physical infrastructure systems. It highlights the importance of proactive planning and preparedness to mitigate the impacts of disasters and ensure a swift recovery.

Key Objectives of the NIST Community Resilience Program:

Develop science-based tools and metrics: NIST creates practical tools and metrics to measure community resilience and evaluate the effectiveness of different resilience strategies.

Engage community stakeholders: The program actively involves community leaders, planners, and residents in the development of resilience planning options to ensure their relevance and practicality.

Conduct disaster recovery studies: Through in-depth studies of past disasters and long-term recovery, NIST identifies critical vulnerabilities and develops recommendations for improvement.

Research Advancement Details

Select descriptions of the Community Resilience Program and constituent projects provide insights into the multi-faceted accomplishments of the program.

Community Resilience Program

NIST manages the multi-faceted Community Resilience Program, assisting communities and stakeholders on issues related to buildings and the interdependencies of physical infrastructure systems. The Community Resilience Program, part of NIST's broader disaster resilience work, complements efforts by others in the public and private sectors. NIST focuses on research, community planning and guidance and stakeholder engagement.

Webpage: <https://www.nist.gov/community-resilience>

Community Resilience Planning Guide

Playbook identifies key actions that communities of any size can take to better position themselves to deal with potential hazards. It complements the NIST Community Resilience Planning Guide for Buildings and Physical Infrastructure Systems and accompanying 6-step process.



EDGE\$ (Economic Decision Guide Software) Online Tool helps the user to identify & compare present and future resilience costs & benefits associated with new capital investment versus maintaining a community's status-quo. EDGE\$ fits within the Community Resilience Planning Guide 6-step Process.

See associated publications (blogs, reports, and journal papers, etc.):
<https://www.nist.gov/community-resilience/publications>

NIST Alternatives for Resilient Communities (ARC) is an interactive screening tool that is designed to assist communities in resilience planning. NIST ARC is designed to assist a *collaborative planning team* in the identification of solutions. Alternatives found with NIST ARC are intended to serve as effective starting points for further analysis and refinement, including with other tools.



The **Community Resilience Indicator Inventory** developed by the NIST Assessment Methodology team supports identification and consensus of resilience indicators for testing and evaluation.

- Based on 56 existing quantitative resilience frameworks
- 3,298 indicators and 7,165 measures

NIST's Community Resilience Program has on-going efforts in collaboration with the National Oceanic and Atmospheric Administration (NOAA), and American Society of Civil Engineers (ASCE) to advance infrastructure planning in the face of future climate conditions. These efforts will inform codes and standards to address community resilience under future climate conditions.



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Author ORCID iDs

Jennifer Helgeson: 0000-0002-3692-7874

Maria Dillard: 0000-0003-1772-8914

Juan F. Fung: 0000-0002-0820-787X

Christina Gore: 0000-0002-3586-6918

Kenneth Harrison: 0000-0002-6813-1854

Therese McAllister: 0000-0003-1733-4667

David Butry: 0000-0002-5134-9419

Tasnim Faiz: 0000-0003-1987-9863

Donghwan Gu: 0000-0002-8189-2455

William Hughes: 0000-0001-9957-137X

Dylan Sanderson: 0000-0002-4443-7074

Contact Information

Jennifer.helgeson@nist.gov



U.S. Department of Commerce

Gina M. Raimondo, Secretary

National Institute of Standards and Technology

Laurie E. Locascio, NIST Director and Under Secretary of Commerce for Standards and Technology

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