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Community Resilience Economic Decision Guide and Tool: Research Overview

NIST Research Brief
NIST RB 1

August 2024

Christina Gore

Jennifer F. Helgeson

Division 730 Applied Economics

Office, Engineering Laboratory,

National Institute of Standards and

Technology, USA

Research Summary

Community resilience planning often requires quantifying and understanding the trade-offs that communities make between the benefits and costs of different resilience actions. The Economic Decision Guide walks communities through the steps to evaluate investments aimed at increasing a community's ability to adapt to, withstand, and recover from a disruptive event. Additionally, to aid communities in using the framework described by the Economic Decision Guide, a tool called the Economic Decision Guide Software (EDGe\$) Online Tool is available to assist communities. There is also additional guidance on loss amplification and risk aversion that are critical factors in accurately determining the benefits and costs of resilience investments. There are also case studies available to serve as a resource for communities in using the Economic Decision Guide framework.

Research Advancement Details

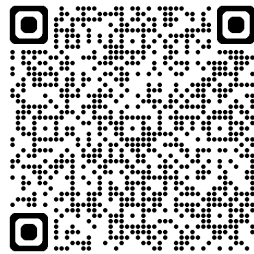
Community Resilience Economic Decision Guide and Online Tool

The Community Resilience Economic Decision Guide for Buildings and Infrastructure Systems (EDG) provides a standard economic methodology for evaluating investment decisions aimed at improving the ability of communities to adapt to, withstand, and quickly recover from disruptive events. NIST has also produced the EDGe\$ tool Version 1.0, a powerful, platform-independent online technique for selecting cost-effective, infrastructure-based community resilience projects based on the EDG.

This handout offers an overview of the Economic Decision Guide as well as details of the EDGe\$ tool to support communities in using the recommendations from the Economic Decision Guide.

Webpage: <https://www.nist.gov/community-resilience/edge-and-economic-decision-guide>

Economic Decision Guide process assesses and compares alternative infrastructure projects for community resilience by analyzing the benefits and costs associated with competing capital improvements to support selecting investment strategies.



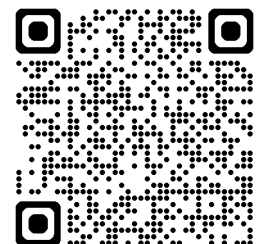
Case Studies can be found at <https://tinyurl.com/y3h4dury>

EDGe\$ (Economic Decision Guide Software) Online Tool helps the user to identify and compare the relevant present and future resilience costs and benefits associated with new capital investment versus maintaining a community's status-quo. Benefits include cost savings and damage loss avoidance because enhancing resilience on a community scale creates value, including co-benefits, even if a hazard event does not strike.

Figure 1: Economic Decision Guide's integration into the Community Resilience Planning Guide



EDGe\$ with Loss Amplification and Risk Aversion demonstrates an example of loss amplification and risk aversion in benefit-cost analysis. This work extends the EDG framework to include loss amplification and risk aversion and presents a case study example of how they can be incorporated into planning decisions.



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Publication History

Approved by the NIST Editorial Review Board on 2024-07-31

How to Cite this NIST Technical Series Publication

Gore C, Helgeson JF (2024) Community Resilience Economic Decision Guide and Tool: Research Overview. (National Institute of Standards and Technology, Gaithersburg, MD), NIST Research Brief (RB) NIST RB 1. <https://doi.org/10.6028/NIST.RB.1>

Author ORCID iDs

Christina Gore: 0000-0002-3586-6918

Jennifer F. Helgeson: 0000-0002-3692-7874



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

This publication is available free of charge from: <https://doi.org/10.6028/NIST.RB.1>