



RESEARCH BRIEF SERIES

MITIGATION MATTERS

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AWARD AMOUNT:
\$9,936

FEMA defines mitigation as the effort to reduce loss of life and property by lessening the impact of disasters. Effective mitigation requires that we all understand local risks and invest in long-term planning to reduce risks and enhance community well-being.

A DECISION FRAMEWORK FOR EQUITABLE USE OF FEDERAL FUNDS IN BUYOUT PROGRAMS

SUMMARY

Voluntary buyout programs produce multiple benefits, yet the programs are difficult to launch and administer, which contributes to inequitable outcomes. We developed a decision framework to help local practitioners equitably select and prioritize households for participation in voluntary buyout programs. We developed this framework by conducting a review of literature and policy documents and interviewing experts in local and state government agencies, nonprofit organizations, and academia.

The first goal of the framework, as shown in Figure 1, is to identify candidate properties for buyouts based on past hazards, projections of future hazards, and financial limitations of funding agencies, particularly, the Federal Emergency Management Agency (FEMA). The framework's second goal is to use principles of systematic equity to help practitioners identify the equity implications of their household selection decisions.

The principles of systematic equity that we incorporated were:

- Distributive equity, which ensures fair and unbiased distribution of resources to all groups;
- Procedural equity, which promotes fair decision-making processes and public participation, especially from underrepresented groups; and
- Recognition equity, which acknowledges how race, gender, class, and other structured inequalities affect access to resources, participation in decision-making, and overall resilience in the face of floods.



*Aerial photo of residential homes in Galveston Beach, Texas, USA.
Photo credit: Felix Mizioznikov, 2023, Shutterstock*

We applied the framework to the City of Galveston, TX, using the Interdependent Networked Community Resilience Modeling Environment (**IN-CORE**), which models the impact of natural hazards on communities and allows the comparison of alternative resilience strategies.

KEY FINDINGS

- Once we applied the decision framework to the City of Galveston, out of 29,541 buildings, we selected 52 residential buildings that met our three criteria for buyout selection (i.e., past hazards, projections of future hazards, and limited available funding from FEMA). The 52 buildings contained 68 housing units, occupied by 44 homeowner households and 24 renter households.

- We highlighted a summary of potential challenges that inhibits households from participating in the buyout program and potential consequences that they face after participation in the buyout program.

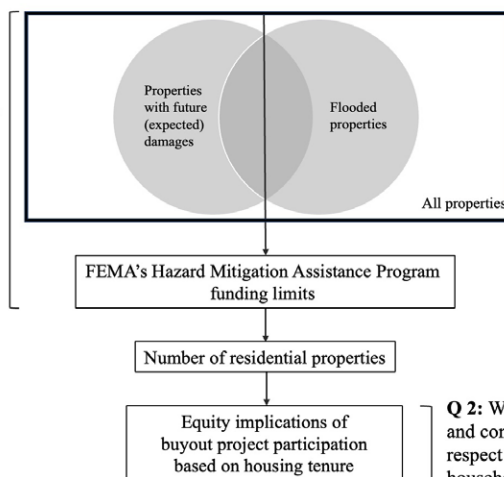
POLICY IMPLICATIONS

- This framework simplifies a complex decision-making process by providing a structured approach, making it easier for practitioners—particularly those unfamiliar with buyout programs—to implement the program more equitably.
- The framework’s steps, Python codes, interactive maps, and implementation details are available for free on https://incore.ncsa.illinois.edu/doc/incore/analyses/buyout_decision.html. This resource enables researchers and practitioners to replicate, recreate, or adapt the framework to align with their resilience goals and priorities.



Homes in Galveston, Texas. Photo credit: Felix Mizioznikov, 2023, Shutterstock

Q 1: How many residential properties can municipalities buy out, given historic flooding, future expected damages, and limits of available funding from FEMA?



Q 2: What are the potential challenges, and consequences of buyouts with respect to housing tenure and household characteristics?

Figure 1: The diagram above shows the steps of developing the decision framework and highlights two decision questions crucial to enhancing clarity and transparency in the decision-making process.

AUDIENCE

This work may be of interest to state and local practitioners administering and implementing buyout programs, as well as scholars looking to apply the framework in other municipalities.

Full report: Motlagh, F., & Hamideh, S. (2025). A Decision Framework for Equitable Use of Federal Funds in Buyout Programs. (Natural Hazards Center Mitigation Matters Research Report Series, Report 23). Natural Hazards Center, University of Colorado Boulder. Available at: <https://hazards.colorado.edu/mitigation-matters-report/a-decision-framework-for-equitable-use-of-federal-funds-in-buyout-programs>



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