Managing the Retreat from Rising Seas

New York City, New York: Land Acquisition and Flood Buyout Programs



GEORGETOWN CLIMATE CENTER

Authors

This report was written by Katie Spidalieri, Senior Associate, and Isabelle Smith, Research Assistant, Georgetown Climate Center at Georgetown University Law Center; and Jessica Grannis, Coastal Resilience Director at National Audubon Society. The Louisiana Strategic Adaptations for Future Environments (LA SAFE) case study was written by Jennifer Li, Staff Attorney, and Alex Love, student, Harrison Institute for Public Law at Georgetown University Law Center. Editorial and writing support were provided by Vicki Arroyo, Executive Director, and Lisa Anne Hamilton, Adaptation Program Director, Georgetown Climate Center.

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Managing the Retreat from Rising Seas: Lessons and Tools from 17 Case Studies

About This Report

As seas continue to rise and disaster events and extreme weather increase in frequency and intensity, climate change is driving state and local policymakers to evaluate strategies to adapt to various risks affecting many communities. In addition to protection (e.g., hard shoreline armoring) and accommodation (e.g., elevating or flood-proofing structures) measures, coastal governments and communities are increasingly evaluating managed retreat, where appropriate, as a potential component of their comprehensive adaptation strategies. Managed retreat is the coordinated process of voluntarily and equitably relocating people, structures, and infrastructure away from vulnerable coastal areas in response to episodic or chronic threats to facilitate the transition of individual people, communities, and ecosystems (both species and habitats) inland.

The aim of managed retreat is to proactively move people, structures, and infrastructure out of harm's way before disasters occur to maximize benefits and minimize costs for communities and ecosystems. For example, policymakers may maximize opportunities for flood and risk reduction by conserving wetlands and protecting habitat migration corridors and minimize the social, psychological, and economic costs of relocation by making investments in safer, affordable housing within existing communities. This report is composed of 17 individual case studies. Each one tells a different story about how states, local governments, and communities across the country are approaching questions about managed retreat. Together, the case studies highlight how different types of legal and policy tools are being considered and implemented across a range of jurisdictions — from urban, suburban, and rural to riverine and coastal — to help support new and ongoing discussions on the subject. These case studies are intended to provide transferable lessons and potential management practices for coastal state and local policymakers evaluating managed retreat as one part of a strategy to adapt to climate change on the coast.

Collectively, these case studies present a suite, although not an exhaustive list, of legal and policy tools that can be used to facilitate managed retreat efforts. Legal and policy tools featured include: planning; hazard mitigation buyouts and open space acquisitions, as well as other acquisition tools like land swaps and reversionary interests; land use and zoning; and Transfer of Development Rights programs. The case studies also highlight various policy tradeoffs and procedural considerations necessitated by retreat decisions. Each jurisdiction is confronting different challenges and opportunities and has different, perhaps even competing, objectives for retreat. In addition, stakeholders in each of these cases are attempting to balance multiple considerations, including:

protecting coastal ecosystems and the environment; fostering community engagement and equity; preparing "receiving communities" or areas where people may voluntarily choose to relocate; and assessing public and private funding options and availability. The case studies included in this report were selected to reflect the interdisciplinary and complex nature of retreat decisions and underscore the need for comprehensive solutions and decisionmaking processes to address these challenging considerations.

Where possible, all of the case studies share a consistent organizational format to allow easier cross-comparison of strategies, processes, and takeaways:

- The Background section introduces state or local context for each case study, including the risks and hazards facing each jurisdiction and its road to considering or implementing managed retreat strategies.
- The Managed Retreat Examples section focuses on the legal and policy tools that have been designed and implemented to support managed retreat strategies on the ground.
- The **Environment** section highlights how floodplains and coastal ecosystems have been restored, conserved, and protected as a part of comprehensive managed retreat strategies to provide ecosystem and community benefits, like reducing flood risk and creating community assets such as parks and trails.
- The Community Engagement section summarizes how affected residents have been contributing to planning and decisionmaking processes for climate adaptation and managed retreat.
- The Funding section identifies how the programs, plans, and projects discussed have been funded by federal, state, and local government and private sources.

- The Next Steps section captures the anticipated future actions that jurisdictions may take in implementing these managed retreat strategies.
- The **Considerations and Lessons Learned** section concludes with the primary takeaways from each example that other coastal state and local policymakers and communities may consider when developing or implementing their own managed retreat strategies using these legal and policy tools.

The case studies in this report were informed by policymakers, practitioners, and community members leading, engaging in, or participating in the work presented in this report. No statements or opinions, however, should be attributed to any individual or organization included in the *Acknowledgements* section of this report. It is also important to note that the programs and planning processes described in each case study are ongoing and the content included in this report is current as of early 2020. Future updates about these case studies will be captured in Georgetown Climate Center's online resources on managed retreat.

These case studies were written to support Georgetown Climate Center's Managed Retreat Toolkit, which also includes additional case study examples and a deeper exploration of specific legal and policy tools for use by state and local decisionmakers, climate adaptation practitioners, and planners. For future updates about these and other case studies and the Managed Retreat Toolkit, please visit the **Managed Retreat Toolkit** and the **Adaptation Clearinghouse**.

New York City, New York: Land Acquisition and Flood Buyout Programs

Executive Summary

The New York City Department of Environmental Protection (NYC DEP) offers flood mitigation buyouts within the NYC watershed, in cooperation with the state, through a Flood Buyout Program that can serve as a model for other coastal and riverine jurisdictions considering retreat. These buyouts are part of a comprehensive flood hazard mitigation program that relies on scientific studies termed Local Flood Analyses (LFA). LFA enable NYC DEP to identify solutions to reduce flooding that may involve buyouts, and then to fund and implement recommended projects. NYC DEP's buyouts are primarily funded by local sewer and water bills and may be supplemented by grants from the Federal Emergency Management Agency, NYC's work is also supported by the Catskill Watershed Corporation (CWC) (a locally based nongovernmental organization), Cornell Cooperative Extension, and a network of Soil and Water Conservation Districts. Communities completing a LFA can apply to CWC for planning grants to help identify areas in local plans, codes, and maps where bought-out residents may relocate to minimize the social and economic costs of buyouts, including loss of local tax bases. In addition, NYC provides a range of effective flood hazard mitigation tools, such as floodplain restoration projects, that can complement buyouts by lowering flood elevations and future repair costs for remaining improvements. Notably, NYC DEP administers a Land Acquisition Program — in addition to its Flood Buyout Program — with a focus on conserving land within the NYC watershed to protect water quality. This dual approach to both buyouts to mitigate flood risk and open space acquisitions to enhance water quality is a unique model that other state and local governments can replicate to achieve co-benefits through land acquisitions. Collectively, NYC's multiple programs and projects can provide an example for other land-use planners and decisionmakers on how managed retreat through buyouts can be supported through a science-based, comprehensive approach that aims to maximize floodplain hazard mitigation and community resilience.

Background

The 2000-square-mile New York City (NYC) watershed is located in the southeastern part of New York State (NYS) and includes the Catskill and Delaware and Croton watershed to the north of NYC. The watershed consists of 19 reservoirs and their major tributaries and more than eight million residents in NYC and more than one million residents located in surrounding counties.1 The NYC watershed is managed through a partnership between federal, state, and local government agencies and nongovernmental entities to protect the largest unfiltered water supply in the United States.² In January 1997, federal, state, city, and environmental entities and watershed municipalities signed the NYC Watershed Memorandum of Agreement to establish CWC.³ CWC is a nongovernmental, cross-jurisdictional body created to implement watershed protection programs that protect the water quality of the NYC drinking water supply, promote economic development within the Catskill region, and help property owners prepare for the next flood.

Among other management strategies led by NYS and CWC, NYC first developed a Land Acquisition Program to ensure a sustainable drinking water supply. Over time, some watershed communities have expressed additional concerns regarding flooding from more frequent and intense storms. In response, NYC supplemented its Land Acquisition Program with a Flood Buyout Program that uses best available science to respond to flood hazard threats and views buyouts within a broader mitigation context.

Managed Retreat Examples

Acquisition and Buyout Programs

NYC identifies areas for buyouts according to causes of flood risk. The NYC Land Acquisition Program (LAP) is administered by the NYC Department of Environmental Protection (DEP). LAP operates throughout NYC's entire watershed as part of a larger comprehensive long-term program with a focus on conserving land within the watershed to protect water quality. LAP has allowed NYC DEP to avoid the multi-billiondollar cost of constructing a drinking water filtration plant by enhancing surface drinking water supplies through priority land acquisitions.⁴ As of 2019, LAP has secured over 152,000 acres including streams and riparian buffers, floodplains, and wetlands vital to maintain high water quality and protect the watershed.

LAP has also expanded to support Flood Buyout Programs for privately-owned properties within the watershed to remove flood-damaged or vulnerable structures. Three local counties requested that LAP partner with them to implement buyouts funded by the Federal Emergency Management Agency (FEMA) after storms in 1996 and 2011. In 2016, following a sequence of major storms and to be responsive to requests from west-of-Hudson-River watershed communities, NYC implemented a Flood Buyout Program with \$15 million expected to result in roughly 100-150 buyouts with the aim of reducing flood vulnerabilities and improving community resilience.

Through the LAP core programs, NYC DEP works directly with interested landowners on a willing seller/willing buyer basis to acquire vacant land. Under the NYC-Funded Flood Buyout Program and buyouts funded by FEMA, local governments must pre-approve which properties can be considered for buyouts. The combined effect of acquiring large tracts of vacant land and relatively small parcels whose structures are removed to restore floodplain benefits has allowed NYC to protect water quality within its watershed while mitigating flood hazard risks for local residents. This dual land acquisition and flood hazard mitigation program implemented through a community-led process has helped maximize co-benefits for the environment and communities.

State, Local, and Community Coordination

To implement the locally led Flood Buyout Program, NYC DEP works in partnership with the state and other local governments and communities within the NYC watershed on a buyout model that can provide support for — and potentially be replicated by — other municipalities. As a first step, NYC DEP works with county Soil and Water Conservation Districts, Cornell Cooperative Extension, and local governments in the NYC watershed to develop Local Flood Analyses (LFAs). LFAs are aimed at identifying projects to mitigate flood impacts on communities, including priority areas for buyouts.⁵ This partnership approach involves using FEMA's flood study hydraulic models to test the effectiveness of flood mitigation projects identified by communities.

Under the NYC-Funded Flood Buyout Program, eligible property owners identified through the LFA process — including those who are either not eligible for or choose not to participate in a federal flood buyout program — can offer to sell their property either to NYC DEP or their local municipality (the purchase price is funded by NYC DEP regardless). The NYS Department of Environmental Conservation (DEC), through its issuance of a Water Supply Permit to NYC and its acceptance of a conservation easement on each property acquired, has created template terms and conditions that are included in legal agreements with participating municipalities within the NYC



watershed. These template terms and conditions essentially function as programmatic requirements to consistently apply this state–local partnership within the west-of-Hudson portion of the NYC watershed. Specifically, the permit requirements function as programmatic guidance for local municipalities to administer and lead buyouts after LFAs have been conducted.

Municipalities must pass a legal resolution in order for specific properties to participate in the NYC-Funded Flood Buyout Program. Accordingly, a local government or its designated outreach lead is the primary actor interacting with individual property owners to refer properties to the NYC-Funded Flood Buyout Program. This framework allows elected municipal officials and communities themselves to have the power to integrate their knowledge of the area and the flood risk into their program. In addition, NYC DEP

Map of New York City's Water Supply System.

This map shows the boundaries of the New York City Watershed — which affects New York City's water supply system within the state's larger geography.

Credit: New York City Department of Environmental Protection. possesses the staff support and resources necessary to implement real estate services for buyouts, which rural communities typically lack. NYS DEC also provides guidance and technical assistance to local governments statewide that may not have to establish a long-term buyout program but may have a need for a few acquisitions tied to a specific flood risk.

Nonprofit Support for Buyouts

In addition to the coordination between the state and the city, local governments in the NYC watershed are aided by nonprofits like CWC to fund and plan for the relocation impacts of buyouts. Among its many functions, CWC offers grants to municipalities to support comprehensive buyouts throughout the watershed by accounting for where people and structures can be relocated. Specifically, CWC administers a Flood Hazard Mitigation Implementation Program.⁶ Under the Flood Hazard Mitigation Implementation Program's Sustainable Communities Planning Program, CWC provides grants to local governments to amend their local land-use laws, comprehensive plans, and floodplain maps to identify areas where FEMA- and NYC-bought-out structures and people could be relocated.7 This example of funding assistance demonstrates how local governments can proactively update local plans, codes, and maps to account for the longterm impacts of buyouts, including where people and structures can be moved out of harm's way. Local governments can also apply for funding from NYC that is provided through CWC to purchase land to relocate businesses and critical facilities a part of the NYC Flood Buyout Program (although, as of July 2019, no successful relocations have occurred). Other types of grant opportunities can facilitate and support local government efforts to engage in similar longer-term planning exercises.

Environment

NYC aims to restore and conserve floodplains post-buyouts in order to maximize the ecosystem and community benefits of these retreat strategies. First, one novel feature of flood buyout programs in NYC's watershed is that regardless of whether funds derive from FEMA or the city, local communities are encouraged to own the properties. After a property is bought out and structures are demolished, either NYC or other municipalities take ownership of and manage the properties; however, NYS DEC reserves a conservation easement to ensure that the land is held in perpetuity to restore floodplain benefits. For properties owned by a local government, a "reuse plan" can be created for each bought-out property. Reuse plans encourage local governments to consider how bought-out properties might be used to mitigate future flood risk - and also to consider potential development opportunities for areas that are higher than flood zones.

In the NYC watershed, NYS supports floodplain restoration projects that are identified by the LFA process and have the goals of reducing flood damages and protecting water quality. NYS works with Soil and Water Conservation Districts to leverage flood mitigation dollars from the NYC DEP Stream Management Program as a match for state and federal funds for restoration projects. For example, in the Village of Walton, the Delaware County Soil and Water Conservation District removed over 42 thousand cubic yards of floodplain fill to restore a floodplain within the village's business district. The project will lower flood elevations and reduce future damages, helping main street businesses to reduce the impact of flood events and facilitate their recovery. Local communities — using the state, city, and county resources through the LFA process - can create solutions that are deemed best for their specific hydrological conditions, real estate market, and social preferences.

Funding

The NYC LAP and Flood Buyout program are almost entirely funded by NYC ratepayers through water and sewer bills. In addition, some buyouts implemented under NYC DEP's Flood Buyout Program are funded by grants from the FEMA Hazard Mitigation Grant Program.⁸

Considerations and Lessons Learned

NYC's Land Acquisition and Flood Buyout programs represent a comprehensive, data-driven approach to buyouts that involves coordination across different agencies, levels of government, and public-private partners. NYC DEP's partnership with the state and local governments in the NYC watershed can serve as a model to encourage state support for community-driven buyout processes that could be introduced and replicated throughout a state, based on local need. Here, local governments lead these inherently local decisions, but the state can account for oversight and consistency across watersheds to ensure that buyouts achieve their intended purpose of mitigating future flood risk. In addition, other local governments could consider adopting a similar dual land acquisition and flood hazard mitigation program like NYC's Land Acquisition and Flood Buyout programs if the co-benefits and geographic context of different projects align. This extensive work through state-local coordination and public-private partnerships can be instructive for other jurisdictions regarding how to incorporate long-term considerations to plan for - and make investments in - potential relocation areas and environmental restoration and conservation into the design and implementation of buyouts.

Endnotes

- 1 New York City Water Supply, N.Y. STATE DEP'T OF ENVTL. CONSERVATION, https://www.dec.ny.gov/lands/25599.html (last accessed Dec. 19, 2019); see also About the Watershed, N.Y. CITY DEP'T OF ENVTL. PROT., https://www1.nyc.gov/site/dep/environment/ about-the-watershed.page (last accessed Dec. 19, 2019).
- 2 New York City Water Supply, N.Y. STATE DEP'T OF ENVTL. CONSERVATION, https://www.dec.ny.gov/lands/25599.html (last accessed Dec. 19, 2019).
- 3 CATSKILL WATERSHED CORP., https://cwconline.org/ (last accessed Dec. 19, 2019).
- 4 New York City Water Supply, N.Y. STATE DEP'T OF ENVIL. CONSERVATION, https://www.dec.ny.gov/lands/25599.html (last accessed Dec. 19, 2019) ("The [NYC watershed] partnership was organized to protect and to ensure that New Yorkers continue to enjoy high quality, affordable drinking water and to avoid the need for costly filtration a cost estimated at between \$8.0 to \$10.0 billion to construct the facility and approximately \$1.0 million each day to operate and maintain the filtration plant.").
- 5 LFAs are also are very similar to Flood and Ice Jam Mitigation Studies being conducted through the Resilient NY program at the state level. Georgetown Climate Ctr., *New York State Resilient NY Flood Mitigation Studies, Buyouts, and Floodplain Restoration Projects*, ADAPTATION CLEARINGHOUSE, https://www.adaptationclearinghouse.org/resources/new-york-stateresilient-ny-flood-mitigation-studies-buyouts-and-floodplain-restoration-projects.html (last visited Jan. 21, 2020).
- 6 *Flood Hazard Mitigation Implementation (FHMI) Program*, CATSKILL WATERSHED CORP., https://cwconline.org/ (last accessed Dec. 19, 2019).
- 7 Id.
- 8 Georgetown Climate Ctr., *FEMA Hazard Mitigation Grant Program*, ADAPTATION CLEARINGHOUSE, https://www. adaptationclearinghouse.org/resources/fema-hazard-mitigation-grant-program.html (last visited Nov. 11, 2019).

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