

The Relocation of Development from Coastal Hazards through Publicly Funded Acquisition Programs: Examples and Lessons from the Gulf Coast

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Abstract: The encroachment of development along shorelines and the naturally hazardous conditions endemic to coastal areas are a dangerous and increasingly costly combination in an era of sea level rise and climate change. Coastal states and communities considering long-term sea level rise and shoreline erosion adaptation strategies should begin to evaluate relocating development away from hazard areas by acquiring fee simple title to vulnerable properties. Acquisition of vulnerable structures has occurred on scales large and small in response to flood hazards elsewhere. This article examines the experiences of acquisition programs in Louisiana and Mississippi following hurricanes and recommends, among other things, that states and communities considering a program of acquiring vulnerable properties first undertake a robust spatially informed planning process that engages and involves affected communities.

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I. Introduction

Residential development along shorelines has long been vulnerable to coastal hazards such as flooding, storm surge, and erosion.² In the face of sea level rise and climate change, the vulnerability of coastal residences to these hazards is certain to increase in the near future.³ However, coastal communities and states are not powerless to address coastal hazards. Indeed, policymakers and scholars have devoted significant attention to developing adaptation responses to coastal hazards.⁴ This article analyzes the policy of using public funds to acquire vulnerable property from willing private sellers in order to relocate development from coastal hazard areas.

For decades, the relocation of vulnerable development away from coastal hazards was largely overlooked relative to other policy options.⁵ Recently, however, relocating development has become an increasingly viable and necessary response to changing coastal conditions.⁶ Relocating vulnerable development from coastal hazard areas reduces flood risk, curtails long-term flood management costs,

² New Jersey is perhaps the state with earliest recorded use of the ocean shoreline for recreational purposes. One report shows efforts as early as 1801 to attract tourists to Cape May at the southern tip of New Jersey. See C.F. Wicker, *History of the New Jersey Coastline*, in PROCEEDINGS OF THE FIRST CONFERENCE ON COASTAL ENGINEERING 299 (1950). Not long after tourists found the New Jersey beach, and certainly by no later than the middle of the 1800s, reports emerged of coastal erosion adversely affecting development along Cape May. *Id.* at 316. Shortly thereafter, protection of development from coastal hazards began. *Id.* at 318. As Americans “discovered” the coasts in the middle and later parts of the 1900s, responses to coastal hazards followed. See generally Orrin H. Pilkey & Howard L. Wright, *Seawalls Versus Beaches*, 4 J. COASTAL RES. 41 (1988) (describing the history of domestic shoreline management practices beginning in the 1950s).

³ See generally Robert J. Nicholls, *Coastal Flooding and Wetland Loss in the 21st Century*, 14 GLOBAL ENVTL. CHANGE 69 (2004); S.F. Balica, et al., *A Flood Vulnerability Index for Coastal Cities and its Use in Assessing Climate Change Impacts*, NAT. HAZARDS § 5.1 (2012).

⁴ In the context of climate change, responding to changing or worsening natural disasters is often referred to as “adaptation.” See OFFICE OF OCEAN & COASTAL RESOURCE MGMT., NATIONAL OCEANIC & ATMOSPHERIC AGENCY, ADAPTING TO CLIMATE CHANGE: A PLANNING GUIDE FOR STATE COASTAL MANAGERS 2 (2010), and So-Min Cheong, *Policy Solutions in the U.S.*, 106 CLIMATIC CHANGE 57 (2011).

⁵ See also Ellen P. Hawes, *Coastal Natural Hazards Mitigation: The Erosion of Regulatory Retreat in South Carolina*, 7 S.C. ENVT. L. J. 55, 58 (1998), Martin M. Randall, *Coastal Development Run Amuck: A Policy of Retreat May Be the Only Hope*, 18 J. ENVT. L. & LITIG. 145, 166 (2003), FEDERAL EMERGENCY MANAGEMENT AGENCY, NATIONAL FLOOD INSURANCE PROGRAM COMMUNITY RATING SYSTEM COORDINATOR’S MANUAL 520-2 (2007) (“The surest way to protect a building from flood damage is to remove it from the floodplain.”) [hereinafter CRS MANUAL], and Derek J. McGlashan, *Managed Relocation: An Assessment of Its Feasibility as a Coastal Management Option*, 169 GEOGRAPHICAL J. 6, 7 (2003).

⁶ See J. Peter Byrne & Jessica Grannis, *Coastal Retreat Measures*, in THE LAW OF ADAPTATION TO CLIMATE CHANGE U.S. AND INTERNATIONAL ASPECTS (Michael Gerrard & Katrina F. Kuh eds., 2012). Professor Byrne and Jessica Grannis use the term “retreat” to characterize the policy of moving development away from high-hazard coastal areas, but explicitly invite relabeling their term. Prof. Cheong employs the term “relocation” to mean “the movement of people and properties away from hazard-prone areas to a safer location.” Cheong, *supra* note 4, at 2. This paper prefers the term “relocation” to “retreat.” See also Sandra S. Nichols & Carl Bruch, *New Frameworks for Managing Dynamic Coasts: Legal and Policy Tools for Adapting U.S. Coastal Zone Management to Climate Change*, 1 SEA GRANT L & POL’Y J. 19, 21 (2008).

and avoids the adverse environmental impacts of other hazard mitigation responses. Relocation can be implemented through any one or more of several different policy pathways, and the publicly funded acquisition of vulnerable residential development is one such pathway to relocation. This article presents lessons from previous, publicly funded, acquisition programs and is intended for an audience of state and local officials interested in leveraging federal programs that support acquisition as a coastal adaptation strategy and the experience of other communities in implementing such acquisition programs.

The first recommendation for state and local governments considering an acquisition-based relocation strategy is to develop a plan that incorporates extensive community input *before* the occurrence of any coastal disaster that necessitates a major response. The spatial variation of coastal hazards should inform the acquisition plan, identifying high-hazard areas where relocation is a priority as well as less vulnerable areas able to accommodate the new development necessitated as a result of relocating from coastal hazard areas. Redevelopment in conjunction with relocation can serve as an economic driver for the acquisition program and a stimulus for local economies still suffering from the effects of the recession. Equally important is the engagement of the affected community in the planning and implementation process. For acquisition programs to work, the affected communities must “own” the process and not feel as though it is dictated to them by bureaucrats.

A second recommendation involves the implementation of the acquisition program. The state and/or local government sponsors of an acquisition program should consolidate and coordinate administrative efforts so that private property owners deal with one point of contact throughout the planning and implementation processes. Concurrently, policymakers must balance the inherent tensions between the speedy and efficient distribution of public funds, so that property owners do not spend years waiting to move forward and public funds are not misappropriated. Phasing acquisitions and developing pilot programs are sensible steps to showing the viability of the strategy.

Finally, any acquisition-based relocation program should be integrated into a comprehensive risk-based land use planning analysis that reduces perverse subsidies provided to coastal development. Public programs encouraging the relocation of development away from vulnerable coastal hazard areas will not be effective if other policy programs subsidize or otherwise encourage vulnerable development to remain in place. Efforts to acquire vulnerable properties should be coordinated with reductions in subsidies in coastal hazard areas as well as with zoning and other land use controls that promote redevelopment in non-hazardous areas.

Part II of this article describes the risk-reduction purpose for relocating vulnerable residential development away from coastal hazard areas. This section outlines the benefits and barriers to acquisition programs. Acquisition programs have numerous benefits, of which the most significant is the long-term reduction in exposure to coastal hazards. Acquisition programs also have many drawbacks. Likely the most significant drawback is the potential of acquisition programs to disrupt communities. Balancing hazard-reduction benefits with potential adverse social impacts will likely be the most important and difficult task of implementing an acquisition program.

Part III introduces the policy framework for federally funded, state and local government-led acquisition grant programs. State and local governments typically control land use policymaking and lead disaster planning, but the federal government has long intervened when land use decisions implicate responses to natural disasters. Federal intervention is especially notable in the context of coastal hazards. State and local governments will likely initiate and lead relocation and acquisition programs, but the federal programs described here will be beneficial to any such efforts.

Part IV analyzes acquisition programs, including large-scale responses in coastal Louisiana and Mississippi following Hurricanes Katrina and Rita as well as smaller programs from riverine contexts throughout the United States. Communities have many policy and design options for implementing an acquisition program, and the contrasting experiences of Louisiana and Mississippi offer interesting

insights. Louisiana had an enormous fund to engage in a buyout program and elected simply to offer each property owner the opportunity either to remain and rebuild or to sell to the state and relocate. The two options were given to all property owners with damaged homes regardless of future hazards and without concern for spatial or other planning objectives because Louisiana's fundamental objective was to compensate residents for losses rather than reduce future risks. Mississippi, in contrast, developed a highly detailed plan to relocate specific properties with the specific intent to reduce risk, but has so far been unable to fund and implement the plan. Louisiana took advantage of national political conditions favoring disaster recovery, whereas Mississippi has seen its plan stalled by increasing federal fiscal austerity. Louisiana implemented a bottom-up approach, allowing property owners to make individualized risk assessments, whereas Mississippi's strategy was a top-down risk-informed planning approach. Only after the next storm will we learn whether the Louisiana or Mississippi approach is more successful.

Finally, Part V identifies potential legal issues and offers recommendations for state and local governments considering acquisition programs. The legal issues identified will help to avoid problems that might delay or jeopardize the success of an acquisition program. The recommendations seek to allow future acquisition programs to learn from the experiences of Louisiana and Mississippi. These recommendations will help state and local governments achieve the broad goals of reducing the loss of life and property from climate-induced coastal disasters, enjoying community buy-in, and operating cost-effectively.

II. Risk Reduction through Acquisition Programs

A. *The Problems Facing Coastal Development: Hazards, Subsidies, and Climate Change*

Residential development in flood-prone coastal hazard areas is problematic for three reasons. First, by locating in hazardous areas, coastal residents subject their homes and property to floods, thereby creating flood risk.⁷ Flooding on its own does not create risk; rather, the presence of development in areas subject to coastal hazards creates risk.⁸ Second, to compensate for flood risk, residents in hazard-prone areas obtain subsidies such as structural protection (e.g., levees and shoreline armoring), below-market flood insurance, emergency response relief, and post-disaster rebuilding funds.⁹ These subsidies provide some short-term benefit to the "protected" property but also eliminate the incentive to build more safely, create a perverse incentive attracting additional development to the hazard area,

⁷ This article distinguishes between "risk" and "hazard." "Risk," an empirical measure of consequences (i.e., expected losses) from floods, is calculated as the product of the unit-less probability that a flood-related loss will occur and the currency-denominated magnitude of the expected loss. See Wolfgang Kron, *Flood Risk = Hazard × Values × Vulnerability*, 30 WATER INT'L. 58, 61 (2005). Risk is therefore described in currency units. A "flood hazard" is an event that causes a flood. Flood hazards include both one-time events (e.g., hurricanes, strong storms) and ongoing events (e.g., waves, tides, currents) that create flood losses. See David R. Godschalk et al., *Avoiding Coastal Hazard Areas: Best State Mitigation Practices*, 7 ENVTL. GEOSCIENCES 13, 14 (2000).

⁸ For decades, it has been recognized that "floods are 'acts of God,' but flood losses are largely acts of man." Gilbert F. White, *Human Adjustments to Floods*, in GEOGRAPHY, RESOURCES, AND ENVIRONMENT: SELECTING WRITINGS OF GILBERT F. WHITE 12 (Robert W. Kates & Ian Burton eds., 1986). Notes another commentator, "flooding does not cause economic damages to uninhabited beaches or to wetlands in riverine floodplains." Daniel Barnhizer, *Givings Recapture: Funding Public Acquisition of Private Property Interests on the Coasts*, 27 HARV. ENVTL. L. REV. 295, 307 (2003).

⁹ See Barnhizer, *supra* note 8, at 324-37. Professor Barnhizer refers to these various subsidy programs as "givings" which are the inverse of "takings" under the Fifth Amendment.

and require continuing subsidies.¹⁰ In addition, subsidies raise the market value of coastal property and increase the costs of efforts to engage in publicly funded acquisition of vulnerable properties. Third, climate change and land use impacts are exacerbating the conditions causing coastal hazards.¹¹ Along shorelines, erosion and inundation are two hazards that damage property.¹² Already a problem demanding significant policy response, the twin shoreline hazards of erosion and inundation are worsening as a result of climate change-induced sea level rise. Throughout low-lying coastal areas inland of the immediate shoreline, flood hazards result from intense storms, land use alteration (primarily the conversion of vegetated areas to impervious surfaces), and the modification of river systems.¹³ Each of these inland flood drivers is worsening as well.

Existing flood hazards are severe enough in many cases to warrant a different response than the status quo; climate change threatens to increase the risks considerably over the coming decades.¹⁴ Climate change is increasing the rate of sea level rise and worsening the dual concerns of erosion and inundation for properties along ocean and estuarine shorelines.¹⁵ Climate change is also likely

¹⁰ *Id.* at 327. Moreover, some coastal flood protections worsen flood effects on neighbors. Coastal flood protection structures frequently interrupt sediment flows, “starve” neighboring areas of sand, and exacerbate erosion elsewhere. *Id.*

¹¹ James G. Titus, *Does the U.S. Government Realize that the Sea Is Rising? How to Restructure Federal Programs so that Wetlands and Beaches Survive*, 30 GOLDEN GATE U.L. REV. 717, 725, 732 (2000).

¹² See James G. Titus et al., *State and Local Governments Plan for Development of Most Land Vulnerable to Rising Sea Level along the US Atlantic Coast*, 4 ENVTL. RES. LET. 1, 2 (2009).

¹³ See Burrell E. Montz, *Generation of Flood Hazards and Disasters by Urban Development of Floodplains*, in 1 FLOODS 116, 118-19 (Dennis J. Parker, ed., 2000) (identifying four ways urbanization can increase flood potential: (1) impervious surfaces inhibit rainwater infiltration sending excess waters to surface drainage systems, (2) increased runoff across impervious surfaces travels at higher velocities and reduces the lag time between discharge and flow, (3) urbanization fills in wetlands, floodplains, and river banks, constricting space available for flows, and (4) construction of stormwater drainage systems that release large quantities of flow at one time).

¹⁴ Climate change is worsening the hazards confronting coastal and flood-prone development and is also expanding the geographic scope of development subject to hazards, but climate change is not creating altogether new hazards that coastal and flood-prone development have not dealt with before. Thus, many efforts to adapt to the risk worsened by climate change-induced hazards—collectively, such efforts are “adaptation policies”—can draw from previous methods for dealing with floods. In general, four types of risk-mitigating adaptation policies exist for development in flood-prone areas: (1) keep development in place, but construct or install infrastructure that protects against floodwater inundation and stabilizes against erosion; (2) keep development in place, but elevate it above floodwaters and build it to withstand erosion, waves, and storm surge; (3) move development to safer areas; and (4) keep development in place, but insure it against losses or damages. The first, second, and fourth options have proven to be both prohibitively expensive and largely ineffective at reducing the risk to development in flood-prone areas. See ELI LEHRER, COMPETITIVE ENTERPRISE INSTITUTE, REFORMING THE NATIONAL FLOOD INSURANCE PROGRAM AFTER 35 YEARS OF FAILURE 11 (2008), available at <http://cei.org/sites/default/files/Eli%20Lehrer%20-%20Reforming%20the%20National%20Flood%20Insurance%20Program.pdf>. Indeed, the heavily-subsidized protection and insurance strategies create the perverse incentives to develop in high-hazard areas, are fiscally unsustainable, and cannot be maintained indefinitely.

¹⁵ Development along the Gulf Coast faces the threat of increasing sea level rise, induced in part by warming temperatures, expanding oceans, and melting polar ice. ORRIN H. PILKEY & ROB YOUNG, *THE RISING SEA* (2009). Although not climate-related, tsunamis also pose a risk to coastal areas across the United States, including along the Gulf Coast. See, e.g., Tom Parsons & Eric Geist, *Tsunami Probability in the Caribbean Region*, 165 PURE & APPLIED GEOPHYSICS 2089 (2008).

increasing the intensity of storms that cause coastal storm surge and inland flooding.¹⁶ The current system of protecting subsidized coastal development in place cannot continue indefinitely in the era of climate change. Long-term efforts to reduce risk must include relocation of both existing and future development away from coastal hazards.

B. Proposed Solution to the Problems Facing Coastal Development: Relocate

Coastal policymakers and property owners should begin to develop and implement plans to break the cycle of subsidizing development in coastal hazard areas. As Hurricane Irene's effects demonstrated in the fall of 2011, flood risks are not limited to the Gulf Coast. It is likely only a matter of time before coastal hazards cause tremendous losses to coastlines from New England to the Florida Keys to the Rio Grande similar to those that occurred along the Gulf Coast following Hurricanes Katrina, Rita, and Ike.¹⁷ Relocating development away from high-hazard areas is one way to end the current flood protection subsidies for development and to reduce flood risk in those areas.¹⁸ As partially introduced above, "relocation" is the planned movement of development from areas with a high probability of flooding to areas with a lower probability of flooding in order to reduce flood risks.¹⁹ Such relocation can take a variety of forms: it may be voluntary or mandatory; it may be state-led, federally funded, or locally encouraged; it may be through zoning, acquisition of vulnerable structures, insurance-based payouts, or some combination of these and other programs.²⁰ The Gulf Coast states were unprepared for the magnitude of devastation in 2005 (Hurricanes Katrina and Rita) and 2008 (Hurricane Ike), but there is no reason other states should not begin preparing today. Relocation efforts should be coordinated and should begin right away, but relocation will not be easy.

Relocation has had some past success, and, as flood hazards worsen because of climate change, relocation will become an increasingly attractive and necessary adaptation option. One relocation strategy may involve physically moving flood-prone structures to a safer location.²¹ Another strategy may involve acquiring and demolishing structures and infrastructure and encouraging building anew

¹⁶ Following Hurricane Katrina's devastating impact on the Gulf Coast of Louisiana, scientists acknowledged the difficulties in correlating any one particular storm's intensity and impacts with global climate change. See Pew Center on Global Climate Change, Was Katrina's Power a Product of Global Warming?, <http://www.pewclimate.org/specialreports/katrina.cfm> (last visited May 15, 2011). Hurricanes have devastated low-lying coastal areas before anthropogenic climate change began and would certainly have continued to do so absent any human-caused changes. However, climate scientists have identified that Hurricane Katrina and similar storms emerged from an ocean energy system that is increasingly likely to yield storms of greater intensity and duration than those that existed before human-induced climate change: climate change will result in destructive coastal storm events. See Kerry Emanuel, *Increasing Destructiveness of Tropical Cyclones over the Past 30 Years*, 436 NATURE 686 (2005).

¹⁷ In addition to the tragic loss of nearly 2,000 lives, the three Gulf Coast storms combined caused tens to hundreds of billions of damage to property, repeatedly brought the regional economy to a standstill, and strained the resources of the National Flood Insurance Program. See *infra* Part IV.B.1.

¹⁸ Randall, *supra* note 5, at 1425; accord. CRS MANUAL, *supra* note 5, at 520-2.

¹⁹ Byrne & Grannis, *supra* note 6.

²⁰ *Id.*

²¹ See McGlashan, *supra* note 5, at 7. Professor McGlashan notes that structures as large as the several hundred foot tall Cape Hatteras Lighthouse have been moved intact. *Id.* at 14. See also CRS MANUAL, *supra* note 5, at 520-2 (describing the difficulty of moving structures in tact).

elsewhere.²² The latter relocation strategy is referred to as “acquisition” throughout this paper. Acquisition occurs in three steps: first, a government body, using public funds,²³ purchases vulnerable property; second, any structures on the acquired property are demolished, thereby reducing the risk of future losses; and, third, the government (or a non-profit conservation organization) perpetually maintains the acquired properties for conservation or recreational uses.²⁴

Most acquisition programs are voluntary,²⁵ and all require providing compensation to the private property owner from whom the property is acquired, provided the acquired property is not a nuisance.²⁶ Nonetheless, acquisition programs can be highly unpopular and have the potential to create social and economic disruptions in the communities where acquisitions occur.²⁷ The social and community aspects of acquisition programs must not be overlooked. In this vein, the design of an acquisition program should be cognizant of community preferences, concerned about discrimination, and focused on

²² See Hawes, *supra* note 5, at 58. Hawes notes that acquisition as a means of effecting relocation policies will likely be the most common approach in the United States given the protections of private property under the Fifth Amendment. However, other relocation-inducing policies might include zoning ordinances, differential tax assessments, and withholding or disinvesting in coastal public infrastructure. See *id.* See also JESSICA GRANNIS, ADAPTATION TOOL KIT: SEA LEVEL RISE AND COASTAL LAND USE (2011).

²³ Conceivably, a non-government organization, such as a conservation organization, could lead an acquisition program. However, the programs discussed throughout this paper will focus on government-led acquisition.

²⁴ GRANNIS, *supra* note 22, at 47.

²⁵ Hawes, *supra* note 5, at 58. A government implementing an acquisition program could exercise its eminent domain authority to acquire property from private property owners without their voluntary participation. Such practice is rare, and compensation is nonetheless required. See Grannis, *supra* note 22, at 47. Moreover, by limiting acquisition to a strictly voluntary basis, state and local governments utilizing federal funds will avoid having to comply with the federal Uniform Relocation Assistance and Real Property Acquisition Act, provided the owner of the acquired property is not renting to tenants who do not voluntarily relocate. See 49 C.F.R. § 24.101(b).

²⁶ Compensation is required primarily because of the Fifth Amendment’s prohibition against the taking of property without just compensation. See Byrne & Grannis, *supra* note 6 and Part II.D.4, *infra*. An exception to the compensation requirement arises when conditions created by development in the coastal hazard area create a nuisance. See *Mugler v. Kansas*, 123 U.S. 623 (1887) (in which the Supreme Court declared “all property in this country is held under the implied obligation that the owner’s use shall not be injurious to the community.”). When a nuisance exists, it would appear that a state or local government may exercise its police powers (rather than its eminent domain powers) and require that the property owner abate the nuisance, or after notice, abate the nuisance itself. Nuisance abatement is not subject to the just compensation clause. See Steven J. Eagle, *Does Blight Really Justify Condemnation?*, 39 URB. LAW. 833 (2007). The Supreme Court has spoken indirectly on the exercise of the police power for nuisance abatement, suggesting that no compensation is necessary if a regulation does not deprive a private property owner of a right he did not previously enjoy by virtue of “background principles” of nuisance and property law. See *Lucas v. S.C. Coastal Comm’n*, 505 U.S. 1003, 1030 (1992) (noting that the owner of a nuclear power plant, for instance, does not have a takings claim if the government forces the closure of a plant located astride a dangerous earthquake fault line because the government always had the power to make the “background principles of nuisance and property law explicit.” (emphasis added)). Justice Thomas elaborated on this notion in a more recent dissent, arguing that “whether the State can take property using the power of eminent domain is therefore distinct from the question whether it can regulate property pursuant to the police power.” *Kelo v. City of New London*, 545 U.S. 469, 519-20 (2005) (Thomas, J., dissenting).

²⁷ Ronald W. Perry & Michael K. Lindell, *Principles for Managing Community Relocation as a Hazard Mitigation Measure*, 5 J. CONTINGENCIES & CRISIS MGMT. 49 (1997) (describing lessons from the relocation of a community in Arizona in order to reduce flood risks). The authors note that relocations for the purpose of reducing risks from natural hazards are distinct from relocations for the purposes of urban renewal or highway development. Natural disaster motivated relocations have the express purpose of protecting the vulnerable populations that are being relocated whereas relocations for new developments typically treat the relocated populations as a problem. *Id.* at

providing fair compensation and transition assistance, especially to low-income or otherwise disadvantaged community members.²⁸

C. *Benefits of Acquisition Programs*

The relocation of flood-prone development through acquisition is an overlooked adaptation policy option that deserves renewed consideration. Acquisition programs have precedential benefits, offer long-term financial savings, and, relative to alternative adaptation policies, reduce environmental externalities. Acquisition programs are versatile (applicable in a variety of different types of communities) and scalable (applicable for tens or thousands of buildings). Finally, acquisition programs can be part of a broader redevelopment effort in low-hazard areas to replace any development acquired and demolished. Redevelopment associated with acquisition can have significant and healthy economic stimulus effects. Each of these five categories of benefits is considered in more detail below.

1. Precedential Benefits

Acquisition programs have worked elsewhere. The federal government, numerous states, and multiple municipalities have previously used acquisition programs to move development away from hazardous coastal areas.²⁹ Acquisition has also been a successful response to riverine floods.³⁰ Previous acquisition efforts have involved as few as tens of structures to more than ten thousand. The latter instance occurred in Louisiana following Hurricanes Katrina and Rita.³¹ Smaller acquisition efforts have occurred along the Mississippi River,³² on the coastal plain of North Carolina,³³ and elsewhere.

2. Long-Term Financial Benefits

Over the long-term, acquisition has the potential to have significant positive fiscal benefits

²⁸ See *id.* at 56. See also Mark Stallworthy, *Sustainability, Coastal Erosion and Climate Change: An Environmental Justice Analysis*, 18 J. ENVTL. L. 357 (2006); NATIONAL WILDLIFE FEDERATION, *HIGHER GROUND* 34-35 (1998). But see J. Andrew G. Cooper & J. McKenna, *Social Justice in Coastal Erosion Management: The Temporal and Spatial Dimensions*, 39 GEOFORUM 294 (2008). Professor Cooper distinguishes many of the coastal policies advanced in the name of shoreline defense from broader environmental justice concerns related to adverse effects of pollution on low-income or otherwise politically disenfranchised communities. Coastal policies favoring discrete local interests may be contrary to future generations' interests or the interests of non-coastal residents. Moreover, social justice concerns can be used to obfuscate the true subsidizing nature of flood protection infrastructure and the benefits this often confers on wealthy oceanfront property owners at the burden of taxpayers as a whole. For examples of how low-income and minority communities have been involved in acquisition programs in the United States, see *infra* note 234.

²⁹ See David Owens, *Land Acquisition and Coastal Resource Management: A Pragmatic Perspective*, 24 WM. & MARY L. REV. 625 (1983). Professor Owens addresses numerous important questions relating to the large-scale acquisition of privately owned coastal property for the purpose of conservation and risk reduction. He also discusses the failures of an effort to acquire large tracts of the Outer Banks.

³⁰ See JAMES FRASER, ET AL., *IMPLEMENTING FLOODPLAIN LAND ACQUISITION PROGRAMS IN URBAN LOCALITIES* 11-13 (2003) (presenting case studies of four independent relocation programs along flood-prone rivers).

³¹ See Part IV.A, *infra*.

³² See Dennis M. Knobloch, *Moving a Community in the Aftermath of the Great 1993 Midwest Flood*, 130 J. CONTEMP. WATER RES. & EDUC. 41 (2005).

³³ FRASER, *supra* note 30, at 13-21.

compared to alternative adaptation approaches.³⁴ As sea levels rise and storms worsen, stabilization infrastructure (e.g., seawalls, levees, and the like) approaches are likely to become prohibitively expensive to construct and maintain and may increase risks.³⁵ Flood insurance has never proven to be economically viable without subsidy.³⁶ Likewise, elevating an existing structure may be nearly as costly as relocating it altogether, especially if the relocation occurs either within the same parcel as the existing structure or to a nearby location.³⁷ Acquisition is a long-term, cost-effective approach when compared to the alternatives.³⁸

3. Environmental Benefits

A related third argument in support of acquisition has to do with environmental externalities: structural stabilization creates externalities whereas relocation has the potential to correct them.³⁹ For instance, some protective measures such as placement of beach fill (alternatively “renourishment” or “replenishment”), levees, and sea walls adversely affect the recreational, tourism, and habitat value of

³⁴ See Kenneth J. Bagstad, et al., *Taxes, Subsidies, and Insurance as Drivers of United States Coastal Development*, 63 ECOLOGICAL ECON. 285, 289 (2007). David A. Moser, *Assessment of the Economic Benefits from Flood Damage Mitigation by Relocation and Evacuation*, United States Army Corps of Engineers Research Report 85-R-1 43 (1985). This USACE report describes the theoretical basis for acquiring and relocating structures from the floodplain and applies the theory to several communities that had suffered flood losses and were considered candidates for acquisition as an alternative to continued maintenance of structural flood controls. *Id.* at 32-42.

³⁵ Byrne & Grannis, *supra* note 6. See also Barnhizer, *supra* note 8, at 326.

³⁶ See Aparna K. Majmudar, *The National Flood Insurance Program: Maintaining Its Head Above Water*, 16 U. MIAMI INT’L & COMP. L. REV. 183, 195 (2009).

³⁷ Compare Jeffrey A. Michael, *Episodic Flooding and the Cost of Sea Level Rise*, 63 ECOLOGICAL ECON. 149, 251 (2007) (describing the variable costs of home elevation) with McGlashan, *supra* note 5, at 14 (summarizing the costs of relocating or demolishing homes as part of the Upton-Jones program).

³⁸ For instance, in coastal Mississippi the United States Army Corps of Engineers estimated the immediate acquisition of approximately 2,000 parcels would cost approximately \$400 million and avert \$22 million to \$33 million in damages (a ratio of costs to damages of approximately 15 to 1), whereas the construction of a 30-foot levee around the high-risk zone would cost in excess of \$5 billion and avoid approximately \$209 million (a cost to damages ratio of 23 to 1). Note that the acquisition costs included a very generous 25% contingency. Moreover, the annual operations and maintenance costs for the levee were expected to be in excess of \$60 million whereas the annual operations and maintenance costs for the acquisition program were expected to be approximately \$10,000. See USACE, MISSISSIPPI COASTAL IMPROVEMENTS PROGRAM (MSCIP) HANCOCK, HARRISON, AND JACKSON COUNTIES, MISSISSIPPI: COMPREHENSIVE PLAN AND INTEGRATED PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT, VOL. 1 at 3-150, Table 3-20 (June 2009) [hereinafter MsCIP EIS]. These calculations are discussed in greater detail in Part IV.C, *infra*.

³⁹ See Jeffrey J. Opperman, et al., *Sustainable Floodplains Through Large-Scale Reconnection to Rivers*, 326 SCI. 1487 (2009) (describing environment effects of flood controls in riverine systems). See also Titus, *supra* note 11, at 740. See also Randall, *supra* note 5, at 181.

coastal ecosystems and impair natural coastline retreat.⁴⁰ Acquisition of vulnerable property, when combined with sensible spatial planning and the removal of externality-creating flood infrastructure, can improve environmental conditions.⁴¹

4. Versatility and Scalability

Acquisition is beneficial because it is both scalable and versatile. Acquisition is scalable because it can be an appropriate policy response in areas with tens of structures⁴² or areas with tens of thousands of structures.⁴³ It is versatile because it can be implemented across a variety of geographic settings or by a variety of government institutions.⁴⁴ For instance, acquisition policies can apply to flood-prone ocean,⁴⁵ estuarine,⁴⁶ or riverine areas,⁴⁷ to a mix of different land uses (e.g., residential or

⁴⁰ Titus, *supra* note 11, at 740. The author explains how under a condition of sea level rise, shoreline ecosystems would naturally migrate landward if unimpeded by structures such as bulkheads, sea walls, and levees. However, the migration process is stalled when those structures exist and shoreline ecosystems are effectively “drowned.” *Id.* at 725-35. See also Niki L. Pace, *Wetlands or Seawalls? Adapting Shoreline Regulation to Address Sea Level Rise and Wetland Preservation in the Gulf of Mexico*, 26 J. LAND USE 327, 333-41 (2011). The United States Army Corps of Engineers (USACE) prepared a comprehensive environmental impact statement (EIS) comparing the construction of a thirty-foot levee to the acquisition of vulnerable properties for coastal Mississippi. See MSCIP EIS, *supra* note 38, at 3-151 to 3-161. With regard to the environmental effects of the levee, the USACE EIS notes that the “esthetic of [the] coastal environment dramatically affected due to the presence of large, intrusive embankment, displacement of residences and businesses and negative alteration of visual environment... Existing natural resources would be significantly degraded due to [the] large footprint of [the] levee and alteration of traditional flow paths, wildlife corridors, and loss of habitat... [And s]ignificant negative impacts to the overall total quality of the environment.” *Id.* With regard to the acquisition of vulnerable parcels the USACE concluded “Very significant opportunity for ecosystem restoration... Conversion to greenspace could significantly improve aesthetic values of the coastal area... [L]ong-term biological resources, including threatened and endangered species would be significantly improved due to [the] removal of development, and its potential replacement with coastal wetlands or green space... Long-term positive improvement expected due to increased flood storage capacity and removal of septic systems... *Significant opportunity for improvement of the coastal environment.*” *Id.* (emphasis added).

⁴¹ See Titus, *supra* note 11, at 740 and Opperman, et al., *supra* note 39, at 1487.

⁴² DeKalb County, Illinois and FEMA acquired a 66-unit mobile home development following a flood of the Kishwaukee River. See MOLLY O'TOOLE & TRACI LEMAY, DEKALB COUNTY ALL HAZARDS MITIGATION PLAN 6-3 (2008), available at <http://www.dekalbcounty.org/HazardMit/Plan.pdf>.

⁴³ The State of Louisiana acquired greater than 10,000 structures along the Gulf Coast of Louisiana following Hurricanes Katrina and Rita. ROAD HOME, HOMEOWNER ASSISTANCE PROGRAM WEEK 246 SITUATION & PIPELINE REPORT 1 (Mar. 22, 2011) [hereinafter SITUATION & PIPELINE REPORT].

⁴⁴ The federal government through FEMA is frequently involved as an administrative partner and funder of acquisition programs. See FEMA, HAZARD MITIGATION ASSISTANCE UNIFIED GUIDANCE (2010) [hereinafter FEMA, UNIFIED GUIDANCE]. The USACE is also occasionally a federal partner. See, e.g., USACE, RELOCATION PLANNING PROJECT MASTER PLAN: KIVALINA, ALASKA (2006). Local, state and federal government entities often partner to pool resources for a single acquisition program. For instance, in Harris County, Texas (the location of Houston), the USACE, U.S. Dept. of Housing and Urban Development, FEMA, Texas Parks and Wildlife Department, and the City of Houston Parks and Recreation Department partnered to acquire 440 properties at a cost of \$40 million over a decade. See FEMA, MITIGATION BEST PRACTICES 713 (2011) [hereinafter FEMA, BEST PRACTICES].

⁴⁵ More than 100 homes were relocated from coastal North Carolina. See Spencer M. Rogers, *Relocating Erosion-Threatened Buildings—A Study of North Carolina Housemoving*, COASTAL ZONE '93 CONFERENCE PROCEEDINGS 1392 (1993).

⁴⁶ The Lummi Nation in Washington State received FEMA funding to purchase vulnerable homes along the Puget Sound. The Lummi were primarily concerned with flooding from a tsunami, and the acquired structures had never been flooded. See LUMMI NATION, MULTI-HAZARD MITIGATION PLAN 218 (2008).

commercial),⁴⁸ and to a spectrum of development densities.⁴⁹ Acquisition is similarly versatile because state and local governments can implement acquisition policies in the absence of either strong federal leadership or specific federal appropriations.⁵⁰

5. Redevelopment Opportunities

Finally, if combined with redevelopment efforts outside of flood-prone areas, acquisition may provide a much-needed stimulus to the construction and real estate industries.⁵¹ This benefit of acquisition programs may prove particularly attractive to coastal communities where the real estate and construction industries have suffered from the economic downturn, or where contracts for structural protection projects are awarded to engineering and construction firms outside of the local labor market.

D. *Barriers to Acquisition Programs*

Despite these benefits acquisition policies have in reducing flood risk, the worsening of flood hazards as a result of climate change, and the enormous costs flood hazards impose, implementing acquisition programs will face significant political, fiscal, technical, and constitutional barriers. However, each of these barriers is surmountable.

1. Political Barriers

Municipality-led pro-growth policies and private property owner resistance are likely the foremost barriers to implementing an acquisition strategy.⁵² Despite ongoing natural processes and recent disasters suggesting development in flood prone areas—particularly in the coastal zone—is increasingly hazardous, vulnerable areas nevertheless continue to be very popular places to build and live.⁵³ Rapid growth in coastal areas during the first decade of this century continued the trends of the 1980s and

⁴⁷ East Grand Forks, Minnesota partnered with FEMA to acquire 370 flood-damaged properties along the Red River. See *Best Practices*, *supra* note 44, at 94.

⁴⁸ DeWitt County, Illinois initiated an acquisition program with FEMA funding assistance that acquired forty homes and three commercial structures. See *Best Practices*, *supra* note 44, at 157.

⁴⁹ Mecklenburg County, North Carolina (home to Charlotte) acquired and demolished a 192-unit apartment building that had suffered repeated flood damage. See Mecklenburg County, *County Buys Cavalier: Most Floodprone Buildings in the County to Be Torn Down*, CHARMECK (Mar. 19, 2008) available at <http://charmeck.org/mecklenburg/county/NewsArchives/2008Stories/Pages/080318Cavalier.aspx>.

⁵⁰ See Fraser, *supra* note 30, at 13-21.

⁵¹ See *id.* at 16 (describing the development of new housing following flooding in eastern North Carolina to encourage owners of damaged homes to participate in an acquisition program). The redevelopment opportunity necessitated by acquisition programs is relatively understudied, but one of the most significant incentives such a policy could offer. See also MSCIP EIS, *supra* note 38, at 3-153 to 3-154 (anticipating approximately 120,000 new construction jobs and \$20 billion in additional sales volume as a result of a large-scale acquisition program in coastal Mississippi).

⁵² See Rutherford H. Platt, *Evolution of Coastal Hazards Policies in the United States*, 22 COASTAL MGMT. 268, 271-72 (1994) (arguing private interests frequently use the specter of takings to achieve local land use policy objectives that tend to lead to diminished environmental regulation). See also Hawes, *supra* note 5, at 86.

⁵³ Barnhizer, *supra* note 8, at 295 (reporting that 26 million additional people will likely reside in coastal counties by 2025). See also Randall, *supra* note 5, at 145, 147.

1990s.⁵⁴ Many municipal governments encourage, at least implicitly, development in hazardous areas.⁵⁵ For instance, a coastal municipal government typically has strong, albeit perverse, incentives to encourage development along shorelines because such development is often highly valuable real estate and therefore contributes significantly to that municipality's tax base.⁵⁶ Relocation will likely be unpopular among local government officials if relocation has the effect of reducing property tax receipts even if it reduces long-term flood risks. Moreover, the availability of *in situ* alternatives, such as protection, elevation, and insurance, reduce vulnerable property owners' urgency to relocate.

Among private landowners and the local government politicians that property owners elect, a political culture highly defensive of property rights suggests strong resistance will meet any pre-disaster efforts to mandate relocation.⁵⁷ Property owners and residents of towns in flood-prone areas rightfully and understandably have strong connections to their homes and communities.⁵⁸ Previous relocation programs have demonstrated that individual and collective decisions to relocate are emotional, and relocation can cause significant social and economic upheaval.⁵⁹ It is for these reasons that relocation programs typically occur on a voluntary basis. On a post-disaster basis, the common response is to promise to rebuild in place, and property owners often feel entitled to federal assistance for doing so.⁶⁰ When disasters cause harm and damage, communities often rally around each other, and there is a real risk that in some instances post-disaster relocation might hamper the individuals' and communities' emotional recovery. Relocation programs during the urban renewal era provide evidence

⁵⁴ NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION, POPULATION TRENDS ALONG THE COASTAL UNITED STATES: 1980-2008 2 (2010). Professor Owens, as recently as 1983, described conditions in coastal North Carolina where coastal populations had decreased. See Owens, *supra* note 29, at 657. Yet, since that time growth in the coastal zone has been dramatic. See also Bryan J. Boruff, Christopher Emrich & Susan L. Cutter, *Erosion Vulnerability of U.S. Coastal Counties*, 21 J. COASTAL RES. 932 (2005). Coastal floodplains and riverine floodplains are very different. Riverine floodplains have historically been the locus of settlement and development, whereas coastal floodplains have only been intensely developed in the last half century. See Barnhizer, *supra* note 8, at 307 n.39. The relationship between coastal development and development-created flood risk is supported empirically by the total spending on disaster relief in coastal areas. In the entire decade of the 1980s, the federal government spent \$3.9 billion on disaster recovery. In the period from 1990 to 2003, the federal government spent on average \$3 billion per year. See Bagstad, et al., *supra* note 34, at 289.

⁵⁵ See Bagstad, et al., *supra* note 34, at 285.

⁵⁶ See Hawes, *supra* note 5, at 62. See also Owens, *supra* note 29, at 635 n.45 and National Wildlife Federation, *supra* note 28, at 35. The primary concern with acquisition programs' effect on local property taxes occurs when the owners that sell their property cross into a different jurisdiction to resettle. This is a nearly impossible problem to solve without redrawing political boundaries or fundamentally reshaping local property tax regimes.

⁵⁷ *Id.*

⁵⁸ See Maria Lewicka, *Place Attachment: How Far Have We Come in the Last 40 Years?*, 31 J. ENVTL. PSYCH. 207 (2011) (finding that people value highly place of residence). See also Rachel G. Kleit & Lynne C. Manzo, *To Move or Not to Move: Relationships to Place and Relocation Choices in HOPE VI*, 17 HOUSING POL'Y DEBATE 271 (2006) (addressing concerns about relocating residents of public housing and those residents perception of place).

⁵⁹ See Perry & Lindell, *supra* note 27, at 53. See also Harvey Rice, *Texas Homeowners Groups Accused of Hindering FEMA Buyouts*, HOMELAND1, Jan. 17, 2010, <http://www.homeland1.com/business-continuity/articles/744936-Texas-homeowners-groups-accused-of-hindering-FEMA-buyouts/> (describing a dispute between an individual homeowner seeking to sell his property to FEMA and the homeowners association that attempted to block the sale). Worth mentioning is the extremely negative reaction that accompanied the *Kelo* decision announcing an expanded application of the Fifth Amendment for involuntary public acquisition of private property. See generally Ilya Somin, *Limits of Backlash: Assessing the Political Response to Kelo*, 93 MINN. L. REV. 2100 (2009). Communities implementing an acquisition program for flood risk reduction purposes would be unwise to get entangled in constitutional issues if such issues are avoidable, and such issues are largely avoidable if all participants in the acquisition program are voluntary.

⁶⁰ Randall, *supra* note 5, at 153-55 (describing problems with structures suffering from repetitive flood losses).

than attempts to engage in relocation should be undertaken with great care, careful planning, and community participation.⁶¹

Despite these considerable political and cultural barriers, counterarguments to the wisdom of allowing flood-prone development to rebuild or remain in place exist at all points along the political spectrum.⁶² For instance, a fiscally conservative position questions providing subsidies to vulnerable development in areas certain to suffer future losses.⁶³ Likewise, an environmentally conservative response to rebuilding in hazardous areas questions the wastefulness of such a policy as well as the harm flood-prone development causes floodplain and coastal ecosystems.⁶⁴

Pro-growth objections to relocation can be ameliorated with a concurrent redevelopment program that provides incentives or opportunities to develop elsewhere and continue the flow of property tax receipts. Moreover, for property rights advocates, state- or locally led relocation efforts might be more politically palatable than federally led programs because of the long-standing concerns about the propriety of federal intrusions into land use policymaking.⁶⁵ Overcoming the political barriers to relocation will entail appealing to varied political interests and reframing the relocation narrative away from interference with private property rights. While overcoming political opposition represents an enormous—likely the biggest—challenge to implementing acquisition, it is not insurmountable as evidenced by the success of previous acquisition programs and the demand for subsidies for acquisition programs.⁶⁶

Indeed some communities, or at least some portions of communities, might desire the opportunity to receive compensation for leaving behind flood risks. For instance, a group of residents in Virginia demanded that their local government acquire their property as a result of the government's putative failure to control flooding.⁶⁷ An Illinois town devastated by the 1993 floods along the Mississippi River relocated nearly in its entirety to higher ground less than a mile away.⁶⁸ It is likely that the communities that will demand the opportunity to participate in an acquisition program will have experienced

⁶¹ See Perry & Lindell, *supra* note 27, at 53. See also PAUL L. NIEBANCK & MARK R. YESSIAN, *RELOCATION IN URBAN PLANNING: FROM OBSTACLE TO OPPORTUNITY* (1968).

⁶² See Evan Lehrmann, *Obama Seeks Subsidized Rate Reductions in Flood Insurance Program*, E&E, Sept. 20, 2011 (noting that conservatives and environmental groups lobbied together to increase NFIP premiums to reduce subsidies to coastal development).

⁶³ See Justin Gillis, *Weighing the Risk of Sea-Level Rise*, N.Y. TIMES, Mar. 14, 2012, <http://green.blogs.nytimes.com/2012/03/14/weighing-the-risk-of-sea-level-rise> (identifying a coalition of conservative advocates for flood insurance reform such as the Competitive Enterprise Institute and Americans for Tax Reform). See also Americans for Smart Natural Catastrophe Policy, <http://www.smartersafer.org/coalition> (last visited Mar. 30, 2012).

⁶⁴ See *id.* (also identifying groups such as Environmental Defense Fund, National Wildlife Federation, the Nature Conservancy and other environmental groups as part of the left-right coalition of interests advocating flood insurance reform). Notes the Coalitions' website: "Measures such as subsidizing artificially low rates for homeowners' insurance policies help to encourage construction in environmentally sensitive and unsafe areas." *Id.*

⁶⁵ See Ashira P. Ostrow, *Land Law Federalism*, 61 EMORY L.J. (2012) [forthcoming]. Increased federal participation in floodplain regulation, though part of the traditionally local land use regulation realm, is justified given that the federal government acts as the insurer of last resort in the event of disasters. Prudent risk management suggests parties bearing flood risk should have some control over the vulnerability factors that account for the risk. See Bagstad, et al., *supra* note 34. In the flood risk context, land use and development policies are the primary vulnerability factors in the flood risk calculation.

⁶⁶ See Part IV, *infra*. See also Best Practices, *supra* note 44 (describing more than fifty instances of FEMA-funded acquisition programs).

⁶⁷ See Nichols & Bruch, *supra* note 6, at 21.

⁶⁸ See Knobloch, *supra* note 32, and *infra* notes 216-19 and accompanying text.

previous floods and perhaps even significant damage. It is also likely that communities desirous of the opportunity to be bought out will have economic opportunities independent of coastal tourism such that the tie to the water can be severed more easily.

Neither the conservation arguments nor the redevelopment arguments address satisfactorily the primary concern that acquisition programs threaten the social fabric of communities and disrupt people's natural attachment to their homes. The disruptive nature of acquisition programs is a significant obstacle to widespread relocation of structures away from flood-prone areas. Acquisition programs operate in tension with community preservation, and there are tradeoffs. On the one hand, acquisition can reduce losses from deadly and devastating flood hazards; on the other, acquisition, if poorly planned, can pull apart or strain communities. Perhaps the most satisfying response to mitigating the concerns of community disruption is to ensure high rates of public participation in the design of the acquisition. Communities can be relocated intact, or nearly so.⁶⁹

2. Fiscal Barriers

Acquisition policies, like almost all adaptation methods, require substantial public spending.⁷⁰ The high upfront costs of acquisition programs present a second and highly significant barrier to implementation. Public spending austerity measures will limit any governments ability to compensate property owners for relocation using public funds.⁷¹ Many, if not most, governments that would consider implementing acquisition presently face difficult decisions about budgeting in light of the current economic situation,⁷² and policies that will both reduce property tax revenues and require large expenditures will be highly unpopular. Similarly, the federal government has undertaken significant steps to reduce spending, and future federal dollars will likely be scarcer than before.⁷³ Federal spending limitations are especially true in light of the National Flood Insurance Program currently owing more than \$17 billion in repayments to the general treasury.⁷⁴ Finally, the political priority of spending for climate-related programs, in relation to other funding priorities (e.g., healthcare, defense, and

⁶⁹ Perhaps the most notable example of an entire community being relocated is Valmeyer, Illinois. Valmeyer, which is located along the Mississippi River, was largely destroyed in the 1993 flood, and in the following years rebuilt itself less than two miles away on a bluff overlooking the floodplain. See Knobloch, *supra* note 32, and *infra* notes 216-19 and accompanying text.

⁷⁰ See Owens, *supra* note 29, at 641. See also Byrne & Grannis, *supra* note 6. The primary costs include acquiring the fee to the property and providing relocation assistance to participating homeowners. However, administrative costs, including the hidden costs of coordinating among the various government agencies, are not insignificant. Administrative costs include verifying ownership and clearing title, obtaining legal services, and ensuring verification with regulatory requirements. For example, in the MSCIP EIS the USACE estimated 4434 properties would need to be acquired in Jackson County, Mississippi for a total of \$483.3 million. MSCIP EIS, *supra* note 38, at 287. Relocation costs, required under the Uniform Relocation Assistance and Real Property Acquisition Act, would have added an additional \$107.6 million. *Id.* The USACE also included a 25% contingency.

⁷¹ See Lisa Mascaro, *New Storm Brews in Congress over Paying for Disaster Relief*, L.A. TIMES, Aug. 29, 2011, <http://articles.latimes.com/print/2011/aug/29/nation/la-na-fema-spending-20110830>.

⁷² See PHIL OLIFF, CHRIS MAE, AND VINCENT PALACIOS, CENTER ON BUDGET & POL'Y PRIORITIES, STATES CONTINUE TO FEEL RECESSION'S IMPACT 4 (2012). Coastal states with fiscal year 2012 budget gaps include Connecticut, Maine, Louisiana, Alabama, California, Washington, New Jersey, and New York. Virtually every coastal state faces a fiscal year 2013 budget gap. *Id.* at 5.

⁷³ Mascaro, *supra* note 71.

⁷⁴ See RAWLE O. KING, CONG. RES. SERV., NATIONAL FLOOD INSURANCE PROGRAM: BACKGROUND, CHALLENGES, AND FINANCIAL STATUS 15 (2011). The NFIP had no debt to the general treasury in 2004, and in the decades before had never carried a debt in excess of \$1 billion. Following the Gulf Coast hurricanes of 2005, the NFIP's debt jumped to nearly \$17 billion and has remained at that level for nearly eight years. *Id.*

education), is unknown at this time.

One solution for overcoming the high cost of acquisition is to frame any such program as a long-term cost savings. Whereas vulnerable development currently requires indefinite subsidy to remain in place, relocated development will require none. Another solution for the high initial cost of acquisition is to frame the strategy as a stimulus: new development and/or redevelopment opportunities will abound in the areas *to which* vulnerable development relocates. Redevelopment will require construction jobs and associated infrastructure spending and might be a boon for the real estate and construction industries still reeling from the recent recession.

3. Technical Barriers

Two categories of technical barriers to acquisition programs exist. First, uncertainty regarding the magnitude of many coastal hazards, especially in light of the ambiguity surrounding climate predictions more generally,⁷⁵ results in ambiguity over which properties should be acquired and how soon relocation is warranted. Second, relocating entire communities and associated supporting infrastructure will present engineering challenges.

Disagreement exists regarding the certainty of coastal hazards. Vulnerability varies geographically,⁷⁶ and advocates espousing both private property rights and the status quo will likely exploit that uncertainty. Inaccurate or out-of-date maps of flood hazards and irregular, inexplicable seasonal fluctuations in local weather and wave conditions contribute to the uncertainty.⁷⁷ A major concern with flood maps is that most were developed on the basis of historic rather than future floods.⁷⁸ Areas that may appear to be outside of the floodplain today may be subject to floods in the future. Related uncertainty exists over the extent to which coastal hazards are the product of anthropogenic climate change instead of background, “natural” fluctuations in sea level rise and storm intensity.⁷⁹ The scientific community has made great strides in resolving ambiguities surrounding flood hazards, and improvements in technology are yielding more reliable maps and better hazards information to facilitate planning.⁸⁰ Hazards maps will be essential for planning future redevelopment and identifying which areas should be protected in place. Even if implementing governments are unwilling to adopt an aggressive stance on acquisition, overcoming the information gaps is wise with regard to ongoing coastal hazards management. While some information gaps cannot be filled in the near future because of inherent uncertainties in climate science and the behavior of natural hazards, it is not necessary to wait for complete certainty before moving forward with a response to obvious risks.

4. Constitutional Barriers

Acquisition programs will operate in the shadow of the Takings Clause, found with the Fifth Amendment to the U.S. Constitution, which imposes constitutional limits on state and local governments’ ability to acquire private property by physical taking and to regulate the use of private

⁷⁵ See Nichols & Bruch, *supra* note 6, at 20 (noting that the extent, severity or timing of climate effects on coastlines is still unknown, and as a result, the exact nature of the responsive action is also unknowable).

⁷⁶ See Boruff, et al., *supra* note 54, at 932 (quantifying vulnerability of different segments of the United States’ coasts). See also Michael, *supra* note 37, at 149.

⁷⁷ See Barnhizer, *supra* note 8, at 349.

⁷⁸ *Id.* at 337.

⁷⁹ See Robert L. Glicksman, *Global Climate Change and the Risks to Coastal Areas from Hurricanes and Rising Sea Levels: The Costs of Doing Nothing*, 52 LOY. L. REV. 1127, 1142 (2006).

⁸⁰ See David R. Maidment, *FEMA Flood Map Accuracy*, in PROCEEDINGS OF THE WORLD ENV’T & WATER RESOURCES CONGRESS 2009: GREAT RIVERS (2009).

property.⁸¹ Three of those constitutional limits are discussed here.

The requirement that the acquiring government entity must provide “just compensation” to the former property owner is the first and most significant limitation under the Fifth Amendment’s Taking Clause on any government-led acquisition of private property by physical taking.⁸² Acquisition programs fall squarely in the realm of physical takings, and there will be little to debate about whether just compensation would be required for the government to engage in the relocation of private property owners by acquisition. Just compensation will be required for any acquisition program. If a constitutional dispute emerges in the context of an acquisition program, it will likely involve either the valuation method or the specific amount required to provide just compensation for individual landowners or classes of landowners.

The so-called regulatory taking doctrine is the second Takings Clause limitation on acquisition programs. A regulation that stops short of a physical taking can nonetheless also require the government to provide just compensation to private property owners if the regulation constitutes either a permanent physical occupation,⁸³ a deprivation of all economic value,⁸⁴ or if the regulation “goes too far.”⁸⁵ Relocation via land use controls such as zoning or via the government’s disinvestment in public infrastructure may constitute a regulatory taking. Relocation via acquisition, however, is unlikely to result in regulatory taking claim because most acquisition programs as contemplated herein will constitute physical takings. When a court finds that a physical taking has occurred, it will apply the physical taking, rather than the regulatory taking, analysis.⁸⁶

The third constitutional limitation under the Fifth Amendment is the requirement that takings be for “public use.” Under a fairly recent (and highly controversial) ruling in 2005, the meaning of “public use” is very broad and means “public purpose.”⁸⁷ The acquisition of vulnerable residential development in coastal hazard areas will almost certainly meet the public purpose standard of the Takings Clause.⁸⁸

Relative to other relocation strategies, acquisition is not likely subject to ambiguities regarding the application of the Fifth Amendment’s Takings Clause. The Takings Clause will apply and just compensation will be required for the properties that any government entity acquires. Perhaps the surest way to avoid any constitutional entanglements is to limit acquisition programs to purchasing

⁸¹ See Marc R. Poirier, *Takings and Natural Hazards Policy: Public Choice on the Beachfront*, 46 RUTGERS L. REV. 243 (1993).

⁸² U.S. CONST. amend V. (“[N]or shall private property be taken for public use, without just compensation”). See also Byrne & Grannis, *supra* note 6.

⁸³ See *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419 (1982).

⁸⁴ See *Lucas v. S.C. Coastal Comm’n*, 505 U.S. 1003 (1992).

⁸⁵ See *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 416 (1922). The U.S. Supreme Court later elaborated on when a government regulation might go too far in *Penn Central Transportation Co. v. New York City*, 438 U.S. 104 (1978), establishing a three-part balancing test considering the character of the government action, the reasonable investment backed expectations of the property owner and the economic impact of the regulation. Regulatory takings can also emerge in the land use context when the regulating government requires some sort of exaction. See *Nollan v. Cal. Coastal Comm’n*, 483 U.S. 825 (1987) and *Dolan v. City of Tigard*, 512 U.S. 374 (1994).

⁸⁶ Admittedly the line between physical and regulatory takings can be “blurry.” See Robert Meltz, *Takings Law Today: A Primer for the Perplexed*, 34 ECOLOGY L.Q. 307, 364 (2007) and Andrea L. Peterson, *The False Dichotomy between Physical and Regulatory Takings Analysis: A Critique of Tahoe-Sierra’s Distinction between Physical and Regulatory Takings*, 34 ECOLOGY L.Q. 381 (2007).

⁸⁷ *Kelo v. City of New London*, 545 U.S. 469, 498 (2005) (Kennedy, J., concurring).

⁸⁸ The U.S. Supreme Court has been largely deferential to the legislature in determining what constitutes a public purpose. See *id.* at 499.

exclusively from property owners who volunteer to sell.⁸⁹

III. The Policy Framework for Government Acquisition Programs

Although state and local governments will likely initiate and lead acquisition programs, the federal government, through existing programs, has the capacity to support such efforts. The federal government supports acquisition programs through financial assistance and through incentives to create and maintain a planning process and documents for hazard mitigation. These two forms of federal support are introduced below.

A. Federal Emergency Management and Hazard Mitigation Assistance

For more than two decades, the federal government has recognized the benefits of acquiring vulnerable properties to mitigate flood hazards and has appropriated funding for that purpose.⁹⁰ Congress has allocated funding and established policy programs that award grants to state and local governments to implement acquisition programs in areas vulnerable to flood hazards.⁹¹ The administration of such federal funding is controlled through Federal Emergency Management Agency (FEMA) administrative regulations and informal guidance.⁹² Acquisition programs that receive federal funding are implemented through state or local government programs.

FEMA administers five federal disaster assistance grant programs, which together are referred to as Hazard Mitigation Assistance (HMA).⁹³ The primary support for acquisition is the Hazard Mitigation Grant Program (HMGP), which provides post-disaster property acquisition assistance to local governments through states on a quasi-competitive grant basis.⁹⁴ Separately funded pre-disaster acquisition programs also exist.⁹⁵ The acquisition provisions of the various HMA programs are among the most proactive elements of the federal disaster planning and mitigation toolbox and have been

⁸⁹ Regulations governing the distribution of federal funds for acquisition programs require that property owners participate voluntarily. See *infra* note 110 and accompanying text. Moreover, by requiring voluntary participation by property owners, state and local governments implementing acquisition programs with federal funds avoid the requirement to comply with the federal Uniform Relocation Assistance and Real Property Acquisition Act. See 49 C.F.R. § 24.101(b) and *infra* note 250 and accompanying text.

⁹⁰ See KEITH BEA, CONG. RES. SERV., FEDERAL STAFFORD ACT DISASTER ASSISTANCE: PRESIDENTIAL DECLARATIONS, ELIGIBLE ACTIVITIES, AND FUNDING 15 (2010).

⁹¹ See FEMA Unified Guidance, *supra* note 44.

⁹² *Id.* See also 44 C.F.R. part 80 (providing for the requirements for federally funded acquisition programs under the Hazard Mitigation Grant Program).

⁹³ These include grants through the Pre-Disaster Mitigation (PDM), Severe Repetitive Loss (SRL), Flood Mitigation Assistance (FMA), and Repetitive Flood Claims (RFC) programs. See FEMA Unified Guidance, *supra* note 44, at 2.

⁹⁴ *Id.* at 51. HGMP awards are granted after disasters are declared and following analysis of the scope of the disaster.

⁹⁵ Federally funded and administered *pre-disaster* property acquisition and relocation assistance is available through the PDM program. See FEMA Unified Guidance, *supra* note 44, at 2. The U.S. Dept. of Housing and Urban Development also provides grants for flood acquisitions. See EUGENE BOYD, CONG. RES. SERV., COMMUNITY DEVELOPMENT BLOCK GRANT FUNDS IN DISASTER RELIEF AND RECOVERY (2011).

employed in flood-prone areas throughout the country many times since their inception.⁹⁶

The HMGP has its basis in statute. In 1988 Congress passed the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), substantially updating and amending disaster relief legislation dating to the 1970s.⁹⁷ The Stafford Act included many new elements of disaster relief and emergency management and established the HMGP.⁹⁸ Following a declared disaster, the HMGP authorizes the President to contribute federal funding to “hazard mitigation measures which substantially reduce the risk of *future* damage, hardship, loss or suffering.”⁹⁹ The Stafford Act also sets forth cost sharing and cost caps for federal public assistance under this provision,¹⁰⁰ and Congress has subsequently increased these cost caps through later amendments to the Stafford Act.¹⁰¹ Following 1993 amendments to the Stafford Act, the HMGP authorizes FEMA to “provide property acquisition and relocation assistance” to eligible states and/or communities with qualifying mitigation plans,¹⁰² but limits properties eligible for participation in the acquisition program and limits future use of properties receiving assistance.¹⁰³

The various HMA programs are subject to a largely unified regulatory regime,¹⁰⁴ with only minor differences, which are addressed at the end of this section. Under HMA grants, state and local government grant recipients purchase homes from either flood-affected or flood-prone residents, demolish those homes, and set aside those acquired, vulnerable lands in a permanently undevelopable state.¹⁰⁵ The HMA programs require voluntary property owner participation; HMA grants cannot fund the acquisition of property through eminent domain.¹⁰⁶ The grants are administered by FEMA in cooperation with state and local governments.¹⁰⁷ Grants are required to be “cost-effective,”¹⁰⁸ but this

⁹⁶ See Best Practices, *supra* note 44 (describing more than fifty instances of FEMA-funded acquisition programs). See also David A. Lieb & Jim Salter, *FEMA Flood Buyouts Top \$2B since 1993*, ABC NEWS, July 12, 2011, <http://abcnews.go.com/US/wireStory?id=14055874#.T3iF779Wpee> (reporting that FEMA has funded the acquisition of more than 36,000 properties since 1993). See Fraser, et al., *supra* note 30. However, although HMA supports locally-administered acquisition programs for the purposes of reducing flood losses, HMA also supports efforts to mitigate other types of disasters including wildfires and tornadoes, and competition for these scarce funds is intense.

⁹⁷ H.R. REP. NO. 100-517 at 4 (1988).

⁹⁸ 42 U.S.C. § 5170c (2006).

⁹⁹ *Id.* (emphasis added).

¹⁰⁰ *Id.*

¹⁰¹ In 1988, the limits of federal assistance were the greater of \$1 million or 10% of public assistance grants. Amendments increased these limits according to a sliding scale with a decreasing federal percentage for increasing total amounts. H.R. REP. NO. 100-517 at 8 (1988). Today, HMGP awards are capped at 7.5% of \$35.3 billion, or up to \$2.65 billion. 42 U.S.C. § 5170c.

¹⁰² 42 U.S.C. § 5165. The 1993 amendments were intended, in part, to “plac[e] hazard mitigation on an equal footing with repair and reconstruction. This is intended to give communities a more balanced choice between repair and reconstruction and relocation or other non-structural measures.” H.R. REP. NO. 103-358 at 5 (1993).

¹⁰³ The limitations and requirements of the HMGP are substantially similar to those of the PDM, SRL, FMA, and RFC programs. See FEMA Unified Guidance, *supra* note 44, at 74.

¹⁰⁴ HMA grants include the HMGP, PDM, SRL, FMA, and Repetitive Flood Claims programs. See FEMA Unified Guidance, *supra* note 44. Each program is subject to a different enabling statute and varying appropriation levels, but the administrative regulations and guidance affecting the disbursement of funds is largely uniform. *Id.*

¹⁰⁵ 44 C.F.R. § 80.19(a).

¹⁰⁶ *Id.* § 80.11(a).

¹⁰⁷ Other entities besides state and local governments are eligible to receive HMA grants, but state and municipal governments are the most common. See *id.* § 80.3. In the ordinary course, the state receives the federal grant and passes the funds through to the applicant local government(s). The state and local government grant recipients are referred to as, respectively, the “grantee” and the “subgrantee” in the HMA regulations and guidance.

requirement has been broadly interpreted, and grant applications do not require a formal cost-benefit analysis.¹⁰⁹

For a property to be eligible for acquisition through an HMA-funded program, (1) the property owner must volunteer to participate in the acquisition;¹¹⁰ (2) the property must contain an at-risk structure;¹¹¹ (3) incompatible easements must be extinguishable upon transfer;¹¹² (4) the acquired property may not be contaminated with hazardous materials;¹¹³ (5) the property may not be part of a planned project such that it will be used in a manner incompatible with FEMA's required deed restrictions;¹¹⁴ and (6) the property may not be subdivided prior to acquisition such that only a portion of the subdivided property undergo an ownership transfer unless the non-transferred portion of any such subdivision is outside of a delineated flood hazard zone.¹¹⁵

After acquisition, FEMA requires (1) acquired properties to be held in fee simple by the acquiring government;¹¹⁶ (2) acquired properties to be dedicated and maintained in perpetuity as open space, recreational uses, or wetlands subject to a deed restriction limiting future development;¹¹⁷ (3) no new structures be built on the acquired property, subject to limited exceptions;¹¹⁸ (4) no future application

¹⁰⁸ FEMA Unified Guidance, *supra* note 44, at 37.

¹⁰⁹ *Id.* at 11.

¹¹⁰ Under the Stafford Act, neither FEMA nor the grantees' administering body is required to limit HGMP awards to voluntary recipients only. However, FEMA's regulations recite that "eligible acquisition projects are those where the property owner participates voluntarily, and the grantee/subgrantee will not use its eminent domain authority to acquire the property." 44 C.F.R. § 80.11(a). On residential properties that are rented, tenants need not be voluntary participants in the program. See FEMA Unified Guidance, *supra* note 44, 89-91. Displaced tenants may be eligible for additional financial assistance.

¹¹¹ 44 C.F.R. § 80.11(b). "At-risk structures" include those that have already been damaged or destroyed as well as those not yet damaged or destroyed. In addition, unimproved land adjacent to land with at-risk structures is also eligible. *Id.* Note that "structure" is not defined in 44 C.F.R. part 80, but it is defined in 44 C.F.R. part 59 (the regulations for the National Flood Insurance Program) along with many other terms common to part 80. In part 59, "structure" means a "walled and roofed building ... that is principally above ground." *Id.* § 59.1.

¹¹² *Id.* § 80.17(b).

¹¹³ Incidental household waste and demolition materials are excepted from this requirement. *Id.* § 80.17(a).

¹¹⁴ *Id.* § 80.17(e).

¹¹⁵ *Id.* § 80.11(c). Permitting acquired properties to be subdivided to allow future development on portions of the parcel outside the delineated (historic) floodplain presents some problems in coastal areas where the floodplain is dynamic. Portions of the shoreline that are currently out of, but adjacent to, the existing floodplain are likely to be in the floodplain as sea levels rise. See Titus, *supra* note 5, at 725-26 (explaining the process of shoreline migration). This is one way in which policies that may make sense for riverine floods do not translate well to the coastal setting. One way to counteract such a potential loophole is to adopt a strategy from the NFIP rules and define the floodplain based on future rather than historical flood conditions. This can be done by incorporating erosion rates into flood maps. See FEMA, NATIONAL FLOOD INSURANCE PROGRAM MANUAL: COMMUNITY RATING SYSTEM 40, 45 (2011) (defining the V-Zone Risk Factor Rating and authorizing communities with shorefront erosion zones to establish setbacks from dunes, bluffs, and shoreline vegetation by using a "published or calculated long-term erosion rate.").

¹¹⁶ *Id.* § 80.11(d). FEMA's regulations require that acquired properties be maintained in perpetuity "for the conservation of floodplain functions," and may be conveyed subsequently only with the approval of FEMA and only then to a public organization subject to a conservation easement or to a private conservation organization. *Id.* § 80.19(b).

¹¹⁷ *Id.* § 80.17(e).

¹¹⁸ *Id.* § 80.19(a)(2). Allowed structures include public facilities, public restrooms, or other compatible structures approved in writing in advance by FEMA. Allowable structures are not eligible for federal flood insurance or any other post-flood federal financial assistance. *Id.* § 80.19(a)(3)-(5).

for disaster assistance be made or received for the acquired property;¹¹⁹ and (5) relocated structures be moved outside of flood-hazard areas.¹²⁰

Grant recipients are also subject to numerous administrative requirements.¹²¹ The grant recipient administering the HMGP award must enter into an agreement with FEMA affirming compliance with these provisions. Grant recipients are required to administer the HMGP awards pursuant to hazard mitigation plans and to demonstrate a "commitment to mitigation activities."¹²² The HMGP will not fund 100% of an acquisition or relocation program; grant recipients must provide up to 25% of matching funds.¹²³

In addition to the voluntary participation requirement for acquisition, property owners may be eligible for additional relocation assistance,¹²⁴ especially if the purchase offer is less than the cost to the occupant-seller of buying another residence outside of the flood prone area.¹²⁵ Finally, property owners must be informed of the market value for their house, the methodology the grant recipient uses to calculate the value, the basis for the offer, and the final offer amount.¹²⁶ The government body funding the acquisition is responsible for removing structures.¹²⁷

Grant recipients are authorized to administer HMGP funding in conjunction with other federal assistance programs, including but not limited to Community Development Block Grant (CDBG) funding.¹²⁸ When multiple funding sources are available, the government implementing the acquisition program is required to simplify application processes as much as possible for property owners.¹²⁹

One important difference among the various HMA programs pertains to the limitations on eligibility for potential grant recipients. A community is eligible for the HMGP only if it is located in an area that the President has declared a disaster.¹³⁰ Pre-Disaster Mitigation (PDM) grants, on the other hand, are available on a pre-disaster basis.¹³¹ Three other HMA programs are available for communities that meet the criteria as being repetitive loss or severe repetitive loss communities.¹³² However, for these programs an applicant community must participate in the NFIP before applying for any for assistance from any of these three HMA programs.

¹¹⁹ 42 U.S.C. § 5170(b)(2)(B).

¹²⁰ FEMA Unified Guidance, *supra* note 44, at 75.

¹²¹ See 44 C.F.R. §§ 80.13-80.21. Additional requirements include providing FEMA with proof of the buyouts (§ 80.21), obtaining title insurance (§ 80.17(b)), and consulting with other federal agencies, such as the U.S. Army Corps of Engineers and the state's Department of Transportation (§80.13(b)), among others.

¹²² 42 U.S.C. § 5170(c)(2).

¹²³ Limited sources of federal funds are authorized for match. See FEMA Unified Guidance, *supra* note 44, at 8. Eligible federal funds include the Community Development Block Grants. *Id.* at 9.

¹²⁴ 44 C.F.R. § 80.17(c)(5).

¹²⁵ *Id.* § 80.17(c)(6). Under the SRL, the property owner will receive compensation equal to the greatest among (1) the current market value of the property, (2) the original purchase price, and (3) any outstanding loan amount. The SRL is the only acquisition program with this unique purchase offer requirement. 42 U.S.C. § 4102a.

¹²⁶ 44 C.F.R. § 80.17(c)(7).

¹²⁷ *Id.* § 80.17(d).

¹²⁸ FEMA Unified Guidance, *supra* note 44, at 79. Recall that funding may also come from other federal entities such as HUD (via Community Development Block Grants specifically designated for disaster mitigation purposes), as well as from state and local sources.

¹²⁹ FEMA Unified Guidance, *supra* note 44, at 79.

¹³⁰ *Id.* at 2. This restriction represents a significant limitation on communities seeking to implement an acquisition program where no disaster has yet occurred. States such as Connecticut, where recent coastal disasters are rare but risks are high, are essentially limited to the PDM program unless participating in the NFIP and eligible for SRL, FMA, or RFC grants.

¹³¹ *Id.* at 59.

¹³² *Id.* at 21, 61-73.

Another important difference between the HMGP and some of the other programs is the method for awarding funds. A significant portion of PDM funds are awarded by Congressional earmark to specific communities or for specific projects, whereas FEMA awards the HMGP funds following application from eligible and interested communities.¹³³

B. The Role of Hazard Mitigation Plans

Before FEMA will award HMA grants, the state and local government in which the applicant is located usually must have an approved Hazard Mitigation Plan (HMP).¹³⁴ HMPs come in three types, each of which is defined in FEMA's regulations. The most basic type of plan, the "Standard" State HMP, must include a description of the planning process (which is to include interested stakeholders and to be integrated with other planning efforts), detailed risk assessments of hazards throughout the state, a mitigation strategy for reducing losses from hazards identified in the risk assessment, and procedures for coordinating with local government mitigation plans, adopting the plan, and maintaining the plan.¹³⁵ The state must update its Standard HMP every three years.¹³⁶ The second class of state HMPs is the "Enhanced Plan."¹³⁷ An Enhanced Plan increases the availability of federal assistance to states and requires additional documentation beyond the Standard HMP along with assurances that the state is taking proactive steps to mitigate risks from disasters.¹³⁸ The third and final class of HMP is the "Local Mitigation Plan."¹³⁹ Local jurisdictions applying for HMGP or PDM grants must have a FEMA-approved plan before submitting an application for federal funds.¹⁴⁰ Local plans must be detailed, describing, for instance, numbers and types of buildings and infrastructure vulnerable to identified hazards as well as dollar estimates of potential losses from hazards.¹⁴¹ Local HMPs must also include a mitigation strategy, a description of the plan-making process, and documentation of adoption by the local government.¹⁴²

The process through which a state or local government creates its HMP is a crucial component of ensuring a successful acquisition program. Creating an HMP is more than a mere formality required for eligibility for federal financial assistance; rather, creating a plan serves many important functions. In addition, the plan-making process is not a static, one-time event. The HMP is, or ought to be, a continuing dialogue between state or local government, its constituents and FEMA.

The HMP drafting process has numerous benefits.¹⁴³ The drafting process is an opportunity to

¹³³ *Id.* at 51. See also Bea, *supra* note 90, at 17.

¹³⁴ See 44 C.F.R. § 201.3(c)(1) and FEMA UNIFIED GUIDANCE, *supra* note 44, at 19. Exceptions exist and some tribes and sub-state entities can obtain waivers from the HMA requirements by promulgating hazard mitigation plans independent from the state. *Id.*

¹³⁵ 44 C.F.R. § 201.4.

¹³⁶ *Id.* § 201.4(d).

¹³⁷ *Id.* § 201.5.

¹³⁸ *Id.*

¹³⁹ *Id.* § 201.6.

¹⁴⁰ *Id.* § 201.6(a).

¹⁴¹ *Id.* § 201.6(c)(2)(ii)(A)-(B).

¹⁴² *Id.* § 201.6(c)(3)-(5). Local Hazard Mitigation Plans must be updated every five years. *Id.* § 201.6(d)(3).

¹⁴³ See Laurie Pearce, *Disaster Management and Community Planning, and Public Participation: How to Achieve Sustainable Hazard Mitigation*, 28 NAT. HAZARDS 211 (2003); Zhenghong Tang, et al., *Moving from Agenda to Action: Evaluating Local Climate Change Action Plans*, 53 J. ENV'TL. PLAN. & MGMT. 41, 57 (2009); David R. Godschalk, et al., *Public Participation in Natural Hazard Mitigation Policy Formation: Challenges for Comprehensive Planning*, 46 J. ENV'TL. PLAN. & MGMT. 733 (2003). See generally FEDERAL EMERGENCY MANAGEMENT AGENCY, GETTING STARTED: BUILDING SUPPORT FOR MITIGATION PLANNING (2002).

inform constituents of coastal hazards and the risks the community or state faces. Information presented in the drafting process can be quantitative. Risk, the product of probability that a hazard will cause a loss and the magnitude of the loss, is a matter of dollars and cents.¹⁴⁴ Presenting risk in dollar terms turns abstract theoretical concepts into a conversation with a practical significance. The plan-making process is also an opportunity to dispel myths about the roles of various government agencies and rumors about the procedures and opportunities of an acquisition program. Drafting an HMP opens a forum for discussing and vetting alternative mitigation strategies. In creating an HMP the planners and their constituents are forced to prioritize concerns, identify unknowns, and allocate resources. The HMP can provide some certainty about a path forward for constituents nervous about potential losses from hazards. Perhaps most importantly, a robust and open HMP planning process provides an opportunity for those facing coastal hazards to make their concerns and preferences heard and to take ownership of loss mitigation strategies. Citizens should be empowered to serve the HMP process in official roles, such as leading committees, running hearings, and contributing research. The process should not be exclusively in the hands of state and federal officials.¹⁴⁵

IV. Acquisition Programs: Large-Scale Responses

A. Acquisition as a Response to Flood Hazards: Pre-Disaster or Post-Disaster

Acquisition is most effective at reducing flood losses if it occurs before a disaster strikes. After disasters, emotions tend to run high, victims are eager to rebuild, and competing pressures limit opportunities to plan acquisition, relocation and redevelopment programs.¹⁴⁶ Quite frequently the urgent desire to restore normalcy—rebuilding a damaged home or returning to the routine of everyday business—overtakes long-term concerns about whether the most appropriate policy is to rebuild in an area subject to frequent and intensifying hazards.¹⁴⁷ On a pre-disaster basis, acquisition decisions can be made on the basis of safety and quantifiable risk reduction.¹⁴⁸

However, the distinction between pre- and post-disaster mitigation is somewhat misleading because responses after one storm are largely indistinguishable from responses before the next.¹⁴⁹ Coastal areas susceptible to flooding once are likely to be susceptible to flooding thereafter even if structural controls are developed, and under most probable climate change and sea level rise scenarios,

¹⁴⁴ See Kron, *supra* note 7, at 61.

¹⁴⁵ See Laurie Pearce, *The Value of Public Participation During a Hazard Impact, Risk and Vulnerability (HIRV) Analysis*, 10 MITIGATION & ADAPTATION STRATEGIES FOR GLOBAL CLIMATE CHANGE 411, 415 (2005); Gerard Hutter, *Strategic Planning for Long-Term Flood Risk Management: Some Suggestions for Learning How to Make Strategy at Regional and Local Level*, 12 INT'L. PLAN. STUD. 273 (2007).

¹⁴⁶ See generally Robert Olshansky, *Planning after Hurricane Katrina*, 72 J. AM. PLAN. ASS'N. 147 (2006) and Robert Olshansky et al., *Planning for the Rebuilding of New Orleans*, 74 J. AM. PLAN. ASS'N. 273 (2008) (both sources describing the planning and emergency response climate in New Orleans following Hurricane Katrina).

¹⁴⁷ See Robert B. Olshansky, Laurie A. Johnson, & Kenneth C. Topping, *Rebuilding Communities Following Disaster: Lessons from Kobe and Los Angeles*, 32 BUILT ENV'T. 354 (2006).

¹⁴⁸ Achieving meaningful levels of citizen participation is also likely to be easier on a pre-disaster basis. After a storm, many affected residents scatter to other parts of the state or to other states altogether, see Elizabeth Fussell, et al., *Race, Socioeconomic Status, and Return Migration to New Orleans after Hurricane Katrina*, 31 POPULATION & ENV'T 20, 21 (2010), or are preoccupied with picking up the pieces of their disrupted lives.

¹⁴⁹ The pre-disaster versus post-disaster distinction is relevant with regard to the availability of federal funding, however, as HMGP are available only post-disaster whereas PDM grants are available pre-disaster. See *supra* note 95 and accompanying text.

the geographic scope of vulnerable areas will increase¹⁵⁰ For instance, efforts to rebuild along the Gulf Coast were largely framed as a response to the hurricanes that already struck (past tense), but those same efforts easily could have been framed as a response to hurricanes yet to come (future tense), with the caveat that future hurricanes and storm surge may cause damage in areas not badly affected by the last storm. Nearly all of the examples of acquisition programs considered below are ostensibly post-disaster insofar as the impetus to begin a relocation program emerged only after a major disaster. But the primary benefits of the acquisition program are losses avoided during the next disaster.¹⁵¹

Louisiana and Mississippi present an interesting contrast of implementation policies for an acquisition program. In 2006, Louisiana received several billion dollars of federal money to begin the process of rebuilding the Gulf Coast. As part of those rebuilding efforts, Louisiana provided each homeowner that suffered major losses from either of the hurricanes the option of receiving federal money to rebuild in place or to sell and relocate elsewhere. Louisiana did not attempt to encourage those who suffered the most damage or those in areas likely to suffer future damages any additional incentive to relocate; instead, all homeowners faced the same options: rebuild or relocate. More than 10,000 households elected to relocate. Mississippi, in contrast, through the U.S. Army Corps of Engineers, developed a detailed plan to relocate thousands of structures from the most vulnerable areas as part of a phased program that would take thirty to forty years to fully implement. Though the Mississippi program is as of today neither funded nor implemented, it offers an interesting counterpoint to the unplanned approach Louisiana adopted. Which approach more successfully reduces flood risks may not be known until after the next hurricane. A detailed analysis of each of the two states' programs follows.

B. The Homeowner Option: Louisiana's Road Home Program

By virtually any measure, Louisiana undertook the most ambitious acquisition program in U.S. history. However, the acquisition program was not purely intended to reduce risk; rather, Louisiana's program was designed to compensate residents (mainly homeowners) who had suffered either partial damage or a total loss to their primary dwelling. The scale of the program (10,000 households voluntarily relocated) and the purpose of the program (compensation rather than risk-reduction) present useful illustrations for state and local governments undertaking disaster-oriented acquisition programs in the future.

1. The Flooding and the Response

Within the span of four weeks in the fall of 2005, two major hurricanes—Katrina and Rita—caused major destruction to Louisiana.¹⁵² Nearly 2,000 people died, nearly 20,000 businesses were destroyed, and more than 200,000 homes were destroyed or severely damaged.¹⁵³ Housing losses alone exceeded

¹⁵⁰ See Michael, *supra* note 37, at 149. See also Bagstad et al., *supra* note 34, at 288 (describing the problem of repetitive loss structures along coastlines).

¹⁵¹ Bagstad et al., *supra* note 34, at 289. When acquisition programs target the most vulnerable properties, savings range from \$2-5 for every \$1 spent acquiring at risk property. *Id.*

¹⁵² See Simon Romero & Jere Longman, *Storm Lashes Coast, Levees Breached in New Orleans*, N.Y. TIMES, Sept. 24, 2005.

¹⁵³ LOUISIANA RECOVERY AUTHORITY, THE ROAD HOME HOUSING PROGRAMS: ACTION PLAN AMENDMENT FOR DISASTER RECOVERY FUNDS 2 (2006). See also N. ERIC WEISS, CONG. RES. SERV., REBUILDING HOUSING AFTER HURRICANE KATRINA: LESSONS LEARNED AND UNRESOLVED ISSUES 2 (2006) and Jeffrey A. Groen & Anne E. Polivka, *Going Home After Hurricane Katrina: Determinants of Return Migration and Changes in Affected Areas*, 47 DEMOGRAPHY 821 (2010).

\$32 billion from the two storms and their aftermath.¹⁵⁴ Without any doubt, a significant response was necessary to both restore order and prepare for the next storm.

Congress responded to the disaster by appropriating \$11.5 billion in CDBG for states along the Gulf Coast, with \$6.2 billion allocated specifically for Louisiana.¹⁵⁵ Congress later made available an additional \$3 billion of CDBG funding for Louisiana exclusively.¹⁵⁶ In addition to the CDBG funding allocated in 2006, Louisiana also secured nearly \$1.2 billion through the HMGP at that time.¹⁵⁷ These federal funds were pooled with a smaller amount of state funding to provide financial assistance to fund the Homeowner Assistance Program (HAP). A cornerstone of the broader "Road Home Program" post-hurricane recovery effort, HAP sought to rebuild the communities that the storms devastated by focusing on homeowners who suffered losses.¹⁵⁸

Under HAP, eligible homeowners¹⁵⁹ could receive at most \$150,000 in assistance¹⁶⁰ and had three options for the delivery of that assistance: (1) rebuild or repair their home in place (Rebuild), (2) sell their home and purchase¹⁶¹ another home in Louisiana (Sell and Stay), or (3) sell their home and move out of the state (Sell and Move).¹⁶² Grant recipients electing to Rebuild were not required to elevate the flood damaged structure although additional funding was available if the recipient so desired, and elevation was encouraged. Many HAP grant recipients did elect to elevate upon selecting the Rebuild option.¹⁶³

¹⁵⁴ Louisiana Recovery Authority, *supra* note 153, at 2.

¹⁵⁵ Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act, Pub. L. No. 109-148, 119 Stat. 2680 (2005). Subsequently, Congress appropriated additional CDBG bringing Louisiana's total to approximately \$13.4 billion. See Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, Pub. L. No. 109-234, 120 Stat. 418 (2006) [hereinafter 2006 *Defense Department Appropriations Act*]; Department of Defense Appropriations, Pub. L. No. 110-116, 112 Stat. 1295 (2007).

¹⁵⁶ Allocations and Requirements for the Supplemental Grant to the State of Louisiana Under Division B of the Department of Defense Appropriations Act, 2008, 72 Fed. Reg. 70,472 (Dec. 11, 2007).

¹⁵⁷ *Id.* Eventually only \$750 million of the \$1.2 billion HMGP award would be used for the Road Home program. The balance would be reallocated for "traditional" HMGP purposes as awarded by the state. Memorandum from Paul Rainwater to Eligible HMGP Applicants (May 29, 2008), available at <http://www.gohsep.la.gov/mitigation/20081603Allocations.pdf>.

¹⁵⁸ The Louisiana Office of Community Development, Disaster Recovery Unit oversees the Road Home Program, which is administered by ICF International, a private consulting firm, under a \$912 million contract. See EILEEN NORCROSS & ANTHONY SKRIBA, THE ROAD HOME: HELPING HOMEOWNERS IN THE GULF AFTER KATRINA, MERCATUS POLICY SERIES POLICY COMMENT NO. 19 (2008), available at http://mercatus.org/sites/default/files/publication/GPI_PS_Road_Home_Policy_Brief.pdf.

¹⁵⁹ To be eligible, a homeowner had to show (1) ownership of the applicable home prior to the hurricanes, (2) the applicable home was a single or double unit structure, and (3) the applicable home either was "destroyed" or suffered "major" damage. Major damage is usually defined as more than \$5,200 damage. See ROAD HOME, ROAD HOME HOMEOWNER PROGRAM POLICIES 7.0, 3 (2010) [hereinafter HOMEOWNER POLICIES].

¹⁶⁰ The actual amount awarded was determined by a series of complicated formulas. In general, a dollar amount of damage to a home was assessed, the amount of insurance received was subtracted from the damage assessment, and the difference was awarded to the grantee subject to the \$150,000 cap. See *id.*

¹⁶¹ Those choosing Option 2 who do not purchase another home within the state within the specified timeline were converted to Option 3 and would receive the (lower) Option 3 amount. See Homeowner Policies, *supra* note 159, at 49.

¹⁶² Each Option included numerous constraints on how funds were allocated. For instance, if a home was more than 50% damaged, the award was calculated differently than if it was less than 50% damaged. See Homeowner Policies, *supra* note 159, at 26.

¹⁶³ SITUATION & PIPELINE REPORT, *supra* note 43 (reporting that 32,186 recipients of Road Home grants elected to elevate their home). All statistics reported in the *Situation & Pipeline Report* are through March 15, 2012. However, award distributions have slowed to a mere trickle.

The Road Home Program accepted applications from Louisiana homeowners from its inception in July 2006 until July 2007.¹⁶⁴

Applicants to the Road Home Program generally followed a multi-step, sometimes multi-year, process to obtain a grant.¹⁶⁵ First, the homeowner submitted an application. Next, Road Home staff reviewed the application and sent a letter to the applicant. Upon receipt of the letter, the applicant had to call and schedule an appointment to meet with an advisor, who would submit the application for processing. While an application was processing, Road Home staff verified the application's accuracy, calculated the amount of assistance for which the applicant was eligible, and sent the homeowner a letter with an assistance amount. With the award amount, the homeowner would then choose one of the three options. Once an option was selected, the Road Home administrative staff would move the application towards closing, which for a property owner electing either Relocate option entailed title transfer activities. Grant recipients had limited ability to appeal an award.¹⁶⁶

2. The Road Home Program: Empirical Results

Louisianans submitted nearly 230,000 applications in the year-long period during which homeowners could seek assistance.¹⁶⁷ Of those applications submitted, approximately 129,750 received funding, with more than \$8.9 billion disbursed to eligible homeowners so far.¹⁶⁸ Nearly 92% of the eligible Road Home applicants elected to Rebuild.¹⁶⁹ Approximately one quarter of those choosing to Rebuild also elevated their homes.¹⁷⁰

Slightly fewer than 10% of those eligible for Road Home assistance sold their homes (10,633 total as of November 2011).¹⁷¹ Those choosing the Relocate options were not homogeneously spread across coastal Louisiana: 88% of homeowners who chose to Relocate were in only two of thirty-seven parishes, St. Bernard and Orleans, and 93% of homeowners who elected to Relocate were in just five parishes, the five easternmost coastal parishes (which include Saint Bernard and Orleans).¹⁷² Not surprisingly, these five parishes were among the six parishes with the highest percentages of damaged housing units.¹⁷³

The average award was \$66,000 for Rebuild grantees, \$88,000 for Sell and Stay grantees, and \$75,000 for Sell and Move grantees; those Relocating received on average nearly \$19,000 more than

¹⁶⁴ HOMEOWNER POLICIES, *supra* note 159, at 15.

¹⁶⁵ RICK EDEN & PATRICIA BOREN, RAND CORPORATION, TIMELY ASSISTANCE: EVALUATING THE SPEED OF ROAD HOME GRANTMAKING 7 (2008).

¹⁶⁶ See HOMEOWNER POLICIES, *supra* note 159, at 25 (setting forth appeal procedures), 30 (limiting appeals), 46 and 55 (precluding appeals for assignments).

¹⁶⁷ SITUATION & PIPELINE REPORT, *supra* note 43, at 1.

¹⁶⁸ *Id.* For various reasons, 14,500 completed applications received no award. *Id.* at 8.

¹⁶⁹ *Id.* at 1. Of the eligible property owners receiving awards, 119,126 elected to Rebuild; these grant recipients received in total \$8.028 billion. *Id.*

¹⁷⁰ *Id.* Of the grant recipients electing to Rebuild, 32,186 also elected to elevate their homes. *Id.*

¹⁷¹ *Id.* The Road Home program tracked whether eligible applicants were "low or moderate income" households (LMI). LMI applicants totaled 43% of all eligible applications, and 47% of those choosing the Relocate options. See *id.* at 5.

¹⁷² The five easternmost coastal parishes are St. Tammany, Orleans, St. Bernard, Plaquemines, and Jefferson.

¹⁷³ The parish with the highest percentage of damaged units was Cameron Parish, which is in the western part of Louisiana along the Texas border. Of the housing units in Cameron Parish, 90% experienced damage and 72% experienced major/severe damage. The five easternmost coastal parishes contributing the vast majority of those homeowners opting to sell their homes experienced damage rates ranging from 53% to 81%. Importantly, the available statistics do not indicate what percentage of those choosing to sell their homes had damaged homes. See FEMA, CURRENT HOUSING UNIT DAMAGE ESTIMATES: HURRICANES KATRINA, RITA, AND WILMA 16 (2006).

those Rebuilding.¹⁷⁴

3. The Road Home Program: Failure?

Several studies have analyzed post-Katrina rebuilding efforts and repopulation results,¹⁷⁵ but none have looked explicitly at the Road Home Program's ability to reduce flood risk by encouraging those in areas vulnerable to future flooding to Relocate.¹⁷⁶ The Road Home Program's Relocate option achieved a nearly 10% participation rate among eligible homeowners even though hurricanes damaged half of the total housing stock in eligible parishes.¹⁷⁷ Five factors help explain the Program's low rates of participation in the Relocate options:

(1) **Homeowners electing to Relocate were under-compensated.** Under-compensation occurred in several ways. Anyone with damages in excess of HAP's \$150,000 award limit automatically received inadequate compensation.¹⁷⁸ Those electing to Relocate were subject to an automatic 30% reduction in award if they had failed to carry adequate flood insurance,¹⁷⁹ and high percentages of homeowners were uninsured.¹⁸⁰ Homeowners electing to Sell and Move (out of the state) were expressly penalized: Sell and Move grant recipients could receive no more than 60% of the uncompensated value of their home, a 40% penalty for moving out of the state.¹⁸¹ Sell and Stay grantees (who could move anywhere else in the state) were subject to the

¹⁷⁴ SITUATION & PIPELINE REPORT, *supra* note 43, at 15. In Jefferson Parish, for example, those Relocating received on average \$51,000 more than those Rebuilding, and in St. Tammany Parish the difference was \$31,000. *Id.*

¹⁷⁵ See Jeffrey A. Groen & Anne E. Polivka, *supra* note 153. See also Peter Burns & Matthew O. Thomas, *New Orleans Five Years Later: Key Questions in the Rebuilding of an American City*, ANNUAL MEETING OF THE AM. POLITICAL SCI. ASS'N (2010), Christina Finch, Christopher T. Emrich & Susan L. Cutter, *Disaster Disparities and Differential Recovery in New Orleans*, 31 POPULATION & ENV'T 179 (2010), Davida Finger, *Stranded and Squandered: Lost on the Road Home*, 7 SEATTLE J. SOC. JUST. 59 (2009), Everett Fineran, *Louisiana Road Home Program: A Path of Unintended Consequences*, 26 BUFF. PUB. INT. L. J. 105 (2007), Fussell, et al., *supra* note 148, Jonathan D. Stringfield, *Higher Ground: An Exploratory Analysis of Characteristics Affecting Returning Populations after Hurricane Katrina*, 31 POPULATION & ENV'T 43 (2010).

¹⁷⁶ Groen & Polivka note that residents in high damage areas were unlikely to return after the storm to their parish of residence before the storm, a finding consistent with the popularity of the Relocate options in parishes experiencing high percentages of damage. See Groen & Polivka, *supra* note 153. Another report concludes that whether a New Orleans resident experienced housing damage was the single greatest predictor of whether they returned to New Orleans following the storm. See Fussell, et al., *supra* note 148, at 34.

¹⁷⁷ See Norcross & Skriba, *supra* note 158, at 2 n. 12.

¹⁷⁸ Under-compensation affects both the homeowners receiving the inadequate awards as well as their neighbors who see home values go down as a result of a low purchase price. Outside of the Road Home Program, homeowners' associations have been vocal opponents of buyout programs. See Rice, *supra* note 53. Moreover, although the Road Home Program's Relocate options' inherent favoritism of residents with lower home values is laudable (as those homeowners are presumably those with lower incomes), it only sets up a situation where owners of high-value homes are in the future subsidized in other ways (e.g., NFIP, repetitive loss rebuilding assistance, etc.).

¹⁷⁹ Awards from insurers were factored into the Road Home Program awards so that homeowners did not receive duplicate compensation. See Homeowner Policies, *supra* note 159, at 12. See also Finger, *supra* note 175, at 61.

¹⁸⁰ See Norcross, *supra* note 158, at 3 n. 14. In Orleans Parish 40% of residents had flood insurance. In St. Bernard's Parish just 57% of residents had flood insurance.

¹⁸¹ See Homeowner Policies, *supra* note 159, at 28. There were limited exceptions to this penalty. For instance, applicants who were elderly, disabled, or active duty military under orders to move out of state were not penalized. *Id.* at 28.

same 40% penalty if they could not purchase housing within the state by 180 days after receiving their award.¹⁸² In addition to systemic under-compensation, many complained of unfair and inconsistently applied valuation techniques.¹⁸³ Finally, the complicated and often opaque award calculation procedures limited grantees' ability to forecast their award and formulate rational decisions, stalling rebuilding efforts and frustrating the displaced.¹⁸⁴

(2) The Road Home Program lacked any compulsory mechanism for relocating residents in the most vulnerable areas and did not coordinate rebuilding efforts at the neighborhood scale. From the HMGP's inception, FEMA regulations have interpreted the Stafford Act to prohibit compulsory buyouts despite the absence of such a prohibition in the statute itself.¹⁸⁵ The Road Home Program guidelines lacked authority to require those in the most vulnerable areas to Relocate. Homeowners deciding between rebuilding or relocating faced uncertainty over the decision of others in their neighborhood: the Rebuild option became less attractive if neighbors did not also return.¹⁸⁶ There were no mechanisms in the Road Home Program's compensation efforts to coordinate Rebuilding efforts in lower hazard areas.¹⁸⁷

(3) A strong bias towards returning and rebuilding permeated the post-Katrina recovery process. Much of the Gulf Coast's post-disaster recovery effort could be characterized as "place-based" as opposed to "people-based." Rebuilding New Orleans and surrounding damaged areas in situ was a symbolic (and cathartic) response to the destruction of the hurricanes.¹⁸⁸ At least one economist has argued that the knee-jerk post-disaster rebuilding preference along the Gulf Coast is arguably a poor one.¹⁸⁹ Those electing to Rebuild were eligible for additional assistance for agreeing to elevate and/or flood-proof their homes, whereas those electing to Relocate were not.¹⁹⁰

¹⁸² See Norcross & Skriba, *supra* note 158, at 12. Homeowner Policies, *supra* note 159, at 49.

¹⁸³ See Finger, *supra* note 175, at 70.

¹⁸⁴ See Norcross & Skriba, *supra* note 158, at 7.

¹⁸⁵ Compare 44 C.F.R. § 80.11(a) (limiting eligible projects to those where "the property owner participates voluntarily" and the applicant government "will not use its eminent domain authority to acquire the property for the open space purposes should negotiations fail") with 42 U.S.C. § 5170C(b) (no mention of limiting grants of hazard mitigation assistance to governments acquiring properties exclusively from voluntarily selling property owners).

¹⁸⁶ See Norcross & Skriba, *supra* note 158, at 17 (explaining the prisoners' dilemma-type situation many residents faced as they made the decision of whether to Rebuild or Relocate).

¹⁸⁷ Without coordinated land use planning as part of an acquisition program, acquired properties will be interspersed among remaining properties. See DAVID R. GODSCHALK ET AL., NATURAL HAZARD MITIGATION: RECASTING DISASTER POLICY AND PLANNING 205 (1999) (Referring to uncoordinated acquisition of property as the "Swiss cheese effect"). This phenomenon creates numerous problems including blight, difficulty providing municipal services, inability to fully restore floodplain function, and community fragmentation.

¹⁸⁸ UNIVERSITY OF NEW ORLEANS, REPETITIVE LOSS AREA ANALYSIS: JEFFERSON PARISH, MAPLEWOOD SUBDIVISION AREA 16 (2006). Norcross & Skriba, *supra* note 158, at 6. ("Alarmed by the rate of out-migration, [Louisiana] wanted as many residents as possible to return, in order to 'restore Louisiana's impacted communities.' Program designers and federal officials feared 'devastated communities [would] be blighted by abandoned homes, clouded land titles, and disinvestments if a large portion of the financial assistance was not provided ... as incentive for homeowners to remain in affected areas.'").

¹⁸⁹ Edward L. Glaeser, *Should the Government Rebuild New Orleans, or Just Give Residents Checks?*, 2 ECONOMISTS' VOICE 4 (2005).

¹⁹⁰ See Homeowner Policies, *supra* note 159, at 28-29. This elevation bonus was the only incentive applicants had to engage in risk-reducing behavior.

(4) **The Road Home Program gave preference to homeowners over renters.** The Road Home Program was targeted most directly towards homeowners. Federal funds allocated to the Program included only 15% for rebuilding rental properties and no funding program existed for helping renters recover.¹⁹¹

(5) **The Road Home Program's application review process was slow and the Program's administration arguably was poor.** The most common criticism of the Road Home Program generally is that the disbursement process was very slow and its administration poor:¹⁹² many applicants waited years for compensation, and many went through multiple rounds of appeals and return visits or correspondence with Program administrators; there were few incentives for the private contractors running the Program to move speedily; the Program policies were not publicly available and inconsistently followed; and applicants often were unaware of the status of their application.¹⁹³ Homeowners electing to Relocate, in particular, waited on average 100 days longer than those rebuilding in place.¹⁹⁴ The Road Home Program and its state government overseers actively resisted transparency early in the implementation of the Program.¹⁹⁵

4. The Road Home Program: Success?

For all the criticism the Road Home Program received, it did manage to disburse nearly \$9 billion to Louisiana's affected residents. From the perspective of proactive, pre-disaster hazard mitigation (that is, in anticipation of the next hurricane to strike the Gulf Coast), the Program funded the acquisition of more than 10,600 homes damaged or destroyed by the 2005 hurricanes, nearly 10% of the homes receiving assistance.¹⁹⁶ In the areas that the hurricanes damaged the most, rates of participation in the Relocation option were even higher. Finally, despite the apparent penalties for selecting either of the

¹⁹¹ Other programs provided assistance to renters, but there was nothing in the \$8 billion Road Home Program for renters. Applicants electing to Relocate but remain in Louisiana in a rental unit received the same penalty as those who elected to Sell and Move. See HOMEOWNER POLICIES, *supra* note 159, at 28.

¹⁹² See Fineran, *supra* note 175 and Finger, *supra* note 175. See also David Hammer, *Auditor: State's Home Elevation Program Not Well Managed*, TIMES-PICAYUNE, July 18, 2011, http://www.nola.com/politics/index.ssf/2011/07/auditor_states_main_home_eleva.html.

¹⁹³ Eden & Boren, *supra* note 165. In a report to Congress a year after the storm, merely twenty-eight checks had been written from the Road Home Program despite the Program's receipt of 77,000 applications at that point. See Weiss, *supra* note 153. By 2012, more than 129,750 payments had been made, and only 295 applications remained outstanding. SITUATION & PIPELINE REPORT, *supra* note 43, at 1. As of Eden and Boren's study in 2008, the average wait time (duration from application date to disbursement date) for applicants was 250 days.

¹⁹⁴ Eden & Boren, *supra* note 165, at 20. The acquisition program in Louisiana was delayed as the state established a government entity to take title for the acquired lands. *Id.* RAND also notes that the Relocate options took longer to close because the state actually took title as opposed to the Rebuild option where the state merely cut a check. *Id.*

¹⁹⁵ See Finger, *supra* note 175, at 75. Interestingly critics from both the left (Finger) and right (Fineran) disparaged the program for its lack of transparency. Compare *id.* with Fineran, *supra* note 175.

¹⁹⁶ Unfortunately available data are not spatially detailed enough to identify whether those relocating were in the most vulnerable areas, so it is difficult to state with any certainty the extent to which the Program reduced flood risk. See SITUATION & PIPELINE REPORT, *supra* note 43.

Relocate options, homeowners received greater awards by choosing to Relocate.¹⁹⁷ A full assessment of the successes of the Road Home Program's Relocate provisions may be premature. The purpose of the Relocate option was to allow owners of flood-damaged homes to avoid future losses, and not until after the next storm will a better understanding of the benefits of that option emerge.

C. *Big Plans: Mississippi's Post-Katrina Acquisition Program*

Unlike Louisiana's compensation-oriented response to the 2005 hurricanes, Mississippi developed a planned effort to reduce risk by acquiring vulnerable properties. Mississippi's planned acquisition program differs from Louisiana's ad hoc approach primarily in that Mississippi's efforts have not yet been undertaken.

1. The Flooding and the Post-Flood Plan

Hurricane Katrina devastated large stretches of coastal Mississippi just as it destroyed southeastern Louisiana.¹⁹⁸ The coast of Mississippi experienced a thirty-foot storm surge, which ultimately killed more than two hundred people and caused damage to tens of thousands of housing units.¹⁹⁹ Also like Louisiana, Mississippi received substantial federal disaster recovery funding and implemented a multi-sector rebuilding program.²⁰⁰ Mississippi did not provide owners of damaged homes the equivalent of the Sell and Stay or Sell and Move options that were available to Louisiana homeowners; that is, Mississippi did not explicitly offer a Relocate option post-disaster in its HAP.²⁰¹

However, the post-disaster response in Mississippi did include a planning effort, which from an acquisition or relocation perspective, is perhaps the most ambitious ever. The United States Army Corps of Engineers ("Corps" or "USACE"), at the direction of Congress, undertook a study and planning effort to reduce future flood risks to coastal Mississippi developments.²⁰² With regard to the benefits of acquisition on coastal risks, the Mississippi Coastal Improvement Plan (MsCIP) is unambiguous: "The most effective alternative for reducing the risk from future hurricane surge events is to remove all structures and relocate population centers from the high risk zones."²⁰³

The MsCIP is a comprehensive plan for the approximately 75-mile stretch of Mississippi Gulf

¹⁹⁷ However, this statistic might mask the economics of the Relocate option. Many choosing to Rebuild likely did not start with a basis of no value and moreover retained the land value of their property, whereas Relocate awards included both land and building value.

¹⁹⁸ John Jopling, *Two Years After the Storm: The State of Katrina Housing Recovery on the Mississippi Gulf Coast*, 77 MISS. L. J. 873, 873 (2008).

¹⁹⁹ OFFICE OF GOVERNOR HALEY BARBOUR, THREE YEARS AFTER KATRINA: PROGRESS REPORT ON RECOVERY, REBUILDING AND RENEWAL 4 (2008).

²⁰⁰ Jopling, *supra* note 198, at 876. Mississippi received approximately \$5.05 billion in CDBG from Congress.

²⁰¹ See *id.* The Mississippi HAP program also received significant criticism for excluding renters. It applied, initially, only to homeowners in single-family homes. *Id.* at 887.

²⁰² 2006 Defense Department Appropriations Act, *supra* note 155 ("the Secretary shall conduct an analysis and design for comprehensive improvements or modifications to existing improvements in the coastal area of Mississippi in the interest of hurricane and storm damage reduction, prevention of saltwater intrusion, preservation of fish and wildlife, prevention of erosion, and other related water resource purposes at full Federal expense").

²⁰³ MsCIP EIS, *supra* note 38. The EIS reports that approximately 32,500 structures were more than 50% damaged and an additional 15,000 to 25,000 were significantly damaged within Mississippi's coastal region. The USACE also reports that rebuilding following Katrina was slower than expected because of higher construction costs and uncertainty related to flood insurance availability. *Id.*

Coast.²⁰⁴ The MsCIP recognizes the broad problems of “significant damage to structures and infrastructure ... due to hurricane-induced storm surge” and “significant erosion of the coastal landscape with subsequent damage to ... man-made infrastructure,” and the opportunity to “reduce the susceptibility of residential, commercial, and public structures and infrastructure to hurricane-induced storm damages [in the coastal zone].”²⁰⁵ The MsCIP also recognizes concerns pertaining to damage of coastal ecosystems, and opportunities to restore and recover ecological assets.²⁰⁶ Significantly, the MsCIP also makes the assumptions, among others, that sea level will continue to rise and that demand for waterfront living will not abate.²⁰⁷ From this identification of problems, opportunities, and assumptions came potential problem-solving “measures.” One of the primary measures recommended is the “Long-term High Hazard Risk Reduction Plan” (HARP), a recommendation to engage in the “acquisition of high-risk properties over a 30 to 40 year period.”²⁰⁸

2. The MsCIP Acquisition Plan

The HARP proposal entails a two-part property acquisition strategy. HARP Phase I involves the acquisition of properties that either have been frequently flooded or are at very high probability of future damage due to storm surge.²⁰⁹ HARP Phase I will seek to acquire 2,000 of 15,000 parcels in the high-hazard area at a total cost of approximately \$407 million.²¹⁰ These parcels include primarily residential uses, but some public buildings are also identified as explicitly recommended to be relocated.²¹¹ The HARP Phase I targets currently undeveloped parcels in high-risk areas so that acquisition can occur before development occurs on those parcels and increases the market value of those parcels. The MsCIP estimates that the 2,000 targeted parcels could be acquired in a five-year period.²¹²

HARP Phase II takes a more reactive approach and would allow a future disaster to be the impetus

²⁰⁴ *Id.* at 1-4. For comparison purposes, Connecticut’s coastline is approximately 330 miles because of the state’s many small bays and estuaries. See Connecticut Dept. of Energy & Env’tl. Protection, *Interesting Connecticut Facts*, <http://www.ct.gov/deep/cwp/view.asp?A=2688&Q=322362> (last visited Mar. 30, 2012).

²⁰⁵ MsCIP EIS, *supra* note 38, at S-4.

²⁰⁶ *Id.* Indeed much of the MsCIP’s focus is on restoring ecological function. Acquisition is but one part of a twelve-point strategy. Nine of the other points pertain to restoring ecological function of various barrier island, dune, and wetland systems. *Id.* at S-10. By dollar amount, the acquisition program constitutes 40% of the total plan. *Id.* at S-11.

²⁰⁷ *Id.* at S-6 (“The demand for waterfront and near-waterfront living will not decrease in the future as a result of hurricanes (i.e., people will always want to live by the water).”). See also USACE, MISSISSIPPI COASTAL IMPROVEMENTS PROGRAM (MSCIP) HANCOCK, HARRISON, AND JACKSON COUNTIES, MISSISSIPPI: COMPREHENSIVE PLAN AND INTEGRATED PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT – NON-STRUCTURAL RESPONSE, APPX. D 264 (June 2009) [hereinafter MSCIP APPX. D].

²⁰⁸ MsCIP EIS, *supra* note 38, at S-12.

²⁰⁹ *Id.* at 3-54. Flood risks were determined using detailed, plan-specific process. The USACE and its consultants did not rely exclusively upon existing FEMA flood maps, but created new models using the latest flood data. In general, the “catastrophic damage zone,” the area where most structures were totally destroyed or severely damaged, was within 800 feet of the beachfront.

²¹⁰ *Id.* at 3-54, 4-30.

²¹¹ *Id.* at 3-55. The EIS notes that public facilities frequently take on secondary importance during disasters, serving as points of refuge, staging areas for emergency provision distribution, and headquarters for emergency service coordination and response. *Id.* at 3-56.

²¹² *Id.* at 3-54. The Mississippi coastal floodplain includes 59,000 parcels. Acquiring even a small percentage of the total number of vulnerable parcels in a short timeframe could have adverse effects on the local tax base and would be prohibitively expensive from a public funds perspective.

for wide-scale relocation.²¹³ The MsCIP recognized that the rebuilding process following Katrina's destruction "might already be too far advanced to relocate a significant number of residents at this time."²¹⁴ HARP Phase II thus entails acquiring structures "after the next significant storm event, and before another major reconstruction effort within the high-hazard surge-plain begins."²¹⁵

The USACE presented the HARP plans to the public in a series of meetings, and the immediate message from the public was largely opposed to large-scale acquisitions.²¹⁶ Affected residents indicated preferences for non-structural elements such as evacuation planning and building code enhancements.²¹⁷ A general public consensus was that acquisition should be limited to those areas having a 1% annual chance of inundation from a hurricane or storm surge.²¹⁸

The HARP proposal recognized that not all structures in the high-hazard areas shared the same vulnerability: "well-armed" structures, such as concrete high-rises are more survivable than single-family cottages.²¹⁹

3. HARP: Setting the Stage for Future Acquisition Programs

The most significant finding in the HARP planning and environmental impact statement preparation process is the recognition that acquisition is a more cost-effective long-term strategy than protection of properties in high-hazard areas through seawalls, levees and other structural means.²²⁰ Moreover, the MsCIP EIS found that the benefits (the avoided damages) of acquiring and relocating vulnerable structures were greater than the avoided damages of structural protection.²²¹

The MsCIP EIS noted additional benefits of the HARP Phase I. For instance, the MsCIP found that the acquisition of properties would result in regional economic benefits of \$3.29 billion from increased real estate transactions.²²² The MsCIP also estimated that the Phase I acquisition program would yield a net of 5,200 new jobs.²²³

The MsCIP EIS also addressed concerns about the displacement of low-income and/or minority

²¹³ *Id.* at 3-55.

²¹⁴ *Id.*

²¹⁵ *Id.*

²¹⁶ *Id.* at 3-54. See also Coleman Warner, *Buyout or Sellout: A Federal Plan to Purchase Properties along Mississippi's Coast has Bay St. Louis Residents Thinking Twice about Rebuilding*, TIMES-PICAYUNE (Sept. 23, 2007). Residents feared that the plan to engage in large-scale buy-outs would impair recovery two years after the hurricane. One resident interviewed in the Warner article stated, "This is too much, too late. If they were going to do something like this, it might have been beneficial soon after the storm... Uncertainty right now is the last thing we need. People need confidence." *Id.*

²¹⁷ MsCIP EIS, *supra* note 38, at 3-54.

²¹⁸ *Id.*

²¹⁹ *Id.* at 4-25. The implications of the differential vulnerability raise a host of secondary concerns. Concrete high-rises are less vulnerable in the short-term (and therefore more appropriate for the high-hazard areas), but are more expensive and difficult to relocate in the long-term. Under scenarios where rising and receding shorelines are a larger concern than hurricanes and storm surge, concrete high-rises may be a less appropriate long-term adaptation response.

²²⁰ *Id.* at 4-31. Phase I of HARP pencils out to about \$407 million to acquire 2,000 structures and the property on which those structures are located. The USACE estimates the acquisition program would take five years to implement, with a rate of 400 structures per year and a cost of \$24 million per year. Damages were expected to range from \$22-33 million per year.

²²¹ *Id.* at 5-11.

²²² *Id.* at 5-10. Contrary to many affected residents' immediate concerns about the impact on the economy, the redevelopment needs would result in substantial net regional economic benefits.

²²³ *Id.*

populations as part of a targeted acquisition program. The EIS found that the adverse impact on low-income populations under a structural protection-based strategy would likely be *greater* than under an acquisition and relocation program.²²⁴ This conclusion is based on the recognition that redeveloping in place will necessitate meeting higher building code standards, which will tend to increase significantly the cost of housing. Finally, the MsCIP EIS notes that the acquisition and removal of structures from floodplains will have significant positive environmental and ecological benefits. Relocation of structures will provide opportunities for wetland restoration and the restoration of other sensitive habitat.²²⁵

The MsCIP's recommendations regarding the HARP Phase I acquisition program have not yet been implemented. The USACE submitted its findings to Congress in early 2011, and is awaiting legislation appropriating funding for the project. Public discussions regarding the viability of a large-scale acquisition program in coastal Mississippi predictably were "emotionally charged."²²⁶ Similarly, portrayals of the HARP acquisition proposals in the popular press were mixed, with some residents expressing strong reservations to any such policy and others indicating support, if reluctantly.²²⁷

Coastal Mississippi has not yet implemented a large-scale acquisition and relocation program, but it is arguably closer to doing so than any other jurisdiction at this time. The MsCIP is the first comprehensive, state-wide plan recognizing the need to relocate development away from high-hazard coastal areas. It recognizes the benefits of such an approach and the increasing need for relocation to occur.

D. Acquisition in Response to Non-Coastal Floods

Acquisition of flood-damaged or flood-prone development has been a not uncommon response to devastating non-coastal flooding. Acquisition programs first received significant attention following the record-breaking 1993 Mississippi River flood, after which FEMA sponsored buyout programs for numerous communities across the Midwest.²²⁸ The 1993 floods killed more than thirty people and caused \$16 billion in damage.²²⁹ In response to the floods, FEMA and analogous state agencies funded the acquisition of 7,700 properties in the amount of \$56.4 million.²³⁰

²²⁴ *Id.* at 4-23 to 4-24. Concerns remain, however, regarding the affordability of housing for residents as the housing stock is diminished. See USACE, MISSISSIPPI COASTAL IMPROVEMENTS PROGRAM (MSCIP) HANCOCK, HARRISON, AND JACKSON COUNTIES, MISSISSIPPI: COMPREHENSIVE PLAN AND INTEGRATED PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT, REAL ESTATE, APPX. C 277 (2009) [hereinafter MSCIP APPX. C] ("The availability of decent safe and sanitary housing is a potential problem. Large scale construction of new residences will most likely be required.").

²²⁵ MsCIP EIS, *supra* note 38, at 3-39.

²²⁶ *Id.* at 3-54.

²²⁷ See Warner, *supra* note 216. Some residents advocated for a speedy implementation of the plan (if at all); others wanted the buyouts to be mandatory (if at all) because delivery of municipal services to far-flung, low-density, patchwork development would be even more costly if some property owners elect to remain in the floodplain. *Id.*

²²⁸ See Nicholas Pinter, *One Step Forward, Two Steps Back on U.S. Floodplains*, 308 SCI. 207 (2005).

²²⁹ *Id.*

²³⁰ *Id.* Before enacting the PDM program, in the late 1980s and early 1990s, Congress authorized the acquisition of damaged properties through the NFIP in a program known as the Upton-Jones Amendment. Under Upton-Jones, a claimant could receive up to 100% of the insured value of a damaged structure for demolishing it following a claimable event; alternatively, the claimant could receive up to 40% of the value of the structure to relocate it from the high-hazard floodplain. See McGlashan, *supra* note 5, at 14. The vast majority of the claims paid out under this program were for demolition, and the majority of the claims were from North Carolina. *Id.* Many of the relocated structures were simply placed on large tractor-trailer-pulled beds and driven via public roads to new locations. See Rogers, *supra* note 45. Congress declined to reenact the Upton-Jones Amendment in 1995, and it is today little more than a historical footnote.

In at least one instance, an acquisition program in response to the 1993 Mississippi River floods led to the relocation of an entire town.²³¹ Valmeyer, Illinois was virtually devastated by the August 1993 flood.²³² After nearly two years of planning and coordinating—almost all of it led by the affected community—Valmeyer was rebuilt on a 500-acre parcel of agricultural land just 1.5 miles linearly from where the original town had been flooded. Significantly, however, the new town is 400 feet higher in elevation, situated on a bluff overlooking the floodplain.²³³ Nearly 60% of the pre-flood population of Valmeyer moved to the new town and as of 2005, the population of the town had nearly returned to its pre-flood level.²³⁴

Although the Mississippi Basin and the upper Midwest have received a disproportionate amount of attention and funding for acquisition programs, such programs have occurred elsewhere. For example, Hurricane Floyd caused significant damage along the coastal plain of North Carolina in September 1999.²³⁵ Following the flood, the heavily damaged cities of Kinston and Greenville undertook acquisition programs.²³⁶ In Kinston, more than 700 property owners volunteered to sell, and in Greenville approximately 450 property owners volunteered to relocate.²³⁷ The acquisition programs and post-hurricane recovery efforts were recognized as opportunities for economic and community development.²³⁸

Since those 1993 floods, FEMA has spent in excess of \$2 billion to acquire approximately 36,700

²³¹ See Knobloch, *supra* note 32, at 41.

²³² *Id.* The town had survived fifty years alongside the Mississippi River protected by USACE-built levees. In the years before the 1993 floods, businessmen, politicians, and residents of Valmeyer grew frustrated with the limitations on development in the levee-protected floodplain and sought “solutions” to circumvent the limitations on new development in flood hazard areas. Less than a decade later, the entire town stood more than sixteen feet underwater and nearly entirely devastated by a flood. Mr. Knobloch, the author of the piece describing his town’s dealings with floodplain restrictions, a flood, and the aftermath of relocating, was mayor of Valmeyer at the time of the flood. He was also among the staunch local supporters for allowing more development in the floodplain. *Id.* at 42.

²³³ *Id.* at 45.

²³⁴ *Id.* at 44. Valmeyer represents one of the best examples of an entire community or town being relocated following flooding. Allenville, Arizona is another such example. Allenville, a predominantly low-income black community, was situated along the Gila River and experienced severe flooding following the development of reservoirs upstream. See Perry & Lindell, *supra* note 27, at 50-53. Moore’s Beach, New Jersey is another example of wholesale community relocation — or perhaps properly described as abandonment. United States Geologic Survey topographic maps show the small town of Moore’s Beach situated on the estuarine shoreline of the Delaware Bay as far back as the 1890s. However, by the late 1980s, only one family remained in full time residence, and by the time this author visited the site in 2004, no structures remained. See *Flood Insurance Cutbacks Imperil Jersey Beach Homes*, NY TIMES, May 27, 1987. Finally, the USACE and leaders of the Inuit village of Kivalina, Alaska engaged in deep discussions to relocate the entire village from its current, vulnerable barrier island location to the mainland. See USACE, *supra* note 34. See also ORRIN H. PILKEY & ROBERT YOUNG, *THE RISING SEA* 14 (2009). Kivalina is currently the plaintiff in a high-profile common law suit against numerous polluters of greenhouse gases pending in the United States Ninth Circuit Court of Appeals. See *Kivalina v. ExxonMobil Corp.*, No. 08-1138 (9th Cir. 2011).

²³⁵ FRASER ET AL., *supra* note 30, at 13.

²³⁶ *Id.* at 13-15. Both Kinston and Greenville are located along rivers and well-inland of any estuarine or ocean floodplains.

²³⁷ *Id.* Like Allenville and Kivalina, the Kinston acquisition program involved relocating primarily low-income and minority residents. In the floods that originally destroyed Kinston, residents rallied to save community focal points such as a church. *Id.* at 17. Civic landmarks can be the focal point of community rallying and encouraging or incentivizing people to leave those features behind can be extraordinarily difficult even in the face of future floods.

²³⁸ *Id.* at 15.

properties nationally, primarily in the Midwest and along the Mississippi.²³⁹ Additional federal funding was contributed to these acquisition programs through CDBGs.²⁴⁰ From 2003, the year the Pre-Disaster Mitigation grant program became a full-fledged FEMA program,²⁴¹ until 2010, the PDM funded nearly seventy projects in seventeen states in an aggregate amount in excess of \$45 million.²⁴² The vast majority of these PDM acquisition efforts were very small. For instance, one project in the state of Washington sought to acquire just three coastal houses.²⁴³ On a slightly larger scale, Gurnee, Illinois acquired forty-five properties over the course of two grants.²⁴⁴ Likewise, DeKalb, Georgia received five grants over four years, totaling \$4.5 million to acquire just one flood prone subdivision.²⁴⁵ On a similar scale, Canton, Maine, acquired thirty-five structures under a 2005 grant and received a second grant in 2007 for an additional \$2.1 million.²⁴⁶ These PDM acquisitions demonstrate the versatility and scalability of acquisition as a response to flood hazards.

V. Legal Issues and Recommendations for Future Acquisition Programs

Given the projected effects of climate change and the subsidies coastal development receives, development will persist in hazardous areas absent intervention. Now is the time to begin planning a wide-scale acquisition program for other states. This final section identifies concerns acquisition programs might raise and offers lessons from acquisition programs along the Gulf Coast, in the Mississippi River Basin and elsewhere. This review does not aim to be comprehensive; rather, it intends to merely start the conversation about how best to use acquisition programs to encourage relocation away from high-hazard coastal areas.

A. Issue-Spotting: Some Concerns with Acquisition Programs

In Louisiana, the much-maligned Road Home Program managed to fund the acquisition of more than 10,000 flood-damaged homes. In Mississippi, a plan with ambitions of a similar scale remains on the drafting table, waiting to be implemented. The biggest difference between the two is the availability of funding: Louisiana received an enormous U.S. taxpayer-funded grant to engage in

²³⁹ See Lieb & Salter, *supra* note 79.

²⁴⁰ *Id.*

²⁴¹ The PDM had existed for the six years before 2003 as a much smaller (by dollar amount) “pilot” program. See FRANCIS X. MCCARTHY & NATALIE KEEGAN, CONG. RES. SERV., FEMA’S PRE-DISASTER MITIGATION PROGRAM: OVERVIEW AND ISSUES 4 (2009).

²⁴² Fiscal year 2010 is the most recent year for which a full year’s worth of data is available. See Best Practices, *supra* note 44.

²⁴³ See Lummi Nation, *supra* note 46, at 218.

²⁴⁴ Best Practices, *supra* note 44, at 231. Gurnee obtained both state and federal funding to complete its acquisition program, but relied on local and private funding as well.

²⁴⁵ *Id.* at 77. DeKalb County’s Jackson Square Condominium acquisition shows that, while difficult, buyouts of multi-family structures are possible as well. Anecdotally, the more common model involves the acquisition of privately owned single-family structures, perhaps because the ownership structures are easier for the acquiring government entities to untangle and because of the lower likelihood of an individual holdout stalling the acquisition process. However, multi-family structures are likely to be vulnerable to flooding concerns as well, and acquiring governments should not overlook the interests of residents of such housing types, especially multi-family rental units. Of course, due care must be given to finding replacement housing for these residents and renters in multi-family residences should be encouraged to participate in the public process alongside homeowners.

²⁴⁶ Maine Emergency Management Agency, *Risk Assessment*, in MAINE HAZARD MITIGATION PLAN 3-14 (2010).

acquisition; Mississippi is still awaiting funds for its planned, large-scale relocation program.²⁴⁷

Careful preparation and planning cannot overcome the importance of appropriations in the success of an acquisition program. Without the capital to provide compensation to property owners, acquisition programs simply do not exist. The appropriations question is a political one and is very difficult to resolve. Legal concerns with acquisition programs exist. Some of the most significant are considered here.

(1) **Claims of Discrimination.** Coastal areas contain both extraordinarily wealthy enclaves and some very poor communities.²⁴⁸ Because acquisition programs will likely be funded by a declining-balance appropriation, a limited pool of acquisition funds can aid more households in lower-income areas than in wealthy ones. Acquisition program designers will have to take great care to ensure that an acquisition program does not have a disproportionately discriminatory effect on a racial basis, certainly; but also avoid discriminating on the basis of wealth. If an acquisition program skews too heavily towards buying out high-value properties, it could be subject to criticisms of being “welfare for the wealthy.” On the other hand, if an acquisition program skews too heavily towards low-income areas, it could engender suspicions that it is a “slum-clearing” effort or is making way for larger homes to remain behind. In Louisiana, the Road Home Program dealt with discrimination lawsuits that created unhelpful distractions and damaged trust between the program coordinators and the affected communities.²⁴⁹ Intensive opportunities for public participation and outreach can be one way to overcome such concerns.

(2) **Fair Market Compensation.** Acquisition and renewal efforts have regularly confronted the problem of property owners believing they are undercompensated.²⁵⁰ Many such property owners engage in the acquisition program begrudgingly, having already lost or suffered much. Receiving a “low-ball” offer from the government can seem like insult on top of injury, and can be a major rallying point for opponents to acquisition programs. The appraisal process must be exceedingly transparent, and opportunities for appeals must be both speedy and accessible.²⁵¹

(3) **Lack of Participation.** As the famous baseball player Yogi Berra quipped, “If the fans don’t come out to the ball park, you can’t stop them.”²⁵² So too is it with an acquisition program that relies entirely upon voluntary participation. No amount of planning, participation, or careful design can overcome determined resistance on the part of the affected community. In the face

²⁴⁷ Mississippi did engage in some relocation after Hurricane Katrina, but the scale was much smaller than Louisiana’s. See April M. Havens, *Jackson County’s Home Buyout Program Nearing Completion*, MISSISSIPPI PRESS, Jan. 10, 2012 (reporting that Jackson County Board of Supervisors purchased fifty-six flood-prone or flood-damaged single family owner-occupied and rental properties).

²⁴⁸ See Bagstad et al., *supra* note 34, at 286 (describing wealth disparities among residents of coastal Louisiana).

²⁴⁹ See Martha Carr, *State Settles Road Home Discrimination Case*, TIMES-PICAYUNE, July 6, 2011, http://www.nola.com/politics/index.ssf/2011/07/state_settles_road_home_discr.html.

²⁵⁰ The federal Uniform Relocation Assistance and Real Property Acquisition Policies (42 U.S.C. §§ 4601-4655) (URA) was passed for the purpose of ensuring constitutional compliance with federal programs involving the acquisition of private property. See *Alexander v. Dep’t. of Housing & Urb. Development*, 441 U.S. 39, 50 (1979). However, the URA does not apply when property owners voluntarily sell real property to the federal government. See 49 C.F.R. § 24.101(b). Compliance with the URA may be necessary if the owner of the acquired property leases to residential tenants who do not relocate voluntarily.

²⁵¹ The Louisiana program suffered in its early years because the program lacked transparency. See Finger, *supra* note 175, at 75.

²⁵² STEVEN D. PRICE, 1001 FUNNIEST THINGS EVER SAID 63 (2006).

of a lack of participation, acquisition program coordinators might offer inducements to participate such as expedited application processing, or some form of limited-time financial inducement (e.g., relocation assistance, paying the closing costs for purchasing a new home). Acquisition advocates might also publicize the risks of remaining in place, offering documentation of losses, and a lack of certainty about the availability of funding in the future. A targeted public information campaign could be part of the early phases of the acquisition effort. There may also be opportunities to mandate relocation through either non-conforming use provisions in zoning ordinances or involuntary buyouts. These efforts should only be undertaken after voluntary programs have been given an opportunity to succeed or for the highest hazard areas where losses are virtually certain.

(4) **Continued Growth in High-Hazard Areas.** Finally, acquisition programs may confront the concern that despite efforts to relocate development away from high-hazard areas, demand to live near the water will continue. As the USACE noted in the introduction to the MsCIP, demand for coastal living is unlikely to diminish despite the widespread publication of and increasing certainty of losses from coastal hazards.²⁵³ To counteract such continued growth, communities implementing acquisition programs will have to implement restrictive zoning and other land use controls.²⁵⁴ Comprehensive analysis of such efforts is beyond the scope of this research, but suffice it to say diminishing coastal development demand will be politically difficult, and will likely engender opposition similar to the development of acquisition programs.

B. Lessons from Previous Acquisition Programs.

Past and planned acquisition programs demonstrate that communities can reduce the risks of coastal and other flooding hazards by removing development from high-hazard areas.²⁵⁵ Moreover, past acquisition programs offer insight for implementing and improving upon future property acquisition programs, whether post-disaster or pre-disaster. These recommendations are grouped into three categories: (1) Draft a Spatially-Informed, Publicly-Inclusive Hazard Mitigation Plan, (2) Implement the Acquisition Program, and (3) Reduce Subsidies to Development in Coastal Hazard Areas.

1. Draft a Spatially-Informed, Publicly-Inclusive Hazard Mitigation Plan

a. Prepare a Comprehensive Acquisition Plan before a Disaster Occurs

A state or local government seeking to relocate vulnerable property via an acquisition program should develop a plan to set forth its objectives and success criteria. Ideally, the acquisition plan would be part of or at least consistent with the jurisdiction's comprehensive land use plan and any relevant hazard mitigation plan. Finally, and as discussed further below, the plan should also be informed by the spatial variation of risk.

A common theme from the Louisiana, Mississippi, and Mississippi River experiences is the

²⁵³ See MsCIP EIS, *supra* note 38, at S-6. See also National Wildlife Federation, *supra* note 28, at 35.

²⁵⁴ See Nichols & Bruch, *supra* note 6, at 19 (setting forth a number of policy strategies for managing coastal development in the face of climate change).

²⁵⁵ MsCIP EIS, *supra* note 38, at 4-31. Although formal studies have not been conducted for Valmeyer, it is now located well outside of the floodplain and almost certainly has much lower flood risk than it did in late July 1993 before the Mississippi River flooded and destroyed the town.

importance of emergency management and planning officials having devoted significant thought and preparation effort to an acquisition program *before* a disaster occurs. Louisiana's Road Home Program was bogged down by delays in part because the scale of devastation had not been contemplated before the storm. Mississippi missed an opportunity to act before rebuilding occurred because no acquisition plan was on the shelf to implement after the disaster struck. The former mayor of Valmeyer underscored the importance of planning best: "It is much easier to convince people that living in the shadow of a major waterway is a risk when they are standing knee-deep in flood water. It is also more expensive for government agencies to deal with situations like this in a reactionary mode."²⁵⁶

b. Engage the Public in Planning the Acquisition Program

The plan must involve the affected public from the very beginning, and, at a minimum, community members should have a continuing opportunity to provide feedback and concerns. Preferably, the affected community would be integrally involved in designing and implementing the plan and the subsequent acquisition program rather than relying on state or non-affected officials.

Land use decision-making is inherently local, and members of the public are typically deeply passionate about their homes and their community. The post-Hurricane Floyd acquisition programs in coastal North Carolina stalled when the communities being bought out felt government officials were dictating an outcome to them.²⁵⁷ In Valmeyer, on the other hand, nearly the entire town was involved in some part of the acquisition and relocation planning process.²⁵⁸ Relocating Valmeyer was an opportunity for the community to face and overcome a common problem. The more attached a community is to their place and to each other, the more important it is to include them in the process of relocation. Acquisition is more than simply appointing a government agency or a consultant to cut checks and send people on their way.

c. Incorporate Risk-based Land Use Planning

The acquisition plan should recognize the spatial variability of coastal risks and offer differing incentives accordingly. Alternatively, a compulsory relocation mechanism may be appropriate in extreme circumstances (such as for properties that have received federal assistance in the past).

The primary design difference between the Louisiana and the Mississippi post-hurricane risk-reduction programs examined above is Mississippi's response sought to prioritize its acquisition based on a spatially determined hazard assessment whereas Louisiana's Road Home Program response did not include spatial risk assessment.²⁵⁹ Under the Louisiana Road Home Program, each grant recipient faced the same programmatic benefit for accepting a buyout; that is, the program did not distinguish its award based on the recipient's risk. Although the benefit of the Road Home Program is unknown until the next storm hits, if properties in identified high-hazard areas had a greater incentive to relocate than those in low-hazard areas and more homeowners had elected to relocate, the benefit of the acquisitions likely would have been greater. The USACE attempted to rectify this concern in Mississippi

²⁵⁶ Knobloch, *supra* note 32, at 45.

²⁵⁷ Fraser et al., *supra* note 30, at 13-15.

²⁵⁸ Knobloch, *supra* note 32, at 44-45.

²⁵⁹ The USACE-led MsCIP analog for Louisiana did include numerous references to relocation and acquisition as possible non-structural flood mitigation measures, but did not propose anything approaching the magnitude of the MsCIP. See USACE, LOUISIANA COASTAL PROTECTION AND RESTORATION (LACPR) FINAL TECHNICAL REPORT NONSTRUCTURAL PLAN COMPONENT APPENDIX A1-1 (2009) [hereinafter LACPR FINAL TECHNICAL REPORT].

by identifying priority relocation areas and planning the massive acquisition effort in phases.²⁶⁰ Although MsCIP has yet to be implemented, the benefits of the spatial design components are manifest: Mississippi can target acquisition funds to high-hazard areas where the payback is the greatest rather than disperse funds in an *ad hoc*, unplanned manner where the risk-reduction benefit of each dollar spent is unknown.²⁶¹

d. Identify Hazards and Vulnerable Development

The first step in using spatial analysis to inform acquisition efforts is to identify the flood hazards, the development subject to those hazards, and any information pertaining to past insurance payouts for flood losses. Digital flood maps are likely the best source of hazard-identification data. Cadastral and census data will likely form the basis for identifying the vulnerable development areas and the magnitude of vulnerabilities. When combined in a geographic information system (GIS) software package and analyzed using models such as HAZUS,²⁶² acquisition program coordinators can create quantitative and spatial analyses of vulnerability. When flood probability information is overlaid on the vulnerability maps, program coordinators will have the risk profiles upon which acquisition targets can be based.

e. Establish Acquisition Priority Zones

Quantitative risk assessments should inform areas targeted for acquisition, but such areas should also be based heavily on community preferences, the availability of alternative mitigation measures, and other planning concerns. For instance, a community might wish to prioritize acquiring properties contiguous with existing nature preserves to create habitat corridors or properties that would facilitate public access to the beach or properties that meet other spatial planning objectives. In this phase of the planning process, the acquisition program coordinators should be most mindful of concerns regarding unfair or illegal discrimination.

Priority zones can be established in phases, as in the MsCIP. Maps can be established that show relatively high-priority acquisition areas in the near-term as opposed to one or more lower-priority, long-term acquisition areas. This portion of the analysis should be used in coordination with amendments to local zoning maps so that additional new development does not continue in the targeted acquisition areas, and future acquisition efforts are made easier through attrition.²⁶³

f. Identify Redevelopment Areas

Finally, spatial planning can be used to inform the redevelopment process. The same hazard and vulnerability criteria and analysis that formed the basis of the risk assessment can be used to identify

²⁶⁰ See generally MSCIP APPX. D, *supra* note at 185, 202-49 (showing maps depicting flood hazards and phases for acquiring flood prone properties).

²⁶¹ Notes the LACPR: "The State now owns thousands of properties by acquisition through the Road Home Program and the disposition of those properties will affect future flood-risk levels in the region. The nonstructural program must begin with an assessment of these ongoing recovery efforts, specifically the Road Home Program, to develop a strategy for integrating risk reduction across other agencies' mission areas." LACPR FINAL TECHNICAL REPORT, *supra* note 259, at 215.

²⁶² Heather Beckmann & David M. Simpson, *Risk Assessment and GIS in Natural Hazards: Issues in the Application of HAZUS*, 6 INT'L J. RISK ASSESSMENT & MGMT. 1466 (2006) (raising concerns with the use of HAZUS as a hazards modeling tool).

²⁶³ See *supra* Part IV.B.4.

areas of low hazard where new development should be focused. Redevelopment areas should harmonize with other community plans and zoning regulations. In addition to using risk assessments to inform redevelopment areas, planners should incorporate transportation and other infrastructure data as well as spatial information pertaining to economic development objectives and opportunities.

2. Implement the Acquisition Program

a. **Coordinate Federal-State Bureaucratic Communication to the Affected Community**

Acquisition programs will fall under the purview of numerous federal and state agencies. For instance, such programs will likely be subject to the oversight and input of federal and state emergency management agencies, environmental agencies and natural resource agencies (e.g., the U.S. Fish & Wildlife Service), archaeological and historic resource agencies, and likely many more. The MsCIP listed more than two dozen participating agencies,²⁶⁴ and the mayor of Valmeyer noted the overwhelming complication of one community coordinating input, oversight, and approvals among twenty-five state and federal agencies.²⁶⁵ The government designers of an acquisition program, whether state or local, should ensure that all communication from “the government” to “the community” is consistent and coordinated, ideally through a single point of contact. Moreover, the relationship between the implementing government agents and the community should be established and strong before any disaster occurs.

b. **Ensure the Acquisition Program Begins Well**

First impressions matter, and with something as potentially controversial as an acquisition program, starting strong is essential. The first few acquired properties should receive disproportionate attention and administrative resources, and should be handled with excess care to ensure the acquisition efforts begins smoothly. Program implementers should look for an eager-to-move project to use as a “pilot” and should craft a messaging campaign around its successes. Overcoming obstacles and challenges once the program is fully functioning is much more achievable if the program coordinators have positive coverage of an early project to point to as precedent.

One strategy for achieving an early success is to relocate public buildings such as a school, fire station, or municipal building. By undertaking an effort to relocate community resources to a safer area, the government implementing the acquisition program is showing that the plan is not a forced relocation of unwilling residents, but a sensible reduction of risk. Moreover, it can demonstrate that life can carry on as normal after the relocation. Relocating public facilities first was one strategy in the MsCIP.²⁶⁶

c. **Create an Offload Market for Acquired Properties that are not in Vulnerable Areas**

Under the current federal regulations, properties acquired with HMA funds may not be built upon again,²⁶⁷ but that does not mean that those properties must remain valueless. Planners should be creative about revenue-producing land uses that can be flooded. For instance, it may be possible to convert parcels acquired in urban areas into parking lots or athletic fields. Large areas of contiguous

²⁶⁴ MsCIP EIS, *supra* note 38, at 1-23 to 1-26.

²⁶⁵ Knobloch, *supra* note 32, at 44.

²⁶⁶ See MsCIP EIS, *supra* note 38, at 3-56.

²⁶⁷ 44 C.F.R. § 80.17(e).

acquired areas could be converted to agricultural use. Another significant benefit of acquiring large contiguous floodplain areas is the ability to restore the natural function of those floodplains.

Program coordinators may also identify volunteers who wish to sell, but who face comparatively lower flood probability. In order to overcome the “patchwork” of unwanted parcels interspersed among occupied areas,²⁶⁸ it may be possible to use unrestricted, non-federal funds to purchase these properties and resell them or convert them to affordable housing or some other locally desirable use.

d. Balance Speed and Efficiency

An acquisition program, once up and running, needs to move quickly enough to provide participating property owners with satisfactory payment and relocation assistance, but not too fast that it is susceptible to errors.²⁶⁹ The Road Home Program received extensive criticism for its inefficiencies and delay.²⁷⁰ Setting and sticking to disbursement benchmarks may have provided the right incentives for the contractors running the program. Moving too fast, however, makes oversight and coordination difficult. It should be noted that so far the Road Home Program largely avoided allegations of fraud or impropriety, no small feat for a program disbursing \$9 billion in small increments to displaced residents. Moving slowly may be partially responsible for avoiding improprieties in order to engage in careful auditing and fraud detection. Likewise, the MsCIP proposal planned to take as long as forty years because there was widespread recognition that the program would develop momentum over time,²⁷¹ and pushing communities to relocate too early in the program would engender opposition and resentment.

e. Use an Acquisition Program in Tandem with Concentrated Redevelopment Efforts in Low-Hazard Areas.

As one long-time observer of coastal hazards has noted for a decade or more, hurricanes are often “urban renewal” programs for coastal areas.²⁷² Although this statement was directed at the areas leveled by the storm and in which development subsequently springs forth anew multiple times bigger, the post-disaster rebuilding phenomenon can be harnessed to make acquisition programs more

²⁶⁸ One problem in Louisiana following the disbursement of Road Home funds was the emergence of communities where many members elected to Relocate while others elected to Rebuild. Those Rebuilding were subject to significantly thinned out neighborhoods and were often surrounded by vacant or underutilized parcels that drove property values down and contributed to blight. Post-acquisition elements of the plan should account for these concerns and include measures to put vacant, but still viable land back to productive and community-benefitting uses.

²⁶⁹ See Olshansky et al., *supra* note 147, at 369. Prof. Olshansky notes that the most important aspect of balancing speed and efficiency is the option of the implementing agency to be flexible: to occasionally work quickly or occasionally be deliberative, as the needs may be.

²⁷⁰ See, e.g., Fineran, *supra* note 175 and Finger, *supra* note 175.

²⁷¹ See MsCIP EIS, *supra* note 38, at 3-55.

²⁷² DAVID M. BUSH, ORRIN H. PILKEY & WILLIAM J. NEAL, *LIVING BY THE RULES OF THE SEA* xi (1996). See also *After Hurricane, Loss of Beach to Erosion Appears to Be Inevitable*, NY TIMES, Aug. 31, 1998 (“I’ve not seen a hurricane have a big impact on development just other than to bring in bigger and better buildings,” Dr. [Orrin] Pilkey said. “That’s really fundamentally the impact these things have. *It’s really an urban renewal project.*” (emphasis added)); Mike Lafferty, *Beaches Show Nature Always Knows Best*, ORLANDO SENTINEL, Oct. 8, 2004 (“I’d be willing to lay money that there is going to be an urban renewal project [on the beach] and nobody will learn anything.” (quoting Dr. Pilkey)); Orrin H. Pilkey, *When Will We Ever Learn the Lessons of Hurricanes?* CNN OPINION, Aug. 26, 2011 (“[T]he most recent hurricanes hitting the East Coast—Hugo (1989) and Fran (1996) for example—have been urban renewal projects.”).

palatable, *provided the redevelopment occurs in areas with significantly lower hazards.*

Relocation/redevelopment programs may emerge through a transfer of development rights scheme,²⁷³ growth incentive zoning,²⁷⁴ expedited permitting, land grants, or other inducements for safer development. The scope of the redevelopment effort is significant; it may be inappropriate for redevelopment to occur in the same jurisdiction the acquisition is taking place.²⁷⁵ State or regional coordination may help overcome these obstacles.

The MsCIP recognized that redevelopment would be a natural part of its planned acquisition programs and factored the environmental and economic benefits of such redevelopment into the EIS. The relocation of Valmeyer was premised on the notion that the town would be redeveloped elsewhere. The Road Home Program, on the other hand, did not account for redevelopment at all.

3. Reduce Subsidies to Development in Coastal Hazard Areas

a. **Avoid Perverse Incentives Encouraging Rebuilding Over Relocation**

For an acquisition program to be successful, relocation and redevelopment outside of coastal hazard areas must be preferable to rebuilding or remaining in place. Acquisition will likely not work if subsidies to development in coastal hazard areas continue unabated. The Louisiana Road Home Program provided more compensation to homeowners who chose to remain in place. In addition, such homeowners received more technical assistance and other attention. As a result, the rebuild option was more attractive than the buyout option. When losses do occur, the disaster response program should send a clear signal to owners of damaged property that acquisition is the preferred response.

b. **Roll-back Subsidies Encouraging or Promoting Development in High-Risk Areas**

Structural protection and non-actuarial insurance programs offset the incentives of an acquisition program. Both structural protection and insurance reduce the costs to property owners of occupying high-hazard areas, and such strategies also create a false sense of security that development in high-hazard areas is not vulnerable.²⁷⁶ Moreover, structural protection and insurance also both increase the value of protected property, which makes acquisition of protected properties more costly. Unfortunately, this step is a difficult one to achieve, and removing subsidies may not be appropriate everywhere; however, it is essential to ensuring a long-term sustainable risk-management program.

²⁷³ See Grannis, *supra* note 16, at 57. Transfer of Development Rights (TDRs) are well-established land use tools for shifting development pressures from areas where development is undesirable to areas where development is desirable. *Id.* Often, these tools are combined with conservation easements and zoning regulations to shape development.

²⁷⁴ The Town of Barnstable, Massachusetts (on Cape Cod) has developed a policy tool called a "growth incentive zone" to encourage development in certain pre-selected areas. See Cape Cod Commission, ch. G: Growth Incentive Zone Regulations (2010) ("The purpose of creating [growth incentive zones] is to direct development and redevelopment into areas with existing development and adequate infrastructure and away from sensitive resource areas... A proposed [growth incentive zone] shall contain existing development and infrastructure, with opportunities for redevelopment, infill, and intensification of existing uses.").

²⁷⁵ See MSCIP APPX. C, *supra* note 202, at 278 ("Large scale construction of new residences will most likely be required.").

²⁷⁶ See Bagstad et al., *supra* note 34, at 287-89.

c. Move the Entire Community, if Necessary

If community cohesion is the overwhelming barrier to an acquisition program, it may be necessary and desirable to relocate the entire community en masse. A recurring theme in disaster response is the way in which a community pulls together to rebuild.²⁷⁷ Acquisition programs threaten to disrupt the social fabric of the community, and any benefit a community finds in rebuilding by pulling together is lost once residents begin to leave permanently. One way to circumvent this concern is to develop a plan to relocate an entire community.

Valmeyer adopted just such a strategy, and the residents of that town were deeply involved in the planning and the implementation phase of the relocation process.²⁷⁸ Coordinating an acquisition and relocation strategy en masse will present numerous technical and scheduling challenges, but it can be beneficial to preserving community identity and avoiding concerns regarding social or economic discrimination.

VI. Conclusion

Acquisition offers an opportunity to reduce the risks coastal development faces from flood hazards. The hurricanes that have hit the Gulf Coast in the past decade are the proverbial canary in the coal mine. Other states would be wise to begin preparing for similar disasters along the shores of the Long Island Sound, the Chesapeake Bay, the Gulf Coast, and the Atlantic Ocean. Acquisition programs have additional benefits including long-term cost savings, opportunities to reduce adverse environmental impacts, and restore floodplain functions. However, acquisition of residential properties has the potential to have negative social and economic effects on coastal communities and must be carefully planned and implemented to avoid those negative impacts. Because of these drawbacks and the difficulty in achieving success through acquisition programs, acquisition cannot be the only solution or the solution everywhere. But it deserves continued and deeper consideration.

Nearly twenty years have passed since the floods along the Mississippi River prompted relocation as a response to flood hazards. In the nearly seven years since hurricanes ravaged the Gulf Coast, the Road Home Program became as much pre-disaster preparation for the next hurricane as post-disaster response to Katrina and Rita. As flood-damaged communities continue to recover, elements of past acquisition efforts can inform long-term adaptation strategies elsewhere. The contrasting acquisition strategies of Louisiana and Mississippi in responding to one major coastal disaster event that affected both states is revealing. Louisiana offered its flood-impaired residents the opportunity to receive compensation for relocating, but did not coordinate or apply any sort of spatial hazard or risk analysis to its acquisition program. Mississippi, on the other hand, engaged in detailed mapping, planning, and risk assessment to devise a comprehensive acquisition strategy, but has not yet implemented its plan. Only time—and the next major storm—will determine which of the two approaches is more effective.

²⁷⁷ See Fraser et al., *supra* note 30, at 17 (describing Kinston, North Carolina residents rallying around saving their church from flood waters). Similar lessons emerge from other types of natural disasters. See Judy Keen, *Joplin Finds Hope Amid Ruins*, USA TODAY, May 25, 2011 (describing community rallying in Joplin, Missouri following devastating tornadoes that struck the town). See generally W. Neil Adger, et al., *Social-Ecological Resilience to Coastal Disasters*, 309 SCI. 1036 (2005).

²⁷⁸ See *supra* note 234 and accompanying text (describing multiple community-wide relocation efforts).