

POLICY RECOMMENDATIONS

RAPID DISASTER RECOVERY HOUSING PROGRAM
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POLICY RECOMMENDATIONS INTRODUCTION

The Policy Recommendations give an overarching view of the lessons learned from both the RAPIDO Demonstration Project as well as findings from a comparison of other reports completed after similar disasters across the Gulf and Atlantic Coasts. It includes general recommendations for improving disaster housing recovery processes for homeowners, primarily at the state and local level, as well as more specific recommendations in each of the major areas of work (education, navigation, and design and construction). The intended audience is federal, state, and local policy makers.

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1.0 INTRODUCTION

After a disaster, many families are able to pick up the pieces and rebuild or relocate. These households rely on personal savings and assets, insurance, and short-term loans to generate the resources necessary to make repairs, rebuild, or relocate. While many assume that all homeowners are insured against wind and flooding, many homeowners may be uninsured, underinsured, or insured for only part of their damages. Further, the same homeowners who are likely to lack resources for recovery are also more likely to experience damage and property losses. For these reasons, homeowners may be left behind by the recovery process.

While in some communities, the proportion of homeowners without the resources necessary for recovery may be somewhat small, in others, the proportion may be quite large. Areas with substantial populations of low-income, minority, and elderly residents, or those with substantial populations living outside of municipal jurisdictions (i.e., without strong building codes or code enforcement) are most at risk. The extent to which these homeowners are unable to recover, or for whom recovery is long-delayed, will be a major factor in the overall recovery of the community, and thus in its resilience.

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When segments of the population recover at different rates, it can undermine economic recovery of the community as a whole. For example, if workers are unable to return to their homes, then some businesses will not be able to reopen or recover themselves¹. Further, because the segments of the population that are likely to be delayed in their recovery are concentrated in particular areas, these areas can become vulnerable to vacancy, abandonment, and further deterioration. Over the long-term, these land uses may be converted from residential to other uses, many of which may be undesirable or inconsistent with community goals².

Consequently, public programs to support recovery of lower-income, minority, elderly, and more rural homeowners provide important resources for the recovery of communities as a whole. While some communities may wish to increase their resilience by using disasters as a way to rid themselves of “weak” households, such an approach will not solve the problem, particularly from a state-level perspective. Families unable to recover in one locale will be displaced to another.

This policy report addresses recovery programs for the subset of homeowners that do not have the resources to recovery on their own³. It captures learning both from experiences in other states [see the Program Comparison Report] and from experiences in the Lower Rio Grande Valley through the RAPIDO rapid re housing pilot program. To develop these policy recommendations, the policy team gathered similar reports for every hurricane that has struck the Gulf and Atlantic Coasts since 2005. Systematically comparing these reports has opened the way to understanding the issues and obstacles that have arisen repeatedly across comparable disasters as well as issues that may be more context-dependent. Further understanding was acquired through following the RAPIDO Demonstration Project throughout 2014, talking regularly with team leaders to understand the approach and implementation, as well as obstacles faced as the program was deployed. Further, the policy team draws on experience and research from faculty fellows at Texas A&M University’s Hazard Reduction & Recovery Center, one of the top disaster centers in the United States. These faculty fellows have decades of experience researching and learning from disasters in Texas, the U.S., and other settings. They include nationally-recognized urban planners, engineers, sociologists, community development specialists, landscape architects, and others who have expertise in all aspects of disasters, particularly land use planning, hazard mitigation, emergency management, vulnerability, and disaster recovery.

1. Xiao and Van Zandt (2012) found a statistically significant relationship between the return of residents and the likelihood of a business re-opening after a disaster in Galveston County following Hurricane Ike (2008). Locally-owned businesses in particular were less likely to re-open if residents were unable to return to their homes. See Xiao, Y. and S. Van Zandt. 2012. *Building Community Resiliency: Spatial Links between Households and Businesses in Post-Disaster Recovery*. *Urban Studies* 49(11):2523-2542.

2. Zhang and Peacock (2009) found that in Miami-Dade County, neighborhoods with slower recoveries exhibited much higher levels of vacancy and abandonment in the four years that followed Hurricane Andrew (1992). These properties were likely to be converted to non-residential uses over time. See Zhang, Y., & Peacock, W. G. (2009). *Planning for housing recovery? Lessons learned from Hurricane Andrew*. *Journal of the American Planning Association*, 76(1), 5-24.

3. Renters have particular needs as well and are likely to also be socially vulnerable, in terms of income, poverty, race/ethnicity, gender, and other factors. Further, renters are often overlooked by recovery programs despite their much greater risk of displacement. However, programs for renters are beyond the scope of this report.

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Its intended audience is policy makers, primarily at the state and local levels, but with implications for policy makers at the federal level. Policy recommendations are offered in specific categories which capture different aspects of housing recovery efforts. Presented first are the general recommendations which respond to the challenges listed below, followed by recommendations in specific categories.

In many ways policy drives a community's resilience and recovery capacity. It establishes the framework for the collaboration and planning necessary for a sustainable recovery effort. Generally, recommendations in recent reports on urban disaster recovery planning emphasize policies that strengthen both local-level capacity and planning on the regional, state, and national levels. This process begins with evaluating existing regional and local capacity including awareness of physical and social vulnerabilities as well as cultural values. From this assessment a community is able to prioritize efforts that contribute most to ensuring the type of resilient future they see for themselves.

CURRENT CHALLENGES

2.0 CURRENT CHALLENGES

Disasters occur when hazards interact with the built and social environment⁴. Texas is one of the most at-risk states in the nation, experiencing higher than average levels of almost every type of disaster (hurricanes, tornadoes, flooding, drought, wildfire, and technological disasters from hazardous materials)⁵. Further, the population continues to expand rapidly along the Texas coast, placing increasing numbers of both people and goods in harm's way⁶.

Impacts from disasters are due to interactions between hazard exposure, physical vulnerability, and social vulnerability. Hazard exposure is the probability that extreme events (e.g., flooding, wind, surge, etc.) will occur, while physical vulnerability refers to the potential damage to the built environment, especially housing⁷. More recent perspectives have expanded vulnerability to consider social vulnerability, which refers to characteristics of a subpopulation that create variability in vulnerability to disasters⁸. Social vulnerability factors include income or poverty, race/ethnicity, gender, household composition, age, housing tenure, and education levels, among others. Frequently, these factors exist in combinations (both poor and Black, for example), which may compound vulnerability⁹.

Social vulnerability factors lead to differences in individual and household actions related to preparedness, warning, and evacuation, as well as damage and recovery. For example, while Whites more often rely on media or government to obtain information about threats or hazards, African-Americans more often rely on social connections such as friends or church members¹⁰. Even if a resident has the same information, he or she may not have the capacity to react in the desired manner. Low-income or elderly residents may not have cars, for example, not allowing them to evacuate in a timely manner or to a location of their choice¹¹. Renters are typically more mobile or transient than owners and may not have local family connections to facilitate evacuation or sheltering, while owners are more likely to have such resources¹². Some of the most robust findings in the social vulnerability literature, however, are in regard to impacts of disasters—damage, casualties, displacement, and recovery. Socially vulnerable populations, and particularly poor and minority households, are more likely to experience higher casualties, greater property losses, longer periods of displacement, and longer recovery times¹³.

All communities have socially vulnerable populations, just as nearly all communities have some exposure to natural hazards, especially in

4. Mileti, D. (1999). *Disasters by Design: A Reassessment of Natural Hazards in the United States*. National Academies Press.

5. Masterson, J.H., W.G. Peacock, S. Van Zandt, H. Grover, L.F. Schwarz, and J.C. Cooper, Jr. 2014. *Planning for Community Resilience: A Handbook for Reducing Vulnerability to Disasters*. Washington, DC: Island Press.

6. *Status and Trends of Coastal Vulnerability to Natural Hazards Project; Annual Report for Phase 4*. Walter Gillis Peacock, Himanshu Grover, Douglas Wunneburger, Samuel D. Brody, Shannon Van Zandt, Rahmawati Husein, Hee Ju Kim, Forster Ndubisi, and June Martin. Available at <http://hrcc.arch.tamu.edu/publications/reports/>

7. National Research Council (2006) *Facing Hazards and Disasters: Understanding Human Dimensions*. National Academy Press, Washington, DC.

8. For a review, see Van Zandt, S., W.G. Peacock, *D. Henry, H. Grover, W. Highfield, and S. Brody. 2012. *Mapping Social Vulnerability to Enhance Housing and Neighborhood Resilience*. *Housing Policy Debate* 22(1): 29-55.

9. Morrow, B. H. (1999). *Identifying and mapping community vulnerability*. *Disasters*, 23(1), 1-18.

10. Perry, R. W., & Lindell, M. K. (1991). *The effects of ethnicity on evacuation decision-making*. *International journal of mass emergencies and disasters*, 9(1), 47-68; Morrow, B.H. (1997). "A gendered perspective: The voices of women." *Hurricane Andrew: Ethnicity, gender and the sociology of disasters*, in Peacock, W. G., Morrow, B. H., & Gladwin, H. (Eds.). (1997). *Hurricane Andrew: Ethnicity, gender, and the sociology of disasters*. Psychology Press.

11. Fernandez, L. S., Byard, D., Lin, C. C., Benson, S., & Barbera, J. A. (2002). *Frail elderly as disaster victims: emergency management strategies*. *Prehospital and disaster medicine*, 17(02), 67-74.

12. Burby, R. J., Steinberg, L. J., & Basolo, V. (2003). *The Tenure Trap The Vulnerability of Renters to Joint Natural and Technological Disasters*. *Urban Affairs Review*, 39(1), 32-58.

13. For a review of this literature, see Van Zandt, S., W.G. Peacock, D. Henry, H. Grover, W. Highfield, and S. Brody. 2012. *Mapping Social Vulnerability to Enhance Housing and Neighborhood Resilience*. *Housing Policy Debate* 22(1): 29-55.

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Texas. Thus no community is immune from having some (or many) households who will be in need of assistance after a disaster. The nature of disasters leads to specific challenges that all communities face when dealing with them.

Rapid, fact-based decision-making. Disasters both magnify and accelerate processes already occurring in communities, such as housing turnover, gentrification, or conversions of land use from residential to commercial¹⁴. Yet, not all these processes (or others) will be compressed or accelerated at the same rate. The result can be a distortion in the relationships between redevelopment and decision processes. For example, a transition of land from residential to commercial that would normally take years might be compressed into a few months after a disaster, when buildings have been destroyed by a storm surge rather than demolished by neglect. Such acceleration might not permit the extent of community input or interventions that might occur normally. Consequently, in the days, weeks, and months that follow a disaster, decisions must be made rapidly to deal with pressing, immediate issues like emergency sheltering and temporary housing, rebuilding, and the restoration of community infrastructure. The pace of decision-making defies typical rational planning methods that require the collection of data and consideration of many alternatives, forcing communities to make hasty decisions that may later turn out to be ill-advised, but yet now are long-lasting if not permanent.

Participatory decision-making. Similarly, the pace of decision-making required after a disaster also often means that typical community-input mechanisms are abbreviated or ignored altogether. Participatory planning methods in non-disaster situations are time-consuming and labor-intensive. After a disaster, there simply isn't time to engage community members in a process that helps solicit their input for deliberative democracy. This can lead to decisions that anger or exclude some community members or stakeholder groups, and ultimately lead to a breakdown in community cohesion and/or political upheaval, resulting in rapid shifts in leadership within a community.

Building and using local capacity. Each disaster is unique. The physical characteristics of the hazard are dynamic—changing from moment to moment—and no matter how much planning takes place, much of the emergency response and even recovery may be improvisational¹⁵. The local nature and context of the disaster and the community mean that the best decisions will be made in conjunction

14. Olshansky, R. B., Hopkins, L. D., & Johnson, L. A. (2012). *Disaster and recovery: Processes compressed in time*. *Natural Hazards Review*, 13(3), 173-178.

15. Olshansky, R. B., Hopkins, L. D., & Johnson, L. A. (2012). *Disaster and recovery: Processes compressed in time*. *Natural Hazards Review*, 13(3), 173-178.

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with broad representation from local stakeholders who understand the community and are familiar with its culture, practices, and values. Yet many if not most communities lack the internal capacity to handle the magnitude of a disaster and the pace of recovery necessary to restore order and safety in an efficient manner. Consequently, outside help from both experts and volunteer organizations is necessary. The process, however, must not exclude local stakeholders or marginalize local influence, resulting in community recovery that is uneven, incomplete, culturally insensitive, or otherwise locally unsatisfactory. Rather, local stakeholder involvement should result in the enhancement of local capacity, leaving the community more resilient than it was prior to the disaster.

Navigating resources and assistance. Disaster recovery is both a long-term and complex process, often lasting years and involving assistance from multiple agencies and organizations. The pace of recovery and amount of assistance needed varies greatly from household to household or business to business. There is not just one agency or organization that works with individuals, households, businesses, and local organizations to navigate the whole process. Consequently, the players involved in the recovery process will vary somewhat from disaster to disaster and community to community. Further, the length of time that each player or agency is involved may vary from person to person and from disaster to disaster. Transitions between them may mean a ball gets dropped. Some may work in ways that confuse, harm, or exploit those that are supposedly being helped (intentionally or not). Thus, the identification and engagement of recovery players is a labyrinth for many, filled with unanswered questions, dead-ends, and paths to nowhere. For many—from residents and survivors themselves to non-profit organizations and volunteers, the process becomes frustrating, counterproductive, or even destructive, compounding the impacts of the disaster itself.

Restoration vs. resilience. Perhaps the biggest challenge faced by communities recovering from disaster is the dilemma between restoration and resilience. Restoration suggests a return to the previous state, while resilience suggests “building back better.” There is a window of opportunity after a disaster in which households, businesses, agencies, and jurisdictions themselves show a greater willingness to make changes to strengthen their infrastructure and structures—physically, economically, and socially. Further, there is often an influx of resources—both financial and physical (e.g., volunteer labor)—to make these changes possible. However, most forms of insurance or loans are only willing to fund restoration to

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original (pre-disaster) conditions. There is often an implicit or explicit resistance to allowing upgrading or major changes (enhancements) to occur as part of recovery. Indeed, some operators may take advantage of the rapid decision-making and the suspension of “normal” to bulldoze (mostly figuratively, but sometimes literally) development projects through that might not have gained community approval in a non-post-disaster setting. In other words, the rushed decision-making that often occurs during recovery can allow some projects to slip through without adequate public scrutiny. To avoid this, there is tendency to emphasize a return to the status quo rather than making wholesale changes to community. The result, however, is that the community recreates the same weaknesses and vulnerabilities that it had before, missing a critical opportunity to enhance resilience.

In the sections that follow, policy recommendations which respond to the aforementioned challenges are offered. Then, how these challenges manifest themselves during the different phases of recovery, including Outreach & Public Participation, Case Management & Social Services, and Design & Construction is identified. For each, a policy recommendation for overcoming these challenges is offered.

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3.1 BROAD-BASED POLICY RECOMMENDATIONS

The phases of disaster are typically understood as mitigation, preparedness, response, and recovery, as seen in Figure 1. The disaster phases should be understood as part of an ongoing cycle of actions that take place both during and between disasters. In other words, recovery from one disaster is mitigation for the next.

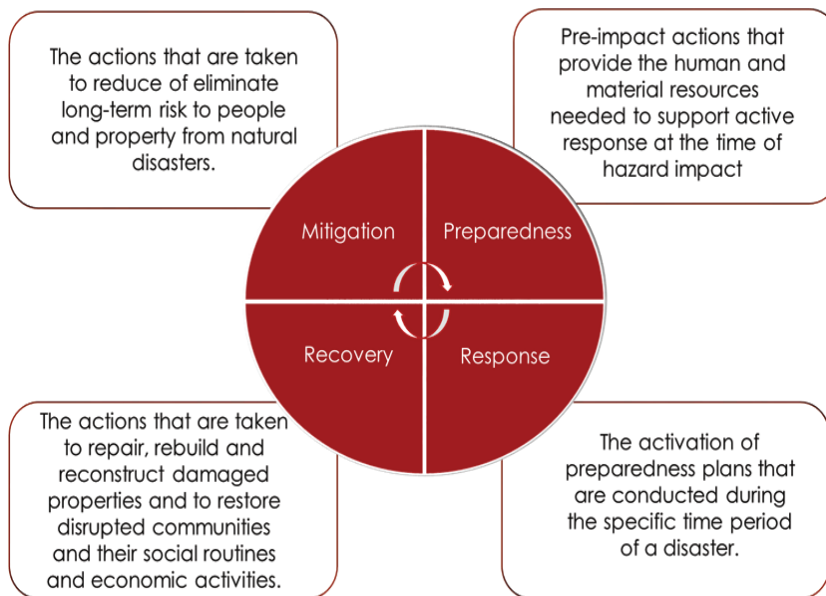


Figure 1. Disaster Management Cycle

While emergency management personnel are primarily focused on preparedness prior to a disaster and response immediately after a disaster, local elected officials (supported by city planners, city engineers and other city and county personnel) as well as local non-profit actors have the opportunity to make decisions and take actions to address both mitigation and recovery in ways that can significantly reduce future exposure and increase resilience.

Policy makers at federal, state, and local levels must recognize that resilient communities result from attention to the whole community at each of these stages. They cannot be resilient unless all members are able to withstand and bounce back from an economic, social or physical disaster. Accordingly, policy makers at each level must strive to achieve the following in their policy making and funding decisions.

Engage community stakeholders in decision making by undertaking “pre-recovery” and comprehensive planning. Limitations on engaging community stakeholders, including

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residents, business owners, and special interest groups, can be overcome by engaging them in planning efforts prior to the event (“pre-recovery planning”). Communities that are engaged in planning and have sound fact-bases for decision making should include risk and vulnerability assessments as part of their assessments of current conditions. For communities with high risk profiles, planning for recovery is strongly advisable. Galveston, for example, did not have a disaster element in their comprehensive plan when Hurricane Ike hit in 2008. It does now (and it is a strong one)¹⁶.

Communities (cities and counties) should make mitigation and recovery planning part of regular and ongoing comprehensive planning and capital investment planning. Land use planning (the identification of what can be built where and how) is one of the most powerful tool that cities have to mitigate against disaster impacts. It allows cities to restrict development in areas that are likely to be impacted by hazards, and can require that structures built in vulnerable areas be built (or upgraded) to standards which make them more resistant to disaster impacts. Capital investment planning permits investment in structural mitigation projects that can protect vulnerable areas from disaster impacts. Research conducted on Galveston Island after Hurricane Ike showed that minority neighborhoods experienced higher levels of damage, even after accounting for the age of the unit and its proximity to the seawall and water¹⁷. The results suggest that a cultural tradition of building in less risky areas deteriorated over time, as did structural characteristics suited for coastal development. This apparent disregard for previously-understood construction practices may reflect an over-reliance on inaccurately drawn flood maps or growth pressures that ultimately placed more households in harm’s way. The role of construction requirements in the form of building codes likely plays a role as well, where homes built with stronger codes performed better¹⁸. It may also suggest disinvestment on the part of the property owners and/or city in providing adequate drainage and structural protection. It may also suggest disinvestment on the part of the property owners and/or city in providing adequate drainage and structural protection.

While most jurisdictions in Texas have these tools at their disposal, few use them to anywhere near their full potential, according to a recent study of Texas jurisdictions conducted for the General Land Office¹⁹. Peacock and his colleagues found that while a slim majority of coastal Texas jurisdictions participate in the National Flood Insurance Program (NFIP), use subdivision ordinances, and uphold

16. See <http://www.cityofgalveston.org/DocumentCenter/Home/View/1370>

17. Highfield, W., W.G. Peacock, and S. Van Zandt. 2014. *Mitigation Planning: Why Hazard Exposure, Structural Vulnerability, AND Social Vulnerability Matter*. *Journal of Planning Education & Research* 34: 287-300. DOI: 10.1177/0739456X14531828

18. Highfield, W., W.G. Peacock, and S. Van Zandt. 2014. *Mitigation Planning: Why Hazard Exposure, Structural Vulnerability, AND Social Vulnerability Matter*. *Journal of Planning Education & Research* 34: 287-300. DOI: 10.1177/0739456X14531828

19. Peacock, W.G., H. Grover, J. Mayunga, S. Brody, S.D. Van Zandt, and H.J. Kim. *The Status and Trends of Population Social Vulnerabilities along the Texas Coast with special attention to the Coastal Management Zone and Hurricane Ike: The Coastal Planning Atlas*. College of Architecture, Texas A&M University, Hazard Reduction & Recovery Center, 2011.

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flood standards for structures, very few other techniques for hazard mitigation are used in this state's coastal jurisdictions. Counties typically have fewer of these tools available than do cities, but those in highly vulnerable areas should seek and accept more regulatory authority over land use, zoning, and building codes to allow them to enact stronger and locally-appropriate hazard mitigation techniques. Peacock's work (2011) shows that counties use significantly fewer tools than cities, suggesting that counties that accept more regulatory authority (and put it to use) will see lower levels of damage and loss, saving them money in the long run.

Further, the implementation of these tools should be prioritized by demonstrated need as determined by an assessment of both physical and social vulnerability. The utility of the social vulnerability approach to understanding risk has been validated by research in Galveston following Hurricane Ike. Van Zandt and her colleagues (2012) found that those neighborhoods that were home to socially vulnerable populations did respond in statistically significant ways: transportation-dependent populations were slower to evacuate; households predicted to have high recovery needs received higher levels of overall damage; and households with high levels of social vulnerability were less likely to apply for Small Business Administration (SBA) loans and aid from FEMA²⁰. These findings indicate that measures of social vulnerability are strong predictors of needs during emergency response and both short- and long-term recovery. In short, neighborhoods that are home to socially vulnerable populations are likely to experience the greatest needs in post-disaster recovery. Thus prioritizing them for pre-storm capital investments to strengthen infrastructure and mitigate against disasters is likely to reduce damage and losses, requiring less public investment in recovery. Further, prioritizing them for post-disaster recovery funding is likely to result in more targeted use of public funds to locations with need, hastening the recovery process for the entire community and enhancing future resilience.

Planning for recovery can institutionalize temporary-to-permanent solutions. After a disaster, residents and business owners are forced to "make-do". In many cases reviewed [see the Program Comparison Report], these temporary solutions became permanent. Planning for recovery allows a community to anticipate these approaches and put in place expectations and paths to permanence. In the RAPIDO Demonstration Project, for example, families are expected to be back on their property within 90 days after

20. Van Zandt, S., W.G. Peacock, D. Henry, H. Grover, W. Highfield, and S. Brody. 2012. *Mapping Social Vulnerability to Enhance Housing and Neighborhood Resilience*. *Housing Policy Debate* 22(1):29-55.

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the disaster and to incrementally rebuild their homes while living in them. This would not be possible without planning ahead of time. Doing so enhances resilience by mitigating population displacement, maintaining social networks, speeding recovery and rebuilding, and providing cost-effective solutions. Importantly, it also engages community stakeholders (ALL residents) in developing a vision for the future of their community. Consequently, when a disaster opens the window of opportunity and infuses the community with disaster recovery funds, such a plan will help the community to guide recovery in a way that is consistent with the vision laid out in the plan. A strong plan will provide protection against the assertion of special or outside interests that often happens after a disaster. For example, outside investors may take advantage of residents ambivalent about returning to their homes and quickly acquire large swaths of land that facilitate dramatic and rapid conversions of land use and residential patterns, destroying the community fabric. If community goals are clear in the plan, they provide guidance for decision making and allow the possibility of using the recovery and rebuilding period to increase resilience and overcome weaknesses.

Encourage and support the development and maintenance of data that supports fact-based planning. Decision-making grounded in a sound fact-base can be achieved through the improvement and institutionalization of regular and ongoing data gathering and reporting by agencies with decision-making authority (typically city and county jurisdictions and state agencies). Data gathering should include socio-demographic data to assess social vulnerability, as well as data capturing physical characteristics such as age and structural characteristics of housing, critical infrastructure, and environmental infrastructure to assess physical vulnerability. Such data should be collected, reported on, and made publicly available at the smallest geographic unit practical. Ideally, such data gathering would be consistent among jurisdictions and would be readily available to users through user-friendly interfaces to facilitate widespread use and permit tracking and accountability over time and across jurisdictions.

An example of this is the Texas Community Planning Atlas developed (but not currently maintained) with funding from the Texas General Land Office and others by the Hazard Reduction & Recovery Center and the Center for Texas Beaches & Shores at Texas A&M University (College Station and Galveston campuses). The Planning Atlas has been used by dozens of jurisdictions and community groups along the Texas coast to understand and plan for natural hazards by visualizing

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the impacts of storms along the coast. Besides providing a sound (and interactive) fact-basis, it also facilitates community engagement in disaster planning by providing a web-based GIS platform that can be combined with video-game technology to allow participants to explore the consequences of development decisions²¹. Further, it supports decision-making in non-disaster situations as well. Planners from Texas A&M University, Texas A&M Galveston, and Texas Sea Grant have demonstrated the Coastal Planning Atlas in communities along the Texas coast since 2010. The Atlas can serve as a platform for spatial data that communities across the state can use to assess their exposure, physical vulnerability, and social vulnerability.

Conduct annual broad environmental reviews as part of comprehensive land use planning effort to identify areas appropriate for development. As part of fact-based planning, communities must know where they will be able to rebuild and where they should not. An assessment of risk and vulnerability is the first step toward identifying locations that should not be rebuilt after a disaster, as well as identifying areas where new development and rebuilding should occur. The U.S. Department of Housing & Urban Development requires environmental review before federal disaster funds (through CDBG-DR) can be spent to rebuild. Using these standards²², communities can assess and identify areas for relocation prior to a disaster, which will expedite relocation and rebuilding after a disaster. Annual updates and revisions will ensure that the information is still valid.

Recognize and prioritize investments in projects that will reduce vulnerability and increase resilience. Pre-recovery planning and data availability will prepare both cities and counties to make more efficient investments in both physical and social infrastructure that support disaster resilience. Physical infrastructure might include structural mitigation projects (dams, levees, drainage systems, etc. in appropriate locations) as well as environmental services (e.g., wetland preservation), while social infrastructure would include support of community engagement efforts and local non-profit organizations. Existing state-level funding mechanisms can emphasize or prioritize these types of investments. For example, environmental review processes for state-funded projects should include criteria related to assess the potential impact on disaster vulnerability (for example, infrastructure projects that destroy wetlands that provide protection against storm surge). The suggestion is not for new funding to be allocated for investments that will reduce vulnerability, but rather that existing investments be evaluated with this criteria in mind.

21. <https://seagrantgis.wordpress.com/2011/07/07/texas-coastal-watershed-program-we-table-and-charm-model/>

22. http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/training/web/crosscutting/environmental/reviewstage1

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The overall funding necessary to help a community recover may be reduced by addressing glaring weaknesses in a community. As noted earlier, the research findings on the effect of social vulnerability factors—particularly race/ethnicity and income—on damage and losses in a disaster are quite robust. Socially vulnerable populations, and particularly poor and minority households, are more likely to experience higher casualties, greater property losses, longer periods of displacement, and longer recovery times (see Van Zandt et al., 2012 for a review of this literature). Thus efforts to address these weaknesses should be cost-effective. Community vulnerability includes both physical vulnerability (low-quality structures in exposed locations) and social vulnerability (household or neighborhood characteristics such as poverty, minority status, income, age, gender, etc.) that result in limited capacity to respond to disasters. Targeting resilience efforts to these communities provides cost-efficiency and improves the resilience of the entire community.

Further, to better guide decisions that emphasize resilience over restoration, the state should develop an advisory board of engineers, planners, design experts, and insurance risk assessors to evaluate the cost-benefit tradeoffs between insurance provision, non-structural mitigation techniques, and the construction of hardened structures. In other words, a determination needs to be made on whether investments are best applied to insuring the uninsured or underinsured residents, moving residents out of harm's way, or building protective structures to minimize future damage. Given the extensive construction, monitoring, and maintenance needed on structural mitigation projects, it may make more sense to undertake non-structural mitigation efforts, or simply provide or supplement insurance coverage for residents who are not adequately covered. Some research suggests, for example, that non-structural approaches, such as restricting development in hazardous locations, protects more people for less investment than many structural approaches²³ (Brody et al., 2008). Properly-conducted risk assessments can better help communities choose from among their options to receive the most benefit for the least cost.

Establish a clear administrative structure for recovery to help community members navigate resources. Pre-recovery planning will also help establish clear structures for navigating the recovery process [described in more detail in the Technical Guide, Section 2.2], and it is recommended that a State Disaster Recovery Coordinator be appointed. This Coordinator would have the responsibility for liaising with the Federal Disaster Recovery Coordinator and the Texas

23. Brody, S. D., Zahran, S., Highfield, W. E., Grover, H., & Vedlitz, A. (2008). Identifying the impact of the built environment on flood damage in Texas. *Disasters*, 32(1), 1-18.

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Division of Emergency Management, and would be supported with technical assistance through a state university unit such as the Hazard Reduction & Recovery Center (HRRC) at Texas A&M University²⁴. The State Disaster Recovery Coordinator would also provide oversight for local boards charged with coordinating on-the-ground long-term recovery activities (NOT emergency response). The Coordinator, with assistance from the HRRC, should create appointment guidelines for the local board, and should develop clear criteria for assessing the existing capacity of local boards. While these criteria would need to be developed, it should at a minimum include an assessment of available professional staff, their training, budget and time allocation (within local communities), other financial sources, and data sources²⁵. Local teams must also provide broad representation of community constituents, not just a select group of special interests.

Within local communities, it is recommended that a Local Disaster Planning Board, to include a Planning Administrator, a Community Preparedness Administrator, a Client Services Administrator, and a Housing Administrator be appointed. These appointments will come from existing professional staff in the community, or in a nearby community (smaller or lower-capacity communities will likely need to cooperate through memoranda of agreements to identify appropriate professionals within the region). While they will be “activated” after a disaster, they will also serve pre-disaster as the overseers of the Disaster Recovery Housing program, and point persons in the community who can advocate for and champion disaster preparedness and mitigation prior to a disaster, as well as for recovery post-disaster. The local board will implement local housing recovery activities through Local Disaster Action Teams. The Action Teams will be managed by an Action Team Lead, a Navigation Manager, Eligibility Manager, Design Manager, and Construction Manager. This team of professionals will carry out the Disaster Recovery Housing program, with day-to-day responsibility for outreach, case management, design, construction, and eventually occupancy, as well as longer-term build out of the structure [see the Technical Guide for more detailed description of these roles].

While the structure may vary somewhat from community to community, pre-planning will streamline the process and will permit decision-making ahead of the disaster as well as the development of educational materials that can help aid recipients to navigate the processes, organizations, and types of aid that are available to them. It will overcome much of the uncertainty that is typical of most recovery processes and will expedite the recovery process tremendously.

24. Technical assistance would include training, education, and certification of plans. These might best be provided through one of the state's public universities. Universities are a strong potential source of such training and capacity-building. One of our partners, the Hazard Reduction & Recovery Center at Texas A&M University, is situated in an urban planning department that trains professional urban planners. Further, their outreach arm, the Texas Target Communities program (TTC), is explicitly engaged in developing curricula and training programs for and with communities. Funded in part by Texas A&M's Agrilife Extension program, TTC brings faculty expertise and graduate student labor to bear on problems that low-capacity communities in Texas are facing. The personnel in these units include faculty and professional staff who are experts on plan-making, community engagement, land use, and hazard management, including particular expertise in hazard mitigation and disaster recovery. For example, the HRRC offers an Environmental Hazard Management Certificate to graduate students, one of the only programs of its kind in the state and perhaps nation. Together, this team has the capacity to offer training and continuing education programs to help communities meet the demand. Further, they have the expertise to develop and implement certification criteria to ensure that plans created meet standards of best practice.

25. For more information on assessing capacity within local jurisdictions (albeit for mitigation rather than recovery), see Peacock and Husein. 2011. *The Adoption and Implementation of Hazard Mitigation Policies and Strategies by Coastal Jurisdictions in Texas: The Planning Survey Results*. Prepared for the Texas General Land Office and The National Oceanic and Atmospheric Administration Under GLO Contract No. 10-059-000-3758.

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Ideally, teams would also be supported by an integrated computer system that serves as a platform for case managers to best assist residents receiving housing recovery assistance. Such a program would provide the most complete and consistent information to households trying to access the myriad of state and federal resources available. Such a resource should be widely available, well-designed, and easy to access and navigate to minimize the training necessary to use it. An example of such a system is The Benefit Bank, used in several states to connect community members to public services. Although Texas is one of the states using the Benefit Bank, it is not currently being used for a full array of services. A more analogous example may be found in North Carolina, where it is being used as an integrated service delivery platform²⁶.

Use housing recovery to increase housing choice for vulnerable populations. Socially vulnerable populations are more often located in physically vulnerable locations, as described earlier in this report. The recovery process should provide opportunities for them to rebuild in a more resilient manner. This may mean different things for different households. Households should be given an option of returning to their own property. However, they should also be aware of the risks involved, and given an opportunity to relocate within the community to an area that is less exposed. Further, recovery efforts should comply with fair housing laws. Since 1992, funding from the Community Development Block Grant (CDBG) has been used 15 times in disaster recovery²⁷. These funds are obligated to “affirmatively further fair housing,” which means that actions taken with these funds must:

- Eliminate housing discrimination in the jurisdiction.
- Promote fair housing choice for all.
- Provide housing opportunities for people of all races, colors, religions, genders, national origins, family types and disabilities.
- Promote housing that is structurally usable by all people, particularly those with disabilities.
- Foster compliance with the nondiscrimination features of the Fair Housing Act.

As part of pre-disaster planning, locations should be identified that are not only less exposed to natural and technological hazards but also serve to reduce community segregation by race/ethnicity and income. In the plan, these locations may be more generalized areas (districts or zones). Once the post-disaster plan is activated, parcels available for rebuilding may be identified in these areas. These

26. See <http://www.mdcinc.org/projects/benefit-bank%20AE-north-carolina>.

27. Dept Housing & Urban Development, Community Planning & Development Disaster Recovery Assistance, available at <http://www.hud.gov/offices/cpd/communitydevelopment/programs/drsi/driquickfacts.cfm>.

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may include vacant or undeveloped parcels. Group sites are not encouraged except where entire communities (neighborhoods) of residents need to relocate and wish to do so together.

In the sections that follow, specific recommendations in each of the substantive areas of housing recovery are offered.

3.2 OUTREACH & PUBLIC PARTICIPATION

A disaster (particularly a federally-declared disaster²⁸) activates a wide array of services and programs to assist with recovery. Yet, many residents are unaware of these resources, particularly those who are likely to be eligible for and benefit from them. For example, the research conducted in Galveston following Hurricane Ike found that socially vulnerable populations who were less likely to have private insurance were also less likely to have applied for and received Small Business Administration (SBA) loans²⁹. Further, a strong body of research finds that socially vulnerable populations (households and neighborhoods with high proportions of households that are low-income, minority, non-native English speakers, female-headed, renters, elderly, etc.) may receive information differently than less vulnerable households and have different capacities to respond to information once received³⁰. These are typically the same communities that receive the brunt of damage, at least from coastal storms and flooding.

The same residents that are in need of assistance are also those most likely to feel marginalized within the larger community and to perhaps have a tradition of distrust of authorities. They have historically been left out of planning processes and are likely to be wary of the efforts of strangers or the authenticity of traditional outreach methods. Consequently, outreach for the delivery of services is often misguided. For example, in Round 2 of the Disaster Recovery funding, initial outreach efforts in the colonias were not effective. It was only after local organizers with La Union del Pueblo Entero (LUPE) were brought in did colonia residents respond to outreach efforts. Oft-prescribed outreach methods like advertising in the paper, radio announcements, distribution of flyers, and mass mailings may not reach the target market—those most in need. When outreach methods are not appropriate, it becomes difficult for service providers to meet enrollment goals to assist impacted populations in proportion to the damage suffered, even though the need is strong.

28. Non-declared disasters have similar needs, but at a smaller scale, yet lack the structure of services and assistance that a declared disaster confers. A housing recovery Board like that described in the previous section would be an invaluable asset in communities that experience non-declared disasters; it would give them an administrative structure that would allow much better service delivery of what limited assistance is available (from the state or donors).

29. Van Zandt, S., W.G. Peacock, D. Henry, H. Grover, W. Highfield, and S. Brody. 2012. Mapping Social Vulnerability to Enhance Housing and Neighborhood Resilience. *Housing Policy Debate* 22(1): 29-55.

30. Perry, R. W., & Lindell, M. K. (1991). The effects of ethnicity on evacuation decision-making. *International journal of mass emergencies and disasters*, 9(1), 47-68;

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To overcome these obstacles, local and state policies should encourage or require:

Partnering with local organizations. In communities with strong local organizations, efforts should be made to engage them in designing outreach protocol. Local organizations know the local vulnerable populations, and in many cases may already be in contact with them. Further, they are familiar with the social geography (where to find them), local customs, the local language or dialect, the local social structure, and may be trusted members of the community which is being served. They will have a better understanding of effective and ineffective ways to reach out to the targeted populations, and may be able to facilitate those efforts. If the organizations are well-trusted in the community, their involvement may increase trust in the system and may increase program participation and completion rates. The local board described in the Broad Based Policy Recommendations section and in the Technical Guide should identify appropriate local organizations to inform outreach protocol.

Flexibility service provision that is sensitive to local conditions. Requirements for outreach efforts should establish expectations that service providers will provide flexibility for clients to meet with them. Remembering that target populations often work second or third-shift hours, are often single-parent households, with limited transportation options and perhaps language barriers, accommodations may include later or weekend office hours, materials available in common local languages (or to meet public access design standards³¹), locations available by public transit, the availability of childcare, and others. Service provision should also consider the dispersal of impacted households after a disaster. Often, and even more so with vulnerable populations, survivors of a disaster are spread far beyond the community, and contacting them and working with them will likely require additional efforts beyond typical case management guidelines. These efforts will maximize program participation and completion rates, and may build local trust and inclusiveness. Rather than prescribing what accommodations should be made, the recommendation is to write policies that require providers to justify and document accommodations needed and provided, and to provide support (i.e., funding) for doing so. These efforts are consistent with fact-based decision-making efforts that are supported with regularly collected and maintained data.

Information sharing and transparency among coordinating agencies. A common complaint from both residents and service providers is

31. see <http://welcometocup.org/Projects/PublicAccessDesign>

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the constant duplication of information required to document eligibility. Often, clients are working with multiple service providers or agencies that need the same or similar documentation. Both client and provider spend countless hours completing and processing forms and paperwork. Efforts by local, state, and federal agencies to improve coordination and information sharing would streamline paperwork, improve efficiency, save time, save money, and improve consistency among services and forms of assistance. The previously mentioned “Benefit Bank” is an example of the kind of system that can dramatically reduce paperwork and bolster program participation and efficiency. While privacy concerns are important to consider, clients can be given the opportunity to maintain privacy only if they wish to duplicate their effort, using something analogous to a HIPAA (Health Insurance Portability and Accountability Act) statement—a notice to clients that their information will be shared.

Remembering that the disaster recovery process builds resilience for the next disaster, efforts made to engage community residents in recovery efforts for one disaster, including planning and implementation, will have payoffs for the next disaster, as well as for enhancing and developing community capacity in between disasters. These efforts are critical for improving community resilience by increasing participation in assistance programs as well as overcoming long-standing mistrust, skepticism, and perhaps most importantly, historic inequities in treatment and outcomes.

3.3 CASE MANAGEMENT & SOCIAL SERVICES

Case management is perhaps the single most important role during disaster recovery. From the aid recipient’s perspective, case managers are their point-of-contact, the person (or people) that they can go to for information about what resources are available as well as how they can demonstrate eligibility or overcome obstacles to receiving and using assistance. More than any other person, the case manager walks the aid recipient through the process of recovery.

From the tax payer’s perspective, the case manager is also critical. The case manager represents the agency offering the assistance. They ensure accountability by establishing and implementing eligibility guidelines to make sure that those receiving assistance are entitled to it. They follow-up with clients to make sure that proper documentation exists and that assistance is being used in the way in which it was intended. Further, by monitoring this activity, the case manager has the potential to reduce waste, in terms of time, money, and other resources.

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This role can have inherent conflicts. It is a challenge for a single individual to act in both advocacy and accountability roles. Case managers must balance the needs of the individual or household against the intentions and limitations of the system. Trust is hard to build, from either side. Clients need to understand the process, eligibility, documentation, and accountability, and feel as though the case manager is working for them. Agency auditors need to see that rules and guidelines were adhered to, that aid was awarded and used consistently and appropriately. They need to feel confident that the case manager is achieving all these outcomes. As a result, transparency and communication are key.

One of the most challenging aspects of post-disaster case management is the rapid and temporary scale-up that is necessary. Systems must ramp up temporarily, bringing in case management professionals from outside the area to handle the load. This heightens the need for strong and consistent training across jurisdictions. It also suggests a need to emphasize communication, common systems, and consistent guidelines used.

Consequently, STATE-level programs should encourage or require:

Partnering with local organizations that are already known to and trusted by residents. As previously suggested, partnering with local organizations may help address many concerns about local culture and forms of communication (including, but not limited to, language), values, and practices. For the receipt of state or federal funding, the state should require that local governments partner with well-established local grassroots organizations where possible. Grassroots organizations know and are engaged with their population, particularly the more vulnerable sectors of the population who are most likely to rely on case management and federal and state assistance for disaster recovery. However, these types of organizations may not be available in all parts of the state. During the establishment of local boards, efforts should be made to identify local partners that have the trust of local residents. The assessment of capacity undertaken by the State-level Disaster Housing Board should include an assessment of local grassroots organizations and identify those that can inform outreach efforts. In their absence, local boards should incorporate intentional outreach efforts as part of their pre-disaster planning efforts.

Effective case management requires trust and confidence between case manager and client, which takes time to generate. Where

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possible, case management personnel (including volunteers) coming in to a community after a disaster must maximize existing capacity and rely upon these existing relationships to be able to make decisions rapidly and get services delivered to clients. Experiences from previous disasters shows that failing to partner with local organizations can severely diminish the responsiveness of the case management system.

Streamlining and enhancing communication systems used by case managers. One of the most consistent findings across disasters is failures or inefficiencies in communication. These happen on many levels—between case managers themselves, between case managers and supervisors, and between case managers and clients. Such failures of communication lead to misunderstandings, mistakes, redundancy, and waste. Investing in well-designed, easy-to-use, supported, integrated, and widely-available systems has the potential to dramatically improve services and reduce waste. Such a system will improve consistency in how eligibility is determined, how clients are tracked, and how services are integrated to avoid duplication and waste.

As mentioned earlier, such systems are available and can be tailored to disaster recovery needs in Texas. Although there are serious privacy concerns associated with the administration of such a system, the logic of having such a system is nevertheless compelling. Through their technical assistance providers (e.g., Texas A&M's Hazard Reduction & Recovery Center), local jurisdictions can be given guidance on establishing and maintaining such a system, avoiding a centralized state system. Protocol should dictate that the records be destroyed post disaster to minimize serious privacy issues.

In addition to supporting technical assistance through the state's public universities, the state should **enhance continuing training and cross training in disaster case management** or case managers working in both the public and nonprofit sectors. Case managers and members of VOADs (Volunteer Organizations After Disasters) across the state should be designated for work in disaster recovery areas and should undergo required continuing training annually (preferably in late spring) to keep knowledge fresh and current. When a disaster occurs, these case managers will be activated and dispatched to the disaster area to work with local organizations and volunteers. Current training curricula (available from the Texas Department of Emergency Management, for example) should be assessed for

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currency and revised if needed. A regular schedule (3-5 years) of curriculum maintenance and updating should be required to reflect adaptive learning from future disasters. Additional training may also be offered by Texas A&M's Hazard Reduction & Recovery Center.

Work with each client to set clear goals and a plan for what they want to achieve throughout the process. The DRH demonstration program emphasizes client choice and input, and findings suggest that the choice associated with the program both empowers and engages the client, which in itself builds resilience. The case management system should also reflect the desired outcomes for each household, after presenting the client with clear and understandable options. For some, this may be a return to housing conditions pre-disaster. For others, it may mean a move to a less physically vulnerable home or location. Articulating these goals from the outset will help both case manager and client to work together most effectively. Establishing clear deliverables and a timeline that are specific, measurable, and realistic will help the client to understand better what to expect and when, and will help the case manager to communicate clearly where things are, understanding that this set of timeline and goals may vary somewhat from client to client, depending on what barriers the client is facing.

Anticipate and prepare for obstacles and barriers that will be common in the local community. When working with low-income or otherwise socially vulnerable communities, it can be expected that some barriers to eligibility will be common. Proof of ownership, tax issues, title issues, and heirship issues are very common in low-income communities, and may be even more common in minority or otherwise marginalized communities, where many legal processes are conducted informally. In the Lower Rio Grande Valley, these obstacles have been considerable, as they are likely to be in many communities where close family ties have allowed property to be handed down informally. It is recommended that permits for the reconstruction of an uninhabitable house be approved without clearing title in a post-disaster situations based on the authorization of a person who can demonstrate some degree of at least partial ownership interest and who was residing in the house at the time of the disaster.

These are known obstacles to local service providers, and are fairly easy to anticipate if pre-recovery planning is taking place. Local governments should seek to minimize these obstacles pre-disaster by facilitating programs, educational and otherwise, that address

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the expected barrier. They should also plan to develop educational materials that can guide the client to prepare ahead of time and address as many barriers as possible on their own.

As part of pre-recovery planning, local agencies should identify eligibility and enrollment processes that will be used and develop outreach and educational materials (posters, handouts, web-based graphics) to make these processes clear to local residents and clients. Having these in place ahead of time will save time after a disaster and will also help encourage residents to prepare themselves (e.g., assembling important documents and keeping them in a safe and memorable place). Modifying current educational programming to include processes common in disaster recovery can also help organizations be better prepared to transition to recovery mode. For example, many local organizations do homeownership education and training or tax preparation. Both of these educational programs, as well as others, can be easily modified to include material about what types of documentation are needed for post-disaster recovery eligibility.

3.4 DESIGN & CONSTRUCTION

Housing reconstruction is the most visible part of recovery. It returns people to their homes, and allows them to return to some semblance of normality. Without housing, residents cannot return to fill jobs, restart and reopen businesses, consume services, or purchase goods. In other words, housing recovery is critical and all types and forms of housing recovery, including affordable housing, are important.

The literature recognizes four stages of housing recovery: emergency sheltering, temporary sheltering, temporary housing, and permanent housing³². Emergency sheltering refers to the location where residents find immediate shelter during a storm. Temporary shelter refers to peoples' displacement for an expected short stay. Temporary housing is expected to be temporary but allows the resumption of normal household routines, responsibilities, and activities. Finally, permanent housing suggests that families are returned to rebuilt homes or new quarters that will be permanent solutions to their housing needs. These are not always smooth transitions, there can be many repetitive steps and jumps in the process. Furthermore, the distinctions are not always clear as when, again noted by Quarantelli (1982 and 1995), temporary housing becomes permanent or when emergency shelters transition into temporary shelters out of necessity. In addition, in any disaster, members of a community may be found in every form of shelter or housing simultaneously³³.

32. Quarantelli, E. L. (1982). *General and particular observations on sheltering and housing in American disasters*. *Disasters*, 6(4), 277-281.

Quarantelli, E. L. (1995). *Patterns of sheltering and housing in US disasters*. *Disaster prevention and Management*, 4(3), 43-53.

33. Peacock, W. G., Dash, N., & Zhang, Y. (2007). *Sheltering and Housing Recovery Following Disaster*. In *Handbook of disaster research* (pp. 258-274). Springer New York.

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Recovery trajectories will vary greatly from household to household, and these differences are somewhat predictable. Research shows clearly that low-income and minority households, and neighborhoods, recover more slowly. They suffer greater levels of damage, are less likely to have insurance, less likely to apply for certain forms of federal aid, slower to undertake significant repairs to their homes, slower to pull permits for repairs, and as a whole, are slower to recover³⁴. They are also more likely to have experienced or be experiencing additional complications that often affect low-income households and may interfere profoundly with the family's ability to participate in any recovery system which undermines post-assistance success, such as domestic violence, inadequately treated mental illness, chronic un- or under-employment, extremely low-incomes, illiteracy, substance abuse and various family dysfunction. Over time, the differences in these recovery trajectories often lead to permanent displacement of vulnerable residents and the redevelopment of previously affordable housing into less affordable housing types.

In this section, design and construction are broken up into several additional sections. First, damage assessment is discussed, which is a critical element in determining which homes will be eligible for reconstruction assistance. Following is the design phase, which was an important piece of the RAPIDO Demonstration Project. The design phase has the potential to not only get families back into their homes quicker, but also to build resilience by engaging residents in the recovery process and giving them control over their own outcomes. Finally, in the construction section, discussion is focused on the policy changes necessary to allow programs like DRH to work, as well as changes needed to expedite reconstruction more generally.

3.4.1 DAMAGE ASSESSMENT

Damage assessments create the baseline for reconstruction. The damage assessment determines which homes are to be repaired, and which have been so heavily damaged that they cannot be repaired and must be rebuilt. This determination then is used to make a claim for insurance or to become eligible for state or federal assistance. Typically, households will not become eligible for public assistance until all their private options are exhausted (i.e., insurance). This process can cause substantial delays in reconstruction, particularly for uninsured or underinsured households.

Damage assessments are tedious and time-consuming. Further, consistency is necessary to ensure that equitable decisions are made.

34. Peacock, W.G. Van Zandt, S., Y.Zhang, and W. Highfield. *Inequities in Long-Term Housing After Disaster*. Forthcoming at the *Journal of the American Planning Association*.

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Consequently, the performance of damage assessments can be a major obstacle to efficient and equitable recovery. The manpower available for damage assessments is often woefully inadequate, and as a result, untrained assessors are used, which leads to inconsistent, and inappropriate assessments. Further, different assessments may be done for different purposes. Insurance adjusters perform damage assessments for insurance claims, while city and county personnel may do damage assessments for reporting to state and federal officials. These assessments may be used individually, but more often are aggregated up to community levels for reporting. An accurate assessment is much more likely to result in an adequate allocation of federal funds for disaster recovery, thus identifying accurate methods for damage assessment should be a high priority for the state. When there are delays in the process of damage assessment, as there were in Hurricane Sandy in the northeast, it can cause tremendous delays in rebuilding. Federal assistance will not be allocated to households until they have exhausted all private sources (i.e., insurance).

When recovery money is awarded based on aggregated numbers, the allocation is returned to the community, which fails to ensure that money will be distributed based on individual need. Rather it becomes subject to political decisions about how the money should be allocated and may exacerbate rather than mitigate pre-existing inequities. In other words, it may be allocated unfairly.

In low-income communities, deferred maintenance can also complicate damage assessments by obscuring the damage incurred from the disaster with wear-and-tear that has not been addressed over time by the homeowner. In Hurricane Dolly, FEMA denied many claims based on deferred maintenance, creating a major obstacle to the receipt of assistance by low-income homeowners³⁵.

Relatively few promising practices are identified for improving damage assessment techniques. While many new technologies are being used to try to streamline the damage assessment process, such as aerial photography overlaid with inundation mapping in flooding disasters, users are skeptical of the sensitivity of these tools to capture damage appropriately. For example, in flooding or surge (hurricane) disasters, often the water rises slowly and stays from a few moments to weeks or months. An aerial photograph would be unable to assess such damage properly.

Consistent recommendations from the reports reviewed suggest that state and local agencies should:

35. <http://www.jdsupra.com/legalnews/motion-for-preliminary-injunction-lupe-78745/>

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Triage damage assessments to identify salvageable homes. Those homes that can be saved should be saved. The adoption of an approach that allows the national guard and volunteers to quickly assess and identify the homes that can be saved is recommended, this will allow the application of immediate assistance to be applied which will help preserve them from further damage³⁶. Similarly, it is recommended that property losses be characterized as proportions of total value lost, rather than absolute dollar amounts. For low-income homeowners, losses in dollar amounts often fail to capture the full extent of damage. A loss of \$30,000 in damage to a low-income home owner may mean the loss of the entire structure, while the same dollar amount may be insignificant to a more affluent homeowner.

Utilize mapping techniques to identify neighborhoods and areas that are likely to have received damage and require recovery assistance. Recent research after Hurricane Ike determined that digital maps of areas predicted to have high recovery needs prior to the hurricane did indeed report higher levels of damage along with lower levels of application for assistance after the disaster³⁷ (Van Zandt et al., 2012). These findings validate a mapping approach to identifying neighborhoods appropriate for targeting assistance. However, the approach is still at a fairly high level of geography and does not have the ability to determine individual household needs.

Given the continuing problems with damage assessment and its importance to the allocation of recovery funding, it is clear that damage assessment methods have much room for improvement. The state should perhaps consider convening an investigation of promising practices in damage assessment to include evaluations of new technology as a way to reduce the labor and time needed to generate accurate assessments.

3.4.2 DESIGN DECISIONS

While recommendations about emergency sheltering are beyond the scope of this report, the DRH program specifically targets the transition from temporary to permanent housing. It is this stage of housing recovery that is perhaps one of the most recognizable hallmarks of the recovery process. Disasters like Hurricanes Katrina and Sandy are recent reminders of the challenges of this transition and its potential for derailing long-term recovery for both the household

36. <http://nlihc.org/sites/default/files/Testimony-of-Sheila-Crowley-March-18-2009.pdf>

37. Van Zandt, S., W.G. Peacock, D. Henry, H. Grover, W. Highfield, and S. Brody. 2012. Mapping Social Vulnerability to Enhance Housing and Neighborhood Resilience. *Housing Policy Debate* 22(1):29-55.

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and the community. The much-maligned “FEMA Trailer” has become a symbol of the governments’ failures in southern Louisiana in the aftermath of Katrina.

The RAPIDO Demonstration Project was designed to provide an alternative to other temporary housing solutions. It follows a relatively recent history of these types of demonstration programs along the Gulf Coast. In areas like the Gulf Coast, with high proportions of single-family housing and higher-than-average homeownership levels, these kinds of rapid re-housing programs have great potential. They minimize the transition from temporary to permanent housing, allowing families to get back into their homes and onto their properties more quickly than trailers or housing vouchers. This allows individuals to return to their normal routines more quickly, which should accelerate the community recovery process. Further, the approach of the demonstration project has been to work with residents to make key design decisions for their homes. This level of engagement is time consuming and may lead to inefficiencies in construction but builds resilience by building commitment on the part of the resident to the community and to the building process. This has the potential to improve community cohesion and thus stability.

The recommendations below are focused on this type of housing recovery program, and include lessons from both RAPIDO and other experiences.

Homes should be rebuilt to withstand future disasters. Most of the homeowners served by the demonstration project were un-insured or under-insured. Efforts to rebuild these homes should recognize the likelihood that these homes will continue to be un- or underinsured over the long-term. Households without mortgages are not required to insure their homes, and many families will not be able to insure their homes adequately. Consequently, as homes are built, particularly those that are being rebuilt on the original site, they must be able to withstand future disasters. Regardless of whether they are located within city limits or within the county, strong building codes should be enforced for rebuilt homes, including elevation and other hardening efforts such as impact-resistant windows or hurricane shutters, or hurricane straps.

Home design should permit essential home activities and should meet the following requirements:

- *Cost Effectiveness:* Unlike historically used temporary units,

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the CORE is reused as part of the permanent housing solution reducing waste in funds and materials. The CORE is intended to be deployed in the family's property, reducing the investment in infrastructure necessary for group sites.

- *Size:* At 480 square feet the DRH CORE is compact enough to be placed in diverse homeowner sites but including enough space for everyday activities.
- *Ease of Construction and Assembly:* CORE panels are easy to construct making them ideal for disaster recovery. Each panel is built from lumber which can be managed by local labor. The assembly system is similar to assembling furniture making it familiar to residents in case they want to engage with the assembly process. Further, panels are designed to be installed by hand, without the need of heavy machinery.
- *Ease of Deployment:* The flat pack design of the CORE allow contractors to deploy the CORE easily in a standard flatbed trailer.
- *Quality of Space:* Within the DRH's timeline, families will be living in the CORE for at least 4 months. The outdoor design of the CORE eases the interior crowding of temporary units and also provides a space for the family to gather.
- *Accessibility:* COREs exceed visitability standards.
- *Expandability:* The CORE facilitates expansion, accommodating the family's long-term spatial needs and aesthetic preferences.

Re-housing should provide choice for residents. The hallmark of the DRH program is providing residents a chance to sit with a designer to describe how the household uses the house. For many lower-income residents, this is the only opportunity they may ever have to influence the design of their living quarters. For residents, the choice aspect of the process is surprising and gives them a sense of self-efficacy that builds their own capacity to deal with unexpected shocks like natural disasters. Further, it results in a reconstructed homes that better meets their needs and can address the shortcomings of their previous home, building commitment and neighborhood attachment, which increases neighborhood stability and resilience.

Choice should include an opportunity to relocate if desired. Homes that are substantially damaged in a disaster are likely located in areas that are highly exposed and physically vulnerable. Replacing them may not be advisable. This decision, however, should be left to the resident. Residents have the right to return if they so desire,

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but should not be forced to rebuild on their original property if that property is located in a hazardous area (such as a floodplain). The ability to choose to relocate is a major move towards building more resilient communities. Communities that continually rebuild in the same hazardous locations are missing an opportunity to mitigate their exposure.

Residents should be re-housed as quickly as possible. The DRH program intends to return the family to their properties within 90 days of a disaster. It allows the rebuilding to take place on-site incrementally by placing the core—a small space for cooking, bathing, and sleeping—on the property first and allowing the completion of the rebuilding process with the family on-site.

Architectural designs must be consistent with local aesthetics and community character. Perhaps the biggest barriers to success in post-Katrina demonstrations such as Brad Pitt’s Make It Right program and the Katrina Cottage were those related to community acceptance of rebuilt homes. Concerns expressed were related to the permanence of the units, the potential for lowering property values (probably unfounded), homes not fitting in with current housing styles, sizes, and aesthetics, as well as crime and safety issues (probably also unfounded). Working with residents will help overcome these concerns, as will working with local architects and designers who have more of an understanding of vernacular styles, and local building materials.

Designs should emphasize the permanent part of “temp-to-perm”. Much of local concern about rapid re-housing solutions stems from their incremental nature. Original structures are intended to be added upon, but the length of time to reach completion may vary somewhat from one structure to the next, depending on the capacity of the family to complete the additions. Temporary homes that resemble mobile homes or trailers are likely to cause concern among neighbors and city officials. Thus rapid rehousing designs should include elements that make the house appear to be permanent and consistent with local building practices.

Clear communication with residents about what they can expect through each phase of the rebuilding process is key. Communication is key to help residents understand the process, the timing, and their role in it. As with any construction project, there will be delays and unexpected occurrences. Clear communication every step of the way will help avoid misunderstandings.

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3.4.3 CONSTRUCTION

The construction process includes permitting and inspections, the procurement of materials, and the construction of homes. The construction of housing comes with a variety of challenges. While the construction process may appear to begin post-disaster, it really must begin long before to ensure that materials and labor are available. The following obstacles to housing reconstruction are identified: the absence of pre-event planning and preparation, inadequacy of efficient and flexible institutional arrangements, and the lack of proactive engagement of the construction industry in disaster management³⁸.

Solutions like the one proposed in the DRH program, which are intended to transition from a temporary to permanent housing solution, must comply with zoning and building code regulations applicable for both temporary and permanent development.

Recommendations include:

Partner with local designers, builders, and contractors. While FEMA prefers national vendors, both the DRH experience and many other reports reviewed indicated that using pre-determined local or regional vendors will have multiple benefits. First, it facilitates the inclusion of local knowledge into the process. Local vendors are more in tune with local needs, which will make the implementation of locally-produced designs more likely and feasible. Although contractors may initially be concerned with unusual materials or practices, these are quickly overcome. Local vendors are also more familiar with local jurisdictions and their permitting and inspection processes. They can help address and overcome these issues as they arise, and provide assurance of long-term commitment to completing the job. A final benefit is the support of local economies. In a post-disaster situation, there is often an influx of outsiders, coming in to help, or to perhaps take advantage of the situation. Post-disaster communities are full of stories of unscrupulous and “fly-by-night” contractors who come in, do shabby work, take money from vulnerable residents, and then disappear. While local labor forces may be inadequate for the whole job, using local contractors will maximize this labor force and return profits to the community itself, which builds capacity and resilience over time.

“Pre-recovery” planning must include pre-procurement. Pre-procurement identifies vendors, contractors, materials, supplies, and services pre-disaster that will be at the ready to be deployed in the

38. Chang, Y., Wilkinson, S., Potangaroa, R., & Seville, E. (2010). *Resourcing challenges for post-disaster housing reconstruction: a comparative analysis*. *Building Research & Information*, 38(3), 247-264.

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event of a disaster. Pre-procurement helps control costs of materials so that prices are determined prior to a disaster and not after, since material costs can be expected to rise significantly after a disaster. Pre-procurement also allows jurisdictions to identify expectations in advance and identify parameters that will be worked within, just as they would do in developing interlocal agreements for debris removal and infrastructure redevelopment. Identifying design and performance standards ahead of time should shorten production time and improve the quality of the units. In some of the Gulf Coast cases, a flexible approach to unit design and construction allowed modifications to be made throughout the development process. In the demonstration program, designers have worked to develop a streamlined assembly process for the CORE units to be able to be put together more easily and quickly. State and federal procurement standards may need to be modified to make this approach to pre-procurement possible.

Build back better. The phrase “build back better” is widely used in post-disaster conversations and can be used to encompass a wide range of practices, but should capture the efforts made by the local community and residents to use the recovery period to strengthen community resilience. It is consistent with the overarching recommendation made to pursue strategies that strengthen resilience versus succumbing to pressures that simply restore pre-existing conditions. In the construction phase, it refers specifically to efforts to improve the environmental performance of buildings (reducing waste, recycling materials, reducing energy usage, for example) and to “harden” or strengthen them in anticipation of future disasters. Policies should allow or facilitate proven processes and practices which increase sustainability.

Pre-approve and plan for flexibility. To make all these things possible, it is recommended that the administrative structure identified as part of “pre-recovery” planning include, as part of their activities, the development of a set of housing designs that are developed with a robust and meaningful period of public engagement to meet all the recommendations in the design section (consistent with community character, flexible, sustainable, etc.). These community-approved designs can then be pre-approved by local jurisdictions, pre-permitted, pre-bid, and pre-procured.

Flexibility is needed, particularly in the permitting process. For rapid re-housing programs, the permitting process typically has the

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impact of slowing down the process, making it difficult to get families back in homes quickly. The conflict comes between the need to use temporary techniques to accelerate the rebuilding process and the need to ensure that the home does and will continue to meet the requirements of the building code. In the demonstration program, for example, requirements related to the foundation systems caused the need for two permits—one for the initial CORE foundation and another for the remainder of the home. This increases costs and slows down construction. Other conflicts may arise related to having two structures on the parcel at one time (either the new home and a trailer, or the need to demolish all structures on the property before anything new can be begun).

Municipal jurisdictions and/or counties are understandably reluctant to allow new building to occur of which they cannot assure quality. While it is not uncommon for the permitting process to be temporarily suspended for days or weeks after a disaster, this suspension is not without risks to both the property owner and the community, if construction activities undertaken do not result in high-quality structures. Within the permitting and approval process, then, it becomes necessary to make extensive use of exceptions, variances, and other tools that allow deviations from existing codes and zoning regulations. The need for such flexibility re-emphasizes the value of local contractors and builders in this process. Local contractors and builders may have pre-existing relationships with inspectors and zoning administrators that will allow the permitting process to have the needed flexibility. These professionals must recognize the value in getting families back in their homes and on their properties and balance these interests against the need to ensure regulatory compliance.

CONCLUSION

Our assessment of findings from both experiences in other states [see the Program Comparison Report] and from experiences in the Lower Rio Grande Valley through the de rapid re housing pilot program allows us to make recommendations for the creation of a Disaster Recovery Housing program.

FEDERAL LEVEL

1. Improved data collection is needed at the federal level regarding program administration and outcomes from federally-funded relief efforts after natural disasters to assist states in targeting aid to areas of greatest need and to reinforce efficiency and effectiveness.
2. Community Development Block Grant awards should be a permanent and integrated feature of the federal disaster response, with the U.S. Department of Housing and Urban Development providing close oversight, technical assistance, and enforcement of fair housing, labor, and environmental quality standards to states receiving disaster recovery funds. This would be supported by positioning the Federal Disaster Recovery Coordinator as a joint collaboration of HUD and FEMA.

STATE LEVEL

1. The state should establish a State Disaster Recovery Coordinator to provide oversight for local boards charged with coordinating on-the-ground long-term recovery activities.
2. The state should contract with a qualified state university unit to provide training, technical assistance, and certification of plans for communities undertaking pre-disaster recovery planning that explicitly incorporates hazard risk assessments, the identification of a Local Housing Recovery Board, and an assessment of the capacity of the appointed board.
3. The state should identify a vendor who can provide an integrated computer system for disaster case management that streamlines enrollment and eligibility throughout the recovery process while protecting the privacy of clients.
4. The state should support the development and maintenance of data that supports fact-based planning, information sharing, and consistent metrics for tracking pre-disaster needs and post-disaster recovery.

CONCLUSION

5. Existing state funding mechanisms for infrastructure investments should be amended to include criteria that assess the extent to which the project will reduce vulnerability and increase resilience.
6. Housing recovery programs should increase housing choice for vulnerable populations, permitting relocation to less exposed locations and/or structural improvements to homes that will withstand future disasters.
7. Procurement programs should be assessed to overcome existing obstacles to pre-procurement.
8. The state should convene a panel of experts to assess practices and metrics for damage assessment that produce consistent, defensible, and accurate assessments of losses and permit geographical targeting of recovery funds to areas of highest need.

LOCAL LEVEL

1. Local governments should undertake pre-disaster recovery planning that is consistent and integrated with the existing network of plans (Comprehensive Plan, Consolidated Housing Plan, Hazard Mitigation Plan, etc.).
2. Counties should seek and accept more control over land use and building codes in high hazard areas to reduce exposure and vulnerability and losses to life and property.
3. Local governments should identify a local housing recovery board that provides guidance and oversight for recovery activities.

When done properly, the disaster recovery process emphasizes the needs of populations most affected by the disaster, resulting in recovery and enhanced resilience for the whole community. When done poorly, it shortchanges actual recovery needs and results in delay, waste of funds, inequities, a lack of accountability, and protracted displacement and hardship for families whose lives have been disrupted by natural disasters.

END OF POLICY
RECOMMENDATIONS