

RAPID DISASTER RECOVERY HOUSING PROGRAM

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JANUARY, 2015

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A Resource in Serving Equality [ARISE]
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CONTENTS

RAPID DISASTER RECOVERY HOUSING PROGRAM

INTRODUCTION

1.0 PROGRAM GOALS	ii
2.0 KEY CONCEPTS AND INNOVATIONS	iv
2.1 Pre-Disaster Preparedness	iv
2.2 Pre-Procurement	iv
2.3 Local Focus	iv
2.4 Supportive Case Navigation	iv
2.5 Community Empowerment	iv
2.6 Temp-to-Perm	v
2.7 Design	vi
2.8 Building	vi
3.0 MAJOR POLICY RECOMMENDATIONS	vii
4.0 TECHNICAL GUIDE	ix

POLICY RECOMMENDATIONS

1.0 INTRODUCTION	01
2.0 CURRENT CHALLENGES	04
3.0 POLICY RECOMMENDATIONS FOR DISASTER RECOVERY	08
3.1 Broad-Based Policy Recommendations	08
3.2 Outreach & Public Participation	16
3.3 Case Management & Social Services	18
3.4 Design & Construction	22
3.4.1 Damage Assessment	23
3.4.2 Design Decisions	26
3.4.3 Construction	29
4.0 CONCLUSION	32

TECHNICAL GUIDE

1.0 INTRODUCTION	33
2.0 TECHNICAL GUIDE	34
2.1 Disaster Recovery Structure	35
2.2 Streams of Work	36
2.2.1 Program Set-up & Administration	36
2.2.2 Local Disaster Planning Board	39
2.2.3 Local Disaster Action Teams	41
3.0 PROGRAM ACTIVITIES	51
3.1 Pre-Disaster	51
Federal Disaster Recovery Coordinator	51
State Disaster Recovery Coordinator	52

CONTENTS

Local Disaster Planning Board	55
Planning Administrator	56
Community Preparedness Administrator	57
Client Services Administrator	58
Housing Administrator	61
Design Planning	62
Construction Planning	64
4.0 POST-DISASTER	66
4.1 Phase 1	67
Disaster Declaration	67
Team Mobilization	67
Target Areas Determined	68
4.2 Phase 2	69
Outreach	69
Intake	69
Environmental Site Review	70
Family Approval - 1st Step	71
4.3 Phase 3	71
Design	71
4.4 Phase 4	73
Temp Construction	73
Move-In	74
Family Approval - 2nd Step	74
Permanent Construction	75
4.5 Phase 5	76

TECHNICAL GUIDE - APPENDICES:

CORE
DR2
Home Design
Environmental Review
Glossary

PROGRAM COMPARISON REPORT

1.0 INTRODUCTION	78
2.0 DISASTER MANAGEMENT PHASES	81
2.1 Mitigation	81
2.2 Preparedness	82
2.3 Response	82
2.4 Recovery	82

CONTENTS

3.0 HOUSING RECOVERY	84
3.1 The Evolution of Recovery in the United States	85
3.2 Federal Government	89
3.3 State Government	91
3.4 Local Government	94
3.4.1 Local Role in Recovery	97
4.0 PROGRAM COMPARISON CATEGORIES	98
4.1 Program Design	98
4.2 Damage Assessment	101
4.3 Outreach	105
4.4 Case Management	107
4.5 Design Decisions	112
4.6 Construction	120
5.0 CONCLUSIONS & RECOMMENDATIONS	126

INTRODUCTION

Our product includes three related documents—the Policy Recommendations, the Technical Guide, and the Program Comparison Report. Each of these documents serves a different purpose and may be used and read by different audiences.

POLICY RECOMMENDATIONS. The Policy Recommendations give an overarching view of the lessons learned from both the RAPIDO Demonstration Project as well as our 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 home owners, 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.

TECHNICAL GUIDE. The Technical Guide supports the Policy Recommendations, offering greater detail on a proposed administrative structure, but more importantly, the Technical Guide serves as a step-by-step guide to adopting and administering the Disaster Recovery Housing program. The intent of the Technical Guide is to allow other users to replicate the program. It is structured so that professionals involved in the execution of such a program can both discover the steps they need to take, but also understand how their parts fit into the whole of the program.

PROGRAM COMPARISON REPORT. The Program Comparison Report serves as an appendix of sorts and includes materials that underlie the actions recommended in the Policy Recommendations and undertaken in the Technical Guide. The Program Comparison Report was generated by identifying post-disaster reports for every hurricane that has struck the Gulf and Atlantic Coasts since 2005 (including Katrina and Rita). This yielded forty (40) reports and articles, most of which covered only pieces of the recovery effort (case management, design, construction, etc.) These documents were systematically compared to one another to develop an understanding of issues and obstacles that have arisen repeatedly across comparable disasters as well as issues that may be more context-dependent.

INTRODUCTION



1.0 PROGRAM GOALS

The DRH program is designed to

- Expedite the housing recovery process through pre-disaster planning and coordination.
 - Develop a plan to re-house owner-occupied households within 120 days of the family's application¹.
 - Complete outreach and homeowner intake within 20-30 days of a disaster.
- Elevate the homeowner in the recovery housing process.
 - Streamline the disaster recovery process for all applicants to ensure that each family's experience is paramount.
 - Promote choice: choice to stay, choice to go.
- Strengthen local control in implementing a DRH Program.
- Execute a temporary-to-permanent rehousing solutions.
 - Incorporate the value of design and choice into housing recovery.
 - Reduce the cost and waste associated with current temporary housing solution.
- Maximize the benefits of pre-disaster planning to both reduce risk of damage and achieve faster and more equitable rehousing.
 - Integrate disaster mitigation and prevention efforts into all areas of work: Outreach, Eligibility, Design and Construction
 - Incorporate disaster recovery housing, mitigation and preparedness into other local planning efforts.



1. The re-housing timeline will begin once disaster response efforts have been completed. The duration of a disaster response effort will vary based on the nature and scale of the disaster

INTRODUCTION

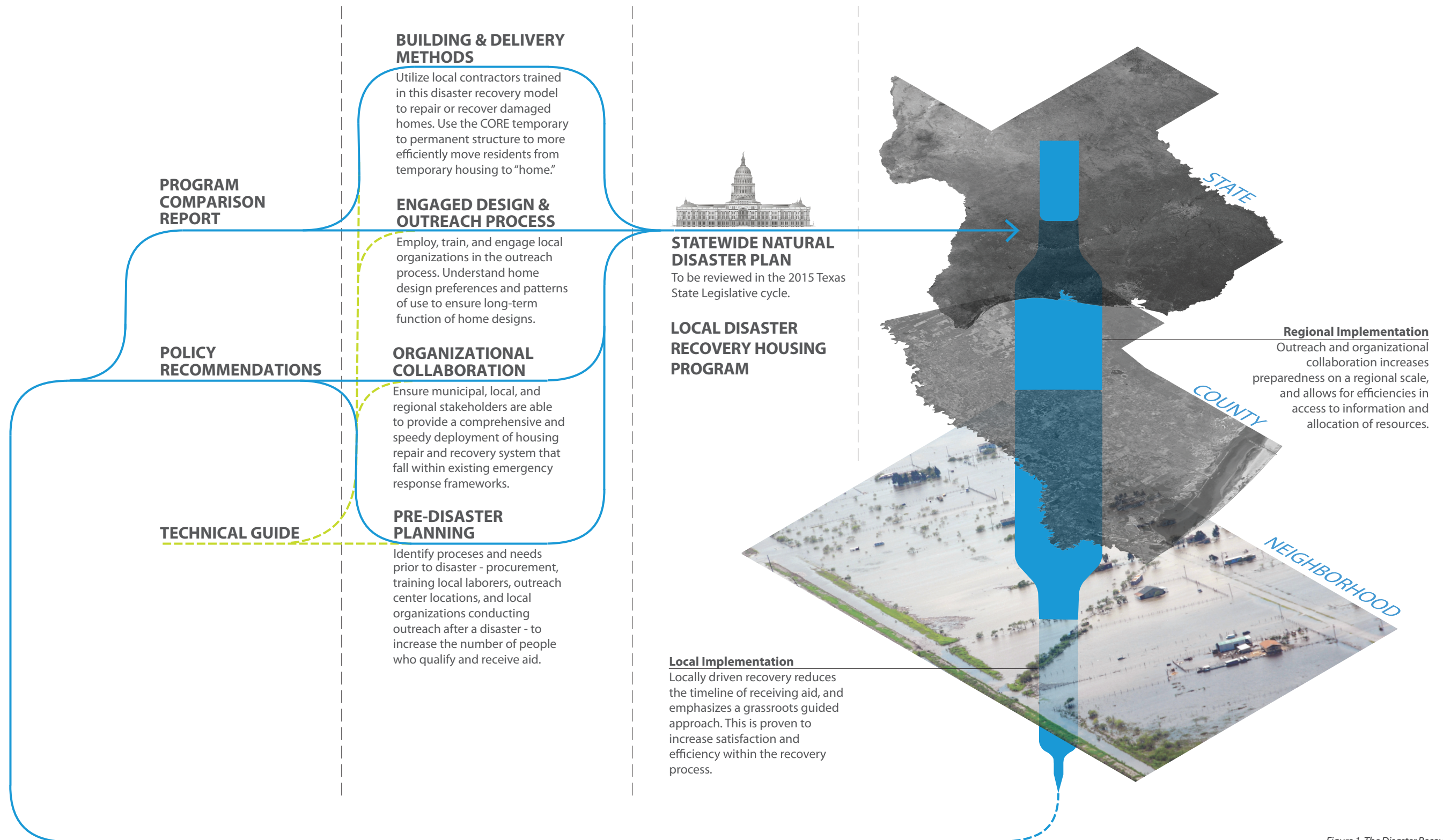


Figure 1. The Disaster Recovery Housing model.

INTRODUCTION

2.0 KEY CONCEPTS AND INNOVATIONS

2.1 PRE-DISASTER PREPAREDNESS

- Data collection and mapping (both formal and community-informed data sources).
- Yearly broad environmental review.
- Identifying social vulnerability and disaster risk.
- Pre-procurement of disaster recovery teams and materials

2.2 PRE-PROCUREMENT

The goal of pre-procurement is to put in place prior to a disaster all of the necessary partners, MOUs, communications, payments, supplies, policies and procedures. Pre-procurement allows housing recovery work to commence at the earliest possible moment after a disaster event occurs.

2.3 LOCAL FOCUS

Broadly representative, locally-driven recovery reduces the timeline of receiving aid and emphasizes a grassroots-guided approach. Involving local stakeholders in decision-making has been shown to increase satisfaction and efficiency within the recovery process [refer to Comparison Report Sections 3.4, 4.2.2, 4.3.2, 4.4.2, 4.6.2]. The DRH Program intends to create a bottom-up, culturally-appropriate approach. The Local Disaster Planning Board's main goal is to create a framework for developing, managing, and implementing the DRH Program to their determined scale, geography and cultural context. The plan should be context appropriate and adapt to local jurisdiction operational structure.

2.4 SUPPORTIVE CASE NAVIGATION

The DRH Program provides a supportive outreach and case management team to assist families through the rehousing process. By assigning a dedicated "Navigator" to each family, the DRH Program assures that families have the support they need—communication, transportation, document collection assistance, or translation services—to complete what can often seem like a daunting process.

2.5 COMMUNITY EMPOWERMENT

Community empowerment can come at multiple levels, the individual, organizational, and governmental. DRH program seeks to address all three. Offering homeowners a choice in the style and type of home that will replace the one they have just lost, restores a feeling of ownership and pride. For many low-income communities, the simple act of asking

INTRODUCTION

“what would you like in a home” can be a powerful experience. DRH program asks quite a lot from local jurisdiction, particularly related to pre-disaster planning and partnership building. Building the capacity to respond to a disaster is not easy for many smaller communities, but in building those partnerships and relationships those communities will have the tools to respond to the variety of challenges that may come in the future. Lastly, emphasizing pre-disaster recovery planning provides a community the ability to shape practices and response efforts to their priorities and sense of place. Ensuring that your voice is present in a time when key decisions are being made and the ability to make collective decisions is constrained.

“Having a collaborative design process was critically important to my colleagues at the City and I, because we want to make sure that with the scarce resources that we have, we help the families that are the focus of this whole effort, to have their homes that reflect their values, their aesthetic ideas, and that are consistent with their neighborhoods.”
- Neal Rackleff, Director, City of Houston Housing and Community Development Outreach.

2.6 TEMP-TO-PERM

The DRH Program’s design and construction methodology is centered around a temporary-to-permanent housing strategy [temp-to-perm] to bridge the relief phase of a disaster with the recovery phase. The rapid response is achieved through the placement of a temporary, modular and incremental unit called the CORE. DRH’s CORE is a 12’x36’ prefabricated panelized temporary unit (conditioned), comprised of a living area, kitchenette, ADA-compliant bathroom, and sleeping area. The CORE unit is designed as a component of a larger home design. Through building the predesigned additions on the CORE, the temporary one bedroom space is transformed into permanent housing.

INTRODUCTION

2.7 DESIGN

The DRH program provides a participatory design process prior and post-disaster.

The CORE design meets the following requirements:

- An informed design incorporating the essential home activities after a disaster [refer to focus groups data on CORE Design].
- *Cost Effectiveness:* Unlike historically used temporary units, 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 that is placed in group sites for infrastructure.
- *Size:* At 480 sq.ft., the CORE is compact enough to be placed in diverse homeowner sites but including enough space for everyday activities. [refer to size comparison graphic]
- *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. [refer to construction criteria graphic] [refer to CORE Prefab and Assembly set]
- Panels are designed to be installed by hand, without the need of heavy machinery. [refer to CORE panels handling photos].
- *Ease of Deployment:* The flat-pack design of the CORE allows Contractors to deploy the CORE easily in a standard flatbed trailer [refer to transportation requirements][refer to CORE deployment photos].
- *Quality of Space:* Within the DRH program's timeline, families will be living in the CORE for at least 4 months. The outdoor design of the CORE eases the interior crowdedness of temporary unit and also provide a space for the family to gather.
- *Accessibility:* COREs will exceed visitability standards.
- *Expandability:* The CORE facilitates expansion, accommodating the families' long term spatial needs and aesthetic preferences. [refer to CORE expansion layouts]

CORE expansions will be result of a local community participatory process, described in the Technical Guide.

2.8 BUILDING

The construction system of the CORE and the diverse additions are designed to give local builders the ability to use their skills and support their families.



INTRODUCTION

3.0 MAJOR POLICY RECOMMENDATIONS

Our assessment of findings from both experiences in other states and from experiences in the Lower Rio Grande Valley through the RAPIDO Demonstration Project, 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 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.

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 Disaster Planning 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.
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

INTRODUCTION

resilience. 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.

INTRODUCTION

4.0 TECHNICAL GUIDE

The Disaster Recovery Housing [DRH] Technical Guide is designed as a support document for municipalities, counties, or councils of government that have adopted the Disaster Recovery Housing (DRH) Program. The Technical Guide seeks to provide a roadmap and technical insight for those administering the DRH program, while assuming there will be variations across the state and its jurisdictions.

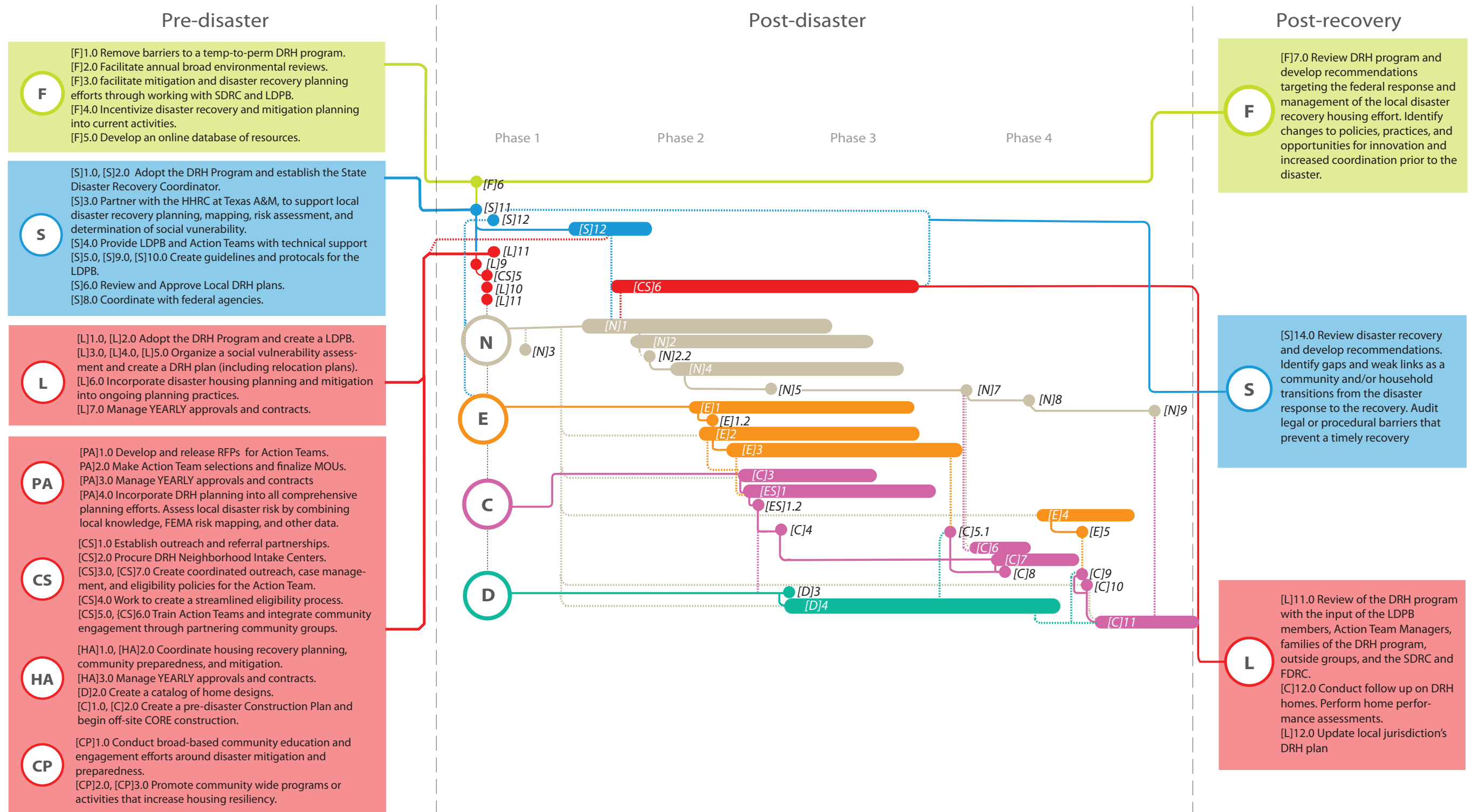
The DRH program does not seek to alter the post-disaster response process or response planning process. Instead, it offers instructions on developing and implementing a local disaster recovery housing plan. As we have seen in prior disasters, the strategy for rehousing residents post disaster has often not been undertaken until the disaster has hit, functionally reinventing the wheel each time. There are a handful of examples of local Emergency Management Plans developing long term recovery plans that include housing, but unfortunately, those are rare.

Based on what we have learned through reviewing past disaster recovery housing efforts and recovery housing pilot programs, the lack of planning for recovery is at the root of why it takes extended periods of time to move a family from temporary into permanent housing. Delays occur because state and local jurisdictions must secure Contractors, go through the procurement process, develop a recovery action plan, and obtain broad environmental reviews [see Program Comparison Report, Sections 3.2, 3.4 & 4.6.1]. The DRH program gives state and local jurisdictions the power and tools necessary to plan ahead for a successful disaster rehousing effort.

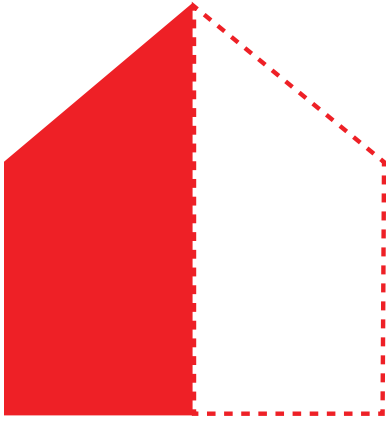
The Technical Guide is primarily for local disaster recovery administrators in the State of Texas [municipalities, counties, or councils of government] that have the capacity to effectively and efficiently execute the DRH Program. The Technical Guide also outlines the roles and responsibilities of other agencies that contribute to disaster recovery housing, such as FEMA, HUD, Texas General Land Office, Texas Division of Emergency Management, and Texas Department Housing and Community Affairs.

INTRODUCTION

DISASTER HOUSING RECOVERY PROGRAM AT-A-GLANCE



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POLICY RECOMMENDATIONS

RAPID DISASTER RECOVERY HOUSING PROGRAM
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CONTENTS

1.0 INTRODUCTION	01
2.0 CURRENT CHALLENGES	04
3.0 POLICY RECOMMENDATIONS FOR DISASTER RECOVERY	08
3.1 Broad-Based Policy Recommendations	08
3.2 Outreach & Public Participation	16
3.3 Case Management & Social Services	18
3.4 Design & Construction	22
3.4.1 Damage Assessment	23
3.4.2 Design Decisions	26
3.4.3 Construction	29
4.0 CONCLUSION	32

POLICY RECOMMENDATIONS INTRODUCTION

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- La Unión Del Pueblo Entero [LUPE] (*contributor*)
- A Resource in Serving Equality [ARISE] (*contributor*)
- Texas Low Income Housing Information Services [TxLIHIS] (*contributor*)

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 home owners are insured against wind and flooding, many home owners may be uninsured, underinsured, or insured for only part of their damages. Further, the same home owners who are likely to lack resources for recovery are also more likely to experience damage and property losses. For these reasons, home owners may be left behind by the recovery process.

While in some communities, the proportion of home owners 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 home owners 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.

POLICY RECOMMENDATIONS INTRODUCTION

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 home owners 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 home owners 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 rehousing 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. We systematically compared these reports to develop an understanding of issues and obstacles that have arisen repeatedly across comparable disasters as well as issues that may be more context-dependent. We also followed the RAPIDO Demonstration Project throughout 2014, talking regularly with the other 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.

POLICY RECOMMENDATIONS INTRODUCTION

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 that capture different aspects of housing recovery efforts. We first offer general recommendations that respond to the challenges listed below, and then offer 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, our 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, allowing them 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.

CURRENT CHALLENGES

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 all together. 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

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.

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CURRENT CHALLENGES

community mean that the best decisions will be made in conjunction 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

CURRENT CHALLENGES

forms of insurance or loans are only willing to fund restoration to 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, we first identify overarching policy recommendations that respond to the aforementioned challenges. Then, we identify how these challenges manifest themselves during many different phases of recovery, including Outreach & Public Participation, Case Management & Social Services, and Design & Construction. For each, we offer policy recommendations for overcoming these challenges.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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.

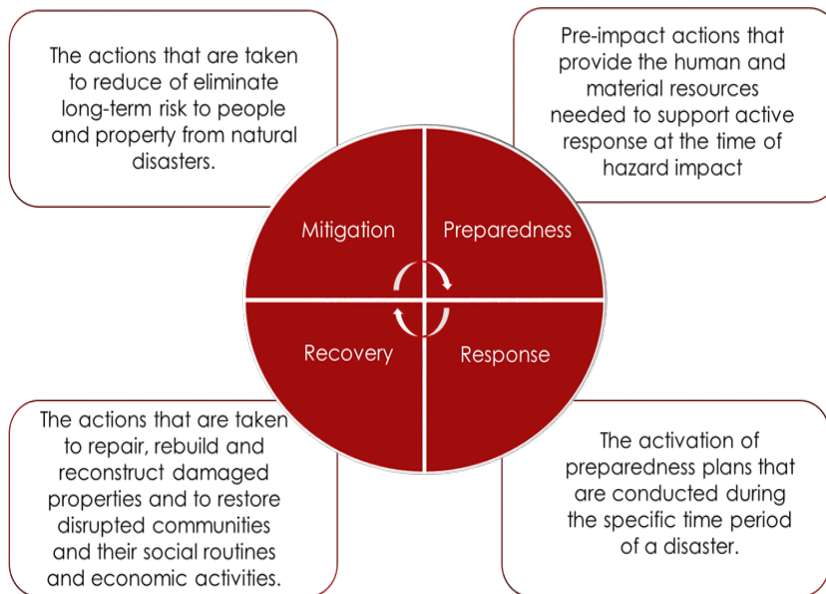


Figure 1. Disaster Management Cycle

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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

flood standards for structures, very few other techniques for hazard mitigation are used in our 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 we 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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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). We are not suggesting new funding be allocated for investments that will reduce vulnerability, but rather that existing investments be evaluated with this criteria in mind.

21. <https://seagrants.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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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, we need to determine whether investments are best applied to insuring under-insured or uninsured 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], we recommend 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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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, we recommend the appointment of a Local Disaster Planning Board, to include a Planning Administrator, a Community Preparedness Administrator, a Client Services Administrator, and a Housing Administrator. 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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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 may include vacant or undeveloped parcels. We do not encourage group

26. See <http://www.mdcinc.org/projects/benefit-bank%C2%AE-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>.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

sites except where entire communities (neighborhoods) of residents need to relocate and wish to do so together.

In the sections that follow, we offer more specific recommendations in each of the substantive areas of housing recovery.

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, our research 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.

To overcome these obstacles, local and state policies should

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;

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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 moreso 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, we recommend writing policies that require providers to justify and document accommodations needed and provided, and 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 the constant duplication of information required to

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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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 non-profit 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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

assessed for 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 our 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. We recommend 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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

by facilitating programs, educational and otherwise, that address 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, which allows them to return to some semblance of normality. Without housing, residents cannot return to fill jobs and restart and reopen businesses as well as consume services and 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

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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

necessity. In addition, in any disaster, members of a community may be found in every form of shelter or housing simultaneously³³.

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, are less likely to apply for certain forms of federal aid, are slower to undertake significant repairs to their homes, are slower to pull permits for repairs, and on the 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 of participate in any recovery system, undermining 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, we break up design and construction into several additional sections. First, we discuss damage assessment, which is a critical element in determining which homes will be eligible for reconstruction assistance. Next we talk about 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 in their homes more quickly, but to build resiliency by engaging residents in the recovery process and giving them more control over their own outcomes. Finally, in the construction section, we discuss 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.

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.

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*.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

Damage assessments are tedious and time-consuming. Further, consistency is necessary to ensure that equitable decisions are made. 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 adjustors 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 home owner. In Hurricane Dolly, FEMA denied many claims based on deferred maintenance, creating a major obstacle to the receipt of assistance by low-income home owners³⁵.

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.

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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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

Triage damage assessments to identify salvageable homes.

Those homes that can be saved should be saved. We recommend an approach that uses national guard and volunteers to quickly assess homes to identify those that can be saved and applying immediate assistance to preserve them from further damage³⁶. Similarly, we recommend that property losses be characterized as proportions of total value lost, rather than absolute dollar amounts. For low-income home owners, 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 home owner.

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

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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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 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 home owners 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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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

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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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, 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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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.

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 we 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

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.

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

job, using local contractors will maximize this labor force and return profits to the community itself, which builds capacity and resilience over time.

“Pre-covery” 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 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 our overarching recommendation to pursue strategies to strengthen resilience versus succumbing to pressures to 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, we recommend that the administrative structure identified as part of “pre-covery” 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

POLICY RECOMMENDATIONS FOR DISASTER RECOVERY

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 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 re-building 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 rehousing 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

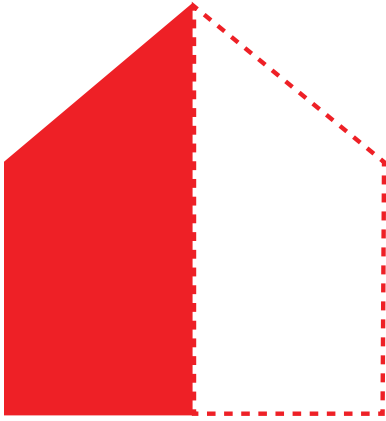
5. Existing state funding mechanisms for infrastructure investments should be amended to include criteria that assess the extent to which the project will reduce vulnerability and increase resilience.
6. Housing recovery programs should increase housing choice for vulnerable populations, permitting relocation 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.

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TECHNICAL GUIDE

RAPID DISASTER RECOVERY HOUSING PROGRAM
JANUARY, 2015

CONTENTS

1.0 INTRODUCTION	33
2.0 TECHNICAL GUIDE	34
2.1 Disaster Recovery Structure	35
2.2 Streams of Work	36
2.2.1 Program Set-up & Administration	36
2.2.2 Local Disaster Planning Board	39
2.2.3 Local Disaster Action Teams	41
3.0 PROGRAM ACTIVITIES	51
3.1 Pre-Disaster	51
Federal Disaster Recovery Coordinator	51
State Disaster Recovery Coordinator	52
Local Disaster Planning Board	55
Planning Administrator	56
Community Preparedness Administrator	57
Client Services Administrator	58
Housing Administrator	61
Design Planning	62
Construction Planning	64
4.0 POST-DISASTER	66
4.1 Phase 1	67
Disaster Declaration	67
Team Mobilization	67
Target Areas Determined	68
4.2 Phase 2	69
Outreach	69
Intake	69
Environmental Site Review	70
Family Approval - 1st Step	71
4.3 Phase 3	71
Design	71
4.4 Phase 4	73
Temp Construction	73
Move-In	74
Family Approval - 2nd Step	74
Permanent Construction	75
4.5 Phase 5	76

CONTENTS

TECHNICAL GUIDE - APPENDICES:

CORE

DR2

Home Design

Environmental Review

Glossary

TECHNICAL GUIDE

INTRODUCTION

1.0 INTRODUCTION

The Technical Guide supports the Policy Recommendations, offering greater detail on a proposed administrative structure, but more importantly, the Technical Guide serves as a step-by-step guide to adopting and administering the Disaster Recovery Housing program. The intent of the Technical Guide is to allow other users to replicate the program. It is structured so that professionals involved in the execution of such a program can both discover the steps they need to take, but also understand how their parts fit into the whole of the program.

- Hazard Reduction and Recovery Center, Texas A&M University [HRRC] (*editor*)
- Community Development Corporation of Brownsville [CDCB] (*author*)
- buildingcommunity WORKSHOP [bc] (*author*)
- La Unión Del Pueblo Entero [LUPE] (*contributor*)
- A Resource in Serving Equality [ARISE] (*contributor*)
- Texas Low Income Housing Information Services [TxLIHIS] (*contributor*)

TECHNICAL GUIDE

2.0 TECHNICAL GUIDE

The Disaster Recovery Housing [DRH] Technical Guide is designed as a support document for municipalities, counties, or councils of government that have adopted the Disaster Recovery Housing (DRH) Program. The Technical Guide seeks to provide a roadmap and technical insight for those administering the DRH program, while assuming there will be variations across the state and its jurisdictions.

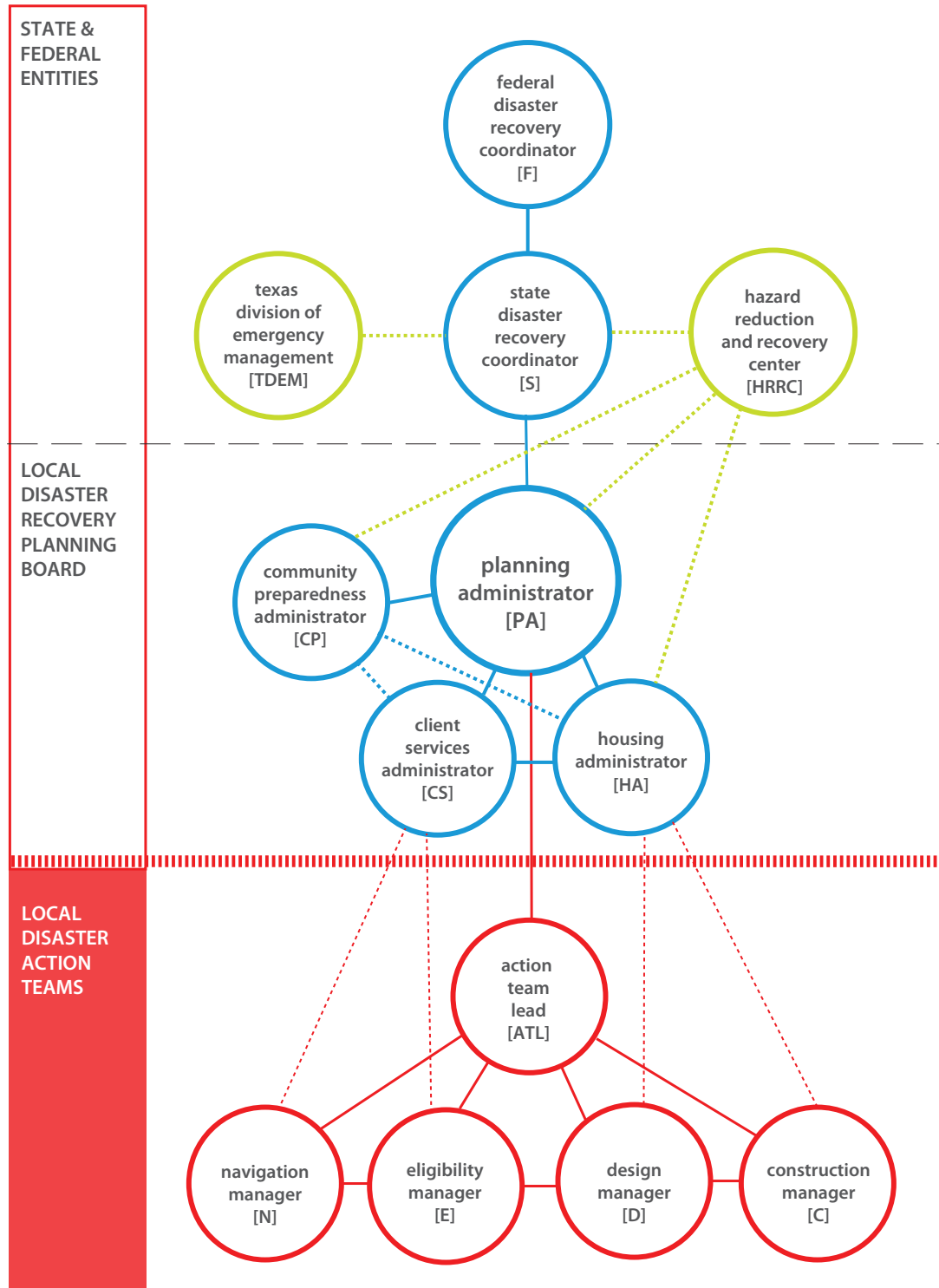
The DRH program does not seek to alter the post-disaster response process or response planning process. Instead, it offers instructions on developing and implementing a local disaster recovery housing plan. As we have seen in prior disasters, the strategy for rehousing residents post disaster has often not been undertaken until the disaster has hit, functionally reinventing the wheel each time. There are a handful of examples of local Emergency Management Plans developing long term recovery plans that include housing, but unfortunately, those are rare.

Based on what we have learned through reviewing past disaster recovery housing efforts and recovery housing pilot programs, the lack of planning for recovery is at the root of why it takes extended periods of time to move a family from temporary into permanent housing. Delays occur because state and local jurisdictions must secure Contractors, go through the procurement process, develop a recovery action plan, and obtain broad environmental reviews [see Program Comparison Report, Sections 3.2, 3.4 & 4.6.1]. The DRH program gives state and local jurisdictions the power and tools necessary to plan ahead for a successful disaster rehousing effort.

The Technical Guide is primarily for local disaster recovery administrators in the State of Texas [municipalities, counties, or councils of government] that have the capacity to effectively and efficiently execute the DRH Program. The Technical Guide also outlines the roles and responsibilities of other agencies that contribute to disaster recovery housing, such as FEMA, HUD, Texas General Land Office, Texas Division of Emergency Management, and Texas Department Housing and Community Affairs.

TECHNICAL GUIDE

2.1 DISASTER HOUSING RECOVERY STRUCTURE



TECHNICAL GUIDE

2.2 STREAMS OF WORK²

2.2.1 PROGRAM SET UP & ADMINISTRATION

Goals

The primary goal of identifying federal and state points-of-contact for disaster recovery is to facilitate both pre-disaster planning and speedier rehousing post disaster through bridging the gap between relief and recovery funding. Through providing planning and mitigation resources, establishing recovery guidelines, and research and technical capacity, the Federal and State Disaster Recovery Coordinators create a structure to support local administration of the DRH program.

Roles & Responsibilities

2.2.1.1 FEDERAL DISASTER RECOVERY COORDINATOR [F]

The Federal Disaster Recovery Coordinator (FDRC) is currently a role within the Federal Emergency Management Agency (FEMA). Within DRH, the FDRC is a joint office of FEMA and the Department of Housing and Urban Development (HUD), and is tasked with bridging the gaps in Disaster Recovery Housing in funding, mitigation, and preparedness planning. The FDRC provides coordination across federal departments related to disaster housing recovery and mitigation. In the event of a catastrophic disaster, where federal assistance is triggered, the FDRC serves to support the State Disaster Recovery Coordinator and Local Disaster Planning Board and their Disaster Recovery Housing plans through facilitating coordination and collaboration between the federal, tribal, state, and local governments; the private sector; volunteers; and faith-based and community organizations (VOADs, Voluntary Organizations Active in Disaster). If a jurisdiction does not have a local DRH program, then the FDRC will serve to support the State's recovery effort by facilitating the incorporation of recovery and mitigation strategies, monitoring recovery and mitigation outcomes and impacts, and periodically assessing if additional resources or assistance is needed.

Responsibilities

- Implement the National Disaster Recovery Framework
- Assist state and tribal jurisdictions in pre-disaster recovery preparedness efforts through technical guidance, pre-disaster planning, and administering preparedness activities.
 - Developing and distributing rehousing best practices.
 - Provide training on pre-disaster planning

2. The roles identified in the DHR Program can be scaled up or down depending on jurisdictional need and capacity, and scale of the recovery housing effort.

TECHNICAL GUIDE

administration, post-disaster outreach, rehousing eligibility, and wrap-around support services.

- Administer financial and technical assistance to state and local agencies conducting pre-disaster planning.
- Develop guidance for effective and equitable damage assessment process.
- Serve as a point of contact and support for state and local agencies administering disaster recovery funds:
 - Communicate information about Federal grants and loans that relate to housing recovery, particularly as it relates to low-income, immigrant, and vulnerable communities.
 - Maximize federal funds available by preventing delays in funding, resolve rule and regulatory conflicts.
 - Ensure all information and decisions related to housing recovery are timely, transparent, accurate, and accessible to all.
- Monitor disaster recovery to ensure that recovery efforts are administered in a timely, equitable manner.
 - Provide oversight for fair housing and community inclusion in the recovery process.
 - Review local disaster recovery housing efforts and develop policy and practice recommendations for the local, state, and federal level housing recovery administrators to improve the process.

2.2.1.2 STATE DISASTER RECOVERY COORDINATOR [S]

The State Disaster Recovery Coordinator, within the General Land Office [GLO], provides coordination between federal, state, and local agencies regarding rapid disaster recovery housing planning, implementation, and mitigation. It supports local jurisdictions by providing training (through state universities), technical assistance, and the sharing of best practices from the federal and state levels. It acts as a partner to the Texas Division of Emergency Management [TDEM] Recovery Coordinator by strengthening the coordination of state level departments involved in disaster planning, mitigation, preparedness, response, and recovery.

Responsibilities

- Coordinate with a state university research center such as the Hazard Reduction and Recovery Center at Texas A&M University to provide:

TECHNICAL GUIDE

- technical assistance to the local jurisdictions
- mapping tools to facilitate assessments
- Perform capacity assessments to determine if local jurisdictions that want to adopt the DRH program have the capacity to administer the program.
- Perform needs and damage assessment in order to prioritize the recovery efforts.
- Oversee local disaster recovery and rehousing efforts to ensure a timely and equitable response.
- Manage an online database of all case management resources available to provide the most complete and consistent information to households trying to access the myriad of state and federal resources available. Such a database should be widely available, well-designed, and easy to access and navigate with minimal training necessary to use it. This will improve coordination and information sharing, streamline paperwork, improve efficiency, save time, save money, and improve consistency among services and forms of assistance.

2.2.1.3 HAZARD REDUCTION & RECOVERY CENTER [HRRC]

The Hazard Reduction & Recovery Center at Texas A&M University is a multi-disciplinary research center that develops knowledge, training, and outreach on disaster mitigation and recovery. The Center's faculty and staff work through three main mechanisms: 1) on-the-ground, face-to-face working with communities to develop pre-disaster mitigation and recovery plans, 2) training of local officials and staff in best practices and techniques for plan development and administration, and 3) public access tools such as the Coastal Atlas that allow communities to develop their own fact-bases for assessing risk. Further, faculty and staff develop and execute plan evaluation protocols that permit the assessment of mitigation and recovery plan quality.

Responsibilities

- Provide technical assistance to communities in plan development and assemblage of team.
- Provide mapping tools to permit risk assessments.
- Provide training to local disaster recovery planning board members to assist with pre-disaster planning.
- Certify pre-disaster recovery plans produced by local disaster recovery boards.

TECHNICAL GUIDE

2.2.1.4 TEXAS DIVISION OF EMERGENCY MANAGEMENT [TDEM]

The Texas Division of Emergency Management (TDEM) coordinates the State of Texas' emergency management program, which seeks to ensure disaster response and recovery planning in all jurisdictions across the State. In the field, TDEM has Regional, State and District Coordinators to provide support to local governments in responding and recovering from emergencies and disasters. Additionally, Emergency Managers offer valuable tools to local jurisdictions that help prevent or reduce damage incurred in an emergency or disaster.

2.2.2 LOCAL DISASTER PLANNING BOARD [L]

The Local Disaster Planning Board and the geographic scale of its coverage is determined by the State Disaster Recovery Coordinator following the recommendations of the capacity assessment. The Local Disaster Planning Board members' primary responsibility is pre-disaster planning, and they are fully available to direct and manage outside agencies to fulfill the DRH program.

Goals

Locally-driven recovery reduces the timeline of receiving aid, and emphasizes a grassroots-guided approach. This is proven to increase satisfaction and efficiency within the recovery process [refer to the Program Comparison Report, Sections 3.4, 4.2.2, 4.3.2, 4.4.2, 4.6.2]. DRH program intends to create a bottom-up, context-based approach. The Local Disaster Planning Board serves to create a framework for developing, managing, and implementing the DRH program to their determined scale, geography and cultural context.

Roles & Responsibilities

2.2.2.1 PLANNING ADMINISTRATOR (LEAD) [PA]

The Planning Administrator will be the bridge between the federal and state assistance and the local Action Teams. The Planning Administrator will work in collaboration with the State Disaster Recovery Coordinator and Federal Disaster Recovery Coordinator regarding planning, preparedness, funding and regulatory barriers. At the local level, they will facilitate ongoing preparedness and semi-regular planning efforts around disaster housing recovery. They will be responsible for understanding the life-cycle of the DRH program, and ensuring that the multiple players have the training and resources they need to be successful. During the post-disaster phase, the Planning Administrator will oversee the work of the Action Teams to implement the DRH

TECHNICAL GUIDE

program and then to evaluate success and adapt the local DRH plan to reflect recommended changes to the system to ensure increased performance.

2.2.2.2 COMMUNITY PREPAREDNESS ADMINISTRATOR (EDUCATION) [CP]

The Community Preparedness Administrator coordinates community preparedness and local disaster education efforts. Through building partnerships, both locally and regionally, the Community Preparedness Administrator works to inform residents, social service organizations, schools, and other local business on the importance of disaster preparedness and mitigation in preventing damage and loss. They will build community capacity through connecting local organizations/nonprofits/volunteer groups/faith communities to promote community engagement and disaster preparedness.

2.2.2.3 CLIENT SERVICES ADMINISTRATOR (NAVIGATION & ELIGIBILITY) [CS]

The Client Services Administrator is responsible for planning and establishing the outreach, case management and eligibility services of the local DRH program. They should have experience managing and administering client-based, social service programs with a strong understanding of the importance of supportive engagement. In preparation for disaster, the Client Services Administrator will coordinate procurement and training of the outreach, case management and eligibility service providers for the local Action Team. After the disaster, the Client Services Administrator will support implementation of the housing recovery program as a specialized resource to the Navigation and Eligibility Managers.

2.2.2.4 HOUSING ADMINISTRATOR [HA]

The Housing Administrator is responsible for planning and establishing a design and construction plan for the DRH program. They should have experience in large scale project management within the local jurisdiction. They will coordinate with municipalities to enforce current building codes and advocate for adopting the most recent building codes. Also he/she will manage the Design and Construction Action Teams procurement and administration and direct Action Team deployment and work in the event of a disaster.

TECHNICAL GUIDE

2.2.3 LOCAL DISASTER ACTION TEAMS

Goals

The Local Disaster Action Teams (aka Action Teams) are the workforce of the DRH program. Procured by the Local Disaster Planning Board, the Action Teams can be comprised of a singular organization, or a collection of smaller organizations. This structure allows for the procurement of local non-profits, community groups and private organizations to work together with the government in the recovery process. Hiring local groups promotes a disaster recovery workforce that cares deeply about the quality of the response effort and has experience with the communities they are working in.

Roles & Responsibilities

2.2.3.1 ACTION TEAM LEAD [ATL]

The Action Team Lead manages the progress, efficiency, and quality of the Action Teams³. They will report to the Local Disaster Planning Board, particularly the Planning Administrator. The Lead is responsible for understanding the housing recovery timeline and DRH program, while also addressing on-the-ground challenges. When problems arise the Action Team Lead will support the Action Team Managers by connecting them to members of the Local Disaster Planning Board or the State Disaster Recovery Coordinator.

Responsibilities

- Understand the full scope of the DRH program; the timeline, deliverables, coordinating parties, and expected homeowner outcomes
- Ensure Action Teams are coordinating throughout the recovery process to prevent the creation of gaps or delays in the timeline and home construction.
- Monitor Action Team progress, deliverables, and timelines;
- Maintain homeowner tracking data on each case to ensure the level of care that the DRH is aiming to achieve.
- Report to the Local Disaster Planning Board weekly

2.2.3.2 NAVIGATION [N]

The goal of the Navigation team is to provide the initial outreach and intake, as well as on-going case management services that engage and guide families through each step of the DRH program. Taking a “navigation” approach means that each family

3. When creating an Action Team, the Local Disaster Planning Board can choose to contract a single organization or a combination of organizations. Additionally, one organization can be selected to perform more than one role in the housing recovery process.

TECHNICAL GUIDE

is paired with a single “Navigator” who accompanies them as they wind their way through the housing recovery process. As the sole case manager from start-to-finish, the Navigator has a holistic view of a family’s case, is a knowledgeable advocate throughout the rehousing process, and a valuable troubleshooter when problems arise. Navigators help families as needed with transportation, document collection, translation, appointments and meetings with DRH staff and Action Team members.

Navigators offer a trusted and reliable relationship in a time of crisis and into recovery. They conduct activities in trusted and convenient locations, as close as possible to impacted neighborhoods. Hiring experienced community members such as health advocates, community organizers, outreach workers, or church members to work as Navigators helps to assure the provision of culturally and linguistically appropriate services to survivors. The Navigators are especially effective at supporting families with special needs or multiple barriers to housing recovery such as large family size or lack of documentation.

Roles & Responsibilities

2.2.3.2.1 NAVIGATION MANAGER

The Navigation Manager supervises the Navigator Action Team as they engage, inform, enroll and navigate families through the disaster recovery housing process.

Responsibilities

- Reporting directly to the Action Team Lead, they assure seamless case management and coordination, supervises case progress and are responsible for managing the performance of the Navigator Team across all steps of the housing recovery process.
- The Navigation Manager maintains a family status reporting system that includes tracking, reporting and assessment of instances where people “drop out” of the process and an explanation of remedies or actions to keep families in the program.
- The Navigation Manager is in direct communication with Local Disaster Planning Board.

2.2.3.2.2 NAVIGATOR [N]

Navigators engage, inform, enroll and guide families through the disaster recovery housing process. They offer a trusted

TECHNICAL GUIDE

and reliable relationship in a time of crisis and into recovery. Hiring experienced community members such as health advocates, community organizers, outreach workers, or church members to work as Navigators helps to assure the provision of culturally and linguistically appropriate services to survivors.

Responsibilities

- Navigators conduct outreach and enrollment activities for DRH program.
- Manage up to 25 cases, accompanying families through the DRH program.
- Work in trusted and convenient locations, as close as possible to impacted neighborhoods.
- Support families with special needs or multiple barriers to housing recovery such as large family size or lack of documentation.
- Act as family's advocate, helping the family understand program requirements and activities, and to troubleshoot any problems or barriers that might prevent successful and rapid rehousing.
- Partner to the other professional team members—Eligibility Specialists, Architects, Construction Managers—as they work together to help families complete each step of the DRH program.

2.2.3.3 ELIGIBILITY [E]

The goal of the Eligibility team is to determine if a family qualifies for federal disaster recovery housing assistance and to prepare and submit applications for assistance to the State. Unlike other housing recovery eligibility processes, the DRH Eligibility coordinates closely with Design and Construction Action Teams to implement an innovative two-step approval process which allows for the accelerated placement of temporary recovery housing on a homeowner's property. This responsive, low-barrier, and coordinated eligibility process helps prevent families from being displaced from their properties for an extended period of time. Eligibility also works closely with the family's Navigator to assure that any barriers to eligibility such as lost documentation, literacy, language, or transportation to appointments, are addressed so that the family can be approved for federal housing recovery assistance as quickly as possible.

TECHNICAL GUIDE

Roles & Responsibilities

2.2.3.2.1 ELIGIBILITY MANAGER

The Eligibility Manager oversees the Eligibility Team and acts as a liaison to the Local Disaster Planning Board. The Eligibility Manager has a strong familiarity with federal, state, and local program requirements and policies for determining eligibility for recovery assistance, as well as potential barriers to eligibility for impacted families.

Responsibilities:

- Oversees team of Eligibility Specialists who work with families to gather documentation, determine eligibility, and prepare and submit an application for housing recovery grant assistance.
- The Eligibility Manager is responsible for reporting the status of all applications and approval to the Action Team Lead, and has direct communication with the Local Disaster Planning Board regarding the implementation of program eligibility requirements.

2.2.3.4 DESIGN AND CONSTRUCTION [D] [C]

The Design and Construction Action Teams are procured by the Local Disaster Planning Board and are led by the Housing Administrator. They are in charge of all temp-to-perm activities and milestones of the DRH plan, from coordination and planning to the built product.

Goals

The main goal of the Design and Construction Action Teams is to enable family's rapid return to the homeowner's property. The design and construction system is phased in two parts to ease the transition between housing relief and recovery and to eradicate the traditional inadequacies associated with housing relief solutions [refer to the Program Comparison Report Sections 3, 4.5.2, 4.6.2]. The DRH establishes a design and construction system that:

- Captures funds being utilized for housing relief solutions and redirects them to a temp-to-perm solution.
- Supports the development of a context-appropriate, catalogue of home designs.
- Contributes to the long-term development of community and place.

TECHNICAL GUIDE

- Increase the availability of affordable housing and improve the quality of housing built after a disaster.
- Fosters the development of home designs which:
 - Improves the sustainability and desirability of housing rebuilt in the event of natural disasters.
 - Responds to community needs and desires to enhance neighborhood vitality.
 - Improves the perceptions and practices of disaster reconstruction housing.
- Reduces the amount of time that residents are displaced, keeping social networks intact and reducing the negative economic impacts of disasters on the affected households.

Roles & Responsibilities

2.2.3.4.1 DESIGN MANAGER [DM]

The Local Disaster Planning Board [HA] selects one firm (from the pre-procured design firms) to be the team lead in the design planning process and the post-disaster activities. The firm assigns a person from their staff with experience in design and project management to become the Design Manager. Pre-disaster, the Design Manager coordinates with the Housing Administrator on the design planning process, and familiarizes the pre-procured Design Action Team with the plan goals, milestones and tasks. Post-disaster, the Design Manager supervises all Action Team members' progress, ensures Technical Guide recommendations are being followed, and that deliverables are in alignment with the project goals, cost and schedule.

Responsibilities

- Communicate weekly with the other Action Team Managers [Navigation, Eligibility, and Construction] about overall project management activities and updates from outreach to housing completion.
- Report directly to the Action Team Lead on milestones, issues and project status.
- The Design Manager is in direct communication with the Housing Administrator.
- After project completion, deliver a program report to the Local Disaster Planning Board to determine post-program actions.

TECHNICAL GUIDE

2.2.3.4.2 DESIGNERS - PRE-DISASTER [D]

Local architecture firms (engaged by the Local Disaster Planning Board) will participate in design charrettes and community focus groups held in targeted neighborhoods.

Responsibilities

- Attending DRH training provided by the Texas Board of Architectural Examiners.
- Working closely with the Community Preparedness and Client Services Administrators, local community organizations, faith communities, and other stakeholders, during the design process, to engage residents in representative neighborhoods.
- Following Technical Guide steps.
- Following resident input on home design.
- Following program design and construction requirements: CORE design, design and construction timeline and program budget.



TECHNICAL GUIDE

2.2.3.4.3 DESIGNERS - POST-DISASTER [D]

Designers (drafters, architects, or architects in training) working for the firm(s) procured by the Local Disaster Planning Board are responsible for guiding the families through the home design selection process.

Responsibilities

- Hold two design meetings with the families (home design selection and pre-construction meeting)
- Adapt the pre-permitted construction document sets to each individual case.
- When the project has been assigned to a specific Contractor, the Designer is responsible for three site visits, checking Contractors' progress and milestone goals.
- Report project issues and status to the Design Manager.

2.2.3.4.4 CONSTRUCTION MANAGER [CM]

The Construction Manager will work at the Action Team Lead organization or is a housing developer contracted to manage the construction stream of work. The Construction Manager has experience in construction and project management. Pre-disaster, the Construction Manager will familiarize the construction team with the plan goals, milestones and tasks. Post-disaster, the Construction Manager, will supervise all team members' work progress, ensure that the Technical Guide recommendations are followed and will ensure deliverables are in alignment with the project goals, cost and schedule.

Responsibilities

- Communicate weekly with the other Action Team Managers [Navigation, Eligibility, Design and Construction] about overall project management activities and updates from outreach to housing completion
- Report directly to the Action Team Lead on milestones, issues and project status.
- The Construction Manager is in direct communication with the Local Disaster Planning Board.
- After project completion, deliver a program report to the Action Team Lead to determine post-program actions.

TECHNICAL GUIDE

2.2.3.4.5 CONTRACTORS

To apply as a builder for the program, Contractors attend a required briefing on the DRH program. The Local Disaster Planning Board provides information about DRH goals, the program's scope and program requirements. If procured, Contractors attend appropriate training on the design and construction specifics of the DRH program and their role within the Design and Construction Action Teams. The Local Disaster Planning Board provides Contractors with training on OSHA safety and health standards. Contractors are assigned by the Local Disaster Planning Board to a particular zone/area based on the determined geography of work (region, county, city). Depending on the scale, Contractors are required to build a certain amount of CORE units prior to the disaster. [refer to CORE description in the Introduction, Section 4.0 "Key Concepts and Innovations"]

Based on the scale and geography of the disaster, Contractors will be deployed by the Local Disaster Planning Board in the order of their ranking, which was determined during the procurement process. Depending on the amount of affected families, each Contractor receives a specific number of families within their pre-assigned region.

Responsibilities

- Following OSHA safety and health standards.
- Informing the Designer of any issues that arise during construction period.
- Request approval for any change to the contract documents, even if the homeowner requests the change.
- Communicate with the Construction Manager weekly during the construction period.
- If the Contractor doesn't have the capacity to supervise the work in progress, they shall procure a foreman for each project.
- Reporting directly to the Construction Manager on project status and obstacles encountered.

SUB-CONTRACTORS

Local sub-contractors are contracted by pre-procured (and approved) Contractors. Hiring local labor promotes community involvement and ensures tax dollars are invested back into the local economy.

TECHNICAL GUIDE

All local builders (Sub-Contractors) procured under DRH Contractors shall receive training on the design and construction specifications of the program and OSHA safety and health standards.

Responsibilities

- Attending training on off-site panelized construction of the CORE and the process of expanding the CORE into a permanent home.
- Following construction standards and local building codes

2.2.3.4.6 MATERIAL SUPPLIERS [MS]

Engaged by the Housing Administrator, local Material Suppliers work closely with Designers and Contractors in obtaining the materials, fixtures and appliances specified in the pre-permitted sets (in stock). Contracts with Material Suppliers are updated annually to account for construction material price fluctuations.

Responsibilities

- Guaranteeing local material supply during the wake of a natural disaster.
- Pre-disaster, each Material Supplier will establish a supply agreement with adjacent regions Material Suppliers as back-up supply in case they are impacted by the disaster and the planned supply chain is affected.
- Following Technical Guide recommendations on storage and material handling.

2.2.3.4.7 ENVIRONMENTAL SPECIALISTS [ES]

The Action Team Lead or the Construction Manager should have an Environmental Specialist on their staff. The Environmental Specialist should be familiarized with the DRH design and construction strategy, which involves two phases of environmental clearance: [CM]

Responsibilities

- Annual broad environmental review is done before the disaster in order to identify which target areas have environmental clearance and which ones will need to be relocated.

TECHNICAL GUIDE

- Site-specific environmental review for the CORE assembly and Additions construction. [refer to [ES]1.0]
- [refer to the appendix “Steps to ensure Broad Environmental Review and Site Specific will be cleared”]

PROGRAM ACTIVITIES

WHAT MAKES A DISASTER RECOVERY HOUSING PLAN?

A recovery plan is a document created and adopted by a governing agency (usually city or county) prior to a disaster. It may be done in conjunction with hazard mitigation plans, or with comprehensive plans created by communities. The recovery plan assesses the exposure risks to the community, as well as the likelihood of impact. Further, a strong recovery plan will identify possible risks the community, such as neighborhood-scale —recognizing that a community and its population is not homogeneous, and will face different degrees of exposure as well as have different capacities to recover. The recovery plan will set in place an administrative structure for the management of the recovery process, which should be closely coordinated with the local emergency management organization and community organizations that broadly represent community stakeholders. It will also specify methods by which the local government can take cooperative action and pre-procure the necessary professional expertise, materials, and financial resources for recovery. Finally, the recovery plan should specify a means for consulting with and assisting citizens thought the recovery process.

ADDITIONAL RESOURCES ON RECOVERY PLANNING:

The American Planning Association: <https://www.planning.org/research/postdisaster/>

Texas A&M University, Planning for Community Resilience: A Handbook for Reducing Vulnerability to Disasters.

3.1 PRE-DISASTER

DRH Program Work-Stream Tasks

[F] FEDERAL DISASTER RECOVERY COORDINATOR

[F]1.0 Remove financial and administrative barriers to a temporary-to-permanent DRH program.

[F]1.1 Establish the Federal Disaster Recovery Coordinator (FDRC) as a joint FEMA and HUD coordinator position, to create more direct coordination between FEMA and HUD funding and resources.

[F]1.2 Eliminate the span of time between FEMA temporary housing funds and HUD permanent housing recovery funds.

[F]2.0 Facilitate an annual broad environmental review process

Remove the project specific requirements related to broad environmental review. Allow a local jurisdiction to conduct annual broad environmental review for any and all projects receiving federal funding.

PROGRAM ACTIVITIES

[F]3.0 Activate working relationships with State Disaster Recovery Coordinator and Local Disaster Recovery Administrators to facilitate mitigation and disaster recovery planning efforts.

[F]3.1 Assist local jurisdictions in developing disaster recovery and mitigation plans, through technical guidance and expertise⁴.

[F]3.2 Investigate promising strategies for incorporating local knowledge when determining areas of increased flood hazard exposure and risk⁵.

[F]3.3 Document past disasters and develop a repository of information that can support the enhancement state, local and/or tribal capacity through increased sharing of lessons learned from past disasters and national best practices for local, state and tribal disaster recovery, mitigation, and planning efforts.

[F]3.4 Specify and establish common standards and guidelines for damage assessments that are proportional and equitable.

[F]4.0 Incentivize the incorporation of disaster recovery planning and mitigation planning into current activities and the current network of planning, such as the coordination of Emergency Management Plans, Local Comprehensive Land Use Plans, Consolidated Plans, or NFIP's Community Rating System⁶.

[F]5.0 Develop an online database for all resources available for Navigators in disaster recovery.

[F]5.1 Develop standard language, vocabulary, and guidelines.

[F]5.2 Train state agencies on tools available.

[S] STATE DISASTER RECOVERY COORDINATOR

[S]1.0 Adopt the DRH Program

[S]2.0 Establish a person or department (State Disaster Recovery Coordinator) within the GLO to support local and regional jurisdictions.

[S]3.0 Partner or contract with research and academic units, such as the Hazard Reduction and Recovery Center at Texas A&M, to support local disaster recovery planning, mapping, risk assessment, and determination of social vulnerability.

4. Hazard Mitigation: Integrating Best Practices into Planning, July 2010, FEMA

5. Charlotte-Mecklenburg County Community Floodplain Mapping Program

6. Local Mitigation Planning Handbook, March 2013, FEMA

PROGRAM ACTIVITIES

[S]3.1 Utilize the HRRC to conduct reviews and certification of local Disaster Recovery Housing plans, and modification recommendations.

[S]3.2 Support local jurisdictions in Disaster Recovery Housing plan development, understanding social vulnerability assessments, and incorporating disaster recovery planning and mitigation into other local processes

[S]3.3 Provide (with support from the HRRC) training to Action Teams.

[S]4.0 Support Local Disaster Planning Boards and Action Teams through training and technical assistance. [S3.0]

[S]4.1 Develop state and regional disaster housing recovery best practices.

[S]4.2 Support local disaster recovery planning by providing resources to conduct mapping, risk assessment, and determination of social vulnerability.

[S]4.2.1 Provide training to Local Disaster Planning Boards on social vulnerability.

[S]5.0 Create guidelines for procurement of the Local Disaster Planning Board and provide MOU templates for the creation of the Action Teams.

[S]5.1 Identify roles, responsibilities, and expectations for each Action Team

[S]5.2 Communicate the scope of the project and evaluation criteria

[S]5.3 Create a ranking system in order to qualify applicants and establish a deployment order. This should be done particularly with Contractors. For example, the State Disaster Recovery Coordinator should evaluate compliance and performance, bonding capacity, project management, customer satisfaction, re-inspection rates, and product quality.

[S]6.0 Review and approve local DRH plans

[S]6.1 Perform a capacity assessment of the local jurisdictions to determine if the area jurisdictions have the skill and financial capacity to implement the local DRH program between COGs, counties or cities⁷.

[S]6.2 Review local DRH plan [L]3.0

[S]6.2.1 Ensure that the local DRH plan is workable and meets the objectives of rapid disaster housing recovery, if not provide actionable feedback to the Local Disaster

7. <http://www.usaid.gov/sites/default/files/documents/1864/OCA%20Tool%20for%20USAID-Funded%20Organizations%20Facilitators%20Copy.pdf>

<http://www.usaid.gov/sites/default/files/documents/1864/OCA%20Tool%20for%20Community%20Based%20Organizations.pdf>

PROGRAM ACTIVITIES

Planning Board.

[S]6.2.2 Offer technical assistance to jurisdictions that need help in adapting the DRH program to their location.

[S]6.3 Approve local DRH plan and offer oversight to local jurisdictions.

[S]6.4 Conduct a yearly review of each local jurisdiction's DRH program to ensure that their contracts, certifications, broad environmental reviews, and other pre-disaster housing recovery tasks have been kept up to date. This may become critical in jurisdictions that go years without a disaster.

[S]7.0 Develop and communicate requirements and general practices related to disaster housing and funding standards.

[S]7.1 Provide briefings for local jurisdictions on an annual basis regarding new programs and updates to existing programs. Briefings include program goals, requirements, application process and reporting requirements.

[S]7.2 Ensure that state and federal funding, reporting, or procedural requirements are clearly outlined at all levels in full at the beginning.

[S]7.3 Maintain oversight to ensure the achievement of performance standards.

[S]8.0 Coordinate with federal agencies.

[S]8.1 Conduct an audit of state or regional mitigation strategies with FEMA.

[S]8.2 Develop a strategy to support local adoption and enforcement of building standards with HUD.

[S]9.0 Provide damage assessment guidelines.

[S]9.1 Create consistent and detailed guidelines for conducting damage assessments.

[S]9.2 Provide annual training on what to look for and common biases (location bias, discrimination, length of time, etc).

[S]10.0 Create triage protocol for local geography⁸.

[S]10.1 Provide clear triage protocol to be applied consistently across all service providers.

[S]10.2 Provide training or certify Navigators on triage protocol and techniques for identifying populations in the greatest need.

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

PROGRAM ACTIVITIES

[L] LOCAL DISASTER PLANNING BOARD

[L]1.0 Adopt the Disaster Recovery Housing Program

[L]2.0 Create a Local Disaster Planning Board

The appropriate authority, such as a mayor, city manager, or director identifies qualified, senior level professionals to form the Local Disaster Planning Board, comprised of individuals most likely working for the jurisdiction that adopts the DRH program. Board members have experience in the areas of Planning & Administration, Case Management & Program Eligibility, Community Outreach & Education, and Design & Construction.

[L]3.0 Organize a social vulnerability assessment

In coordination with standard planning and engagement activities in the predetermined geography. [refer to Program Comparison Report, Section 4.2.2]

[L]3.1 Coordinate with the State Disaster Recovery Coordinator and the HRRC to partner in the assessment process.

[L]3.2 Understand what areas, neighborhoods, and community members are most vulnerable. Utilize infrastructure and housing surveys completed by the community in targeted areas, and cross reference them with the state data.

[L]3.3 Reduce or modify development in areas that are prone to natural disasters to reduce impact on structures, life and safety.

[L]4.0 Create an Implementation Framework (aka "DRH plan")

The Planning Administrator will lead the local DRH planning effort, supported by the Community Preparedness, Client Services, and Housing Administrators.

[L]4.1 Create a framework for developing, managing, and implementing the DRH program to their determined scale, geography and cultural context.

[L]4.2 Report program modifications to the State Disaster Recovery Coordinator for approval.

[L]5.0 Develop a Relocation Plan

[L]5.1 Use the yearly broad environmental review to assess the local jurisdiction's need for a housing relocation plan. If the broad environmental review identifies areas that are not approved for redevelopment in the event of a disaster, then the local jurisdiction must begin identifying areas and strategies for resident relocation.



Community meeting with residents of Country View around community priorities and infrastructure needs.



Community meeting with residents of Curry Estates exploring issues of flooding and drainage.

PROGRAM ACTIVITIES

[L]6.0 Incorporate disaster housing planning and mitigation into planning practices and all comprehensive planning efforts.

[L]6.1 Work at the local level to promote, develop, and enforce disaster mitigation strategies that contribute to reduced housing damage in the event of a future disaster.

[L]7.0 Manage YEARLY approvals and contracts

The Planning Administrator oversees overall completion, but the Community Preparedness, Client Services, and Housing Administrators manage the completion of approvals and contracts that relate to their area of recovery effort.

[L]7.1 Yearly Action Team training and certification. Yearly training and certifications are used to train new members of the Action Team or provide a refresher for previously certified participants. Additionally, yearly trainings serve to provide updates on any changes made to local, state, or federal housing assistance eligibility standards, reporting requirements, response and recovery practices, or other information that would alter how the Action Teams would conduct their housing recovery tasks. This also includes any changes to the local DRH plan.

[PA] PLANNING ADMINISTRATOR

[PA]1.0 Develop and release RFPs

Develop and release RFPs for procurement of the Action Teams⁹ [Action Team Lead, Navigation, Eligibility, Design and Construction]. RFP releases are lead by the Planning Administrator, but are supported by the Community Preparedness, Client Services, and Housing Administrators.

[PA]1.1 Communicate selection criteria, skills needed and project guidelines for each Action Team.

[PA]1.2 Provides oversight for the work of the Action Team. An Action Team Lead is contracted to manage the success of the overall program¹⁰.

[PA]1.3 Preference is given to local organizations when selecting the Action Teams. In the event a large non-local firm is hired to manage the details of the housing recovery effort, the Local Disaster Planning Board requires the use of pre-approved local organizations to handle the on-the-ground recovery effort. Selecting an organization(s) that has strong connections to the community, particularly to those who are the most vulnerable to displacement in the event of a disaster, strengthens the ability of the Navigator to support

9. Developing and releasing RFPs will depending on jurisdictional requirements

10. When creating an Action Team, the Local Disaster Planning Board can choose to contract a single organization or a combination of organizations. Additionally, one organization can be selected to perform more than one role in the housing recovery process.

PROGRAM ACTIVITIES

families through the rehousing process.

[PA]1.4 Refer to roles and responsibilities in each Action Team Section regarding qualities the Local Disaster Planning Board looks for in the procurement process.

[PA]1.4.1 Outline Contractor bid procedures and cost control guidelines. Rank local Contractors following qualification requirements.

[PA]1.4.2 Contractors will be awarding contracts in units of five houses.

[PA]1.4.3 Enforce Section 3 requirements for the procurement of sub-contractors.

[PA]2.0 Make Action Team selections and finalize the necessary MOUs.

During the selection of the local Action Teams for the roles of Navigation, Eligibility, Design and Construction.

[PA]3.0 Manage YEARLY approvals and contracts.

The Planning Administrator will oversee overall completion.

[PA]3.1 Yearly MOUs of Action Teams and Action Team Lead

[PA]3.2 Yearly broad environmental review [C] [HA]

[PA]3.2 Yearly updates to the DRH plan

[L]3.2.1 State Disaster Recovery Coordinator will receive reports and feedback from each Action Team Manager after the recovery work.

[PA]4.0 Incorporate disaster housing planning and mitigation into planning practices and all comprehensive planning efforts.

[PA]4.1 Assess local hazard exposures and disaster risk by combining local knowledge, FEMA risk mapping, FEMA flood maps, and other data. Particularly when it comes to flooding, engage local residents to identify areas that are prone to floods that may not be identified on FEMA flood maps¹¹.

[CP] COMMUNITY PREPAREDNESS ADMINISTRATOR

[CP]1.0 Conduct broad-based community education and engagement efforts around disaster mitigation and preparedness.

[CP]1.1 Identify and work closely with organizations or nonprofits working vulnerable communities to ensure the communities have access to education, training, resources, and information from trusted sources.

[CP] 1.0 Disaster Preparedness Program for Low-Income Homeowners

An example of this would be: LUPE hosts an event where we present information regarding the documents needed pre disaster such as:

- *property title*
- *valid ID's (examples of it)*
- *SSN or ETIN verification*
- *last statement of utility (water, electric) that shows you were living there during the hurricane*
- *income verification*

11. Charlotte-Mecklenburg County Community Floodplain Mapping Program

PROGRAM ACTIVITIES

[CP]2.0 Promote community wide programs or activities that increase housing resiliency.

[CP]2.1 Expand current local weatherization programs to include housing mitigation repairs.

[CP]2.2 Partner with local, grassroots organizations to incorporate housing resiliency¹², displacement prevention, and disaster preparedness into their yearly calendar including:

- Girl/Cub/Boy Scouts
- National Guard
- PTA or schools
- Fraternal Orders
- Professional Organizations
- Neighborhood Associations
- Political or Organizing Organization
- Religious organizations or Faith Communities

[CP]3.0 Coordinate with Action Team Managers in pre-disaster response and recovery planning and community preparedness.

[CP]3.1 Partner is conducting community preparedness and education activities

[CP]3.1.1 Utilize other organizations such as the boy/girl scouts or fire department to support community preparedness programs.

[CS] CLIENT SERVICES ADMINISTRATOR

In preparation for a disaster event, the Client Services Administrator oversees set-up for all activities of the DRH program related to outreach, case management, and eligibility. The Client Services Administrator will establish program policies and procedures, procure Contractors, and coordinate training for the Action Teams. The Client Services Administrator will also build partnerships with local social services organizations, faith communities, VOAD groups, and other support organizations prior to a disaster, to assure responsive and effective community outreach during disaster recovery.

[CS]1.0 Establish outreach and referral partnerships and MOUs with local groups.

Outreach to and inform local social services, faith communities, VOAD groups, and other support organizations about the DRH program. Identify opportunities for collaboration with local groups, such as local groups referring impacted families to the



Texas RioGrande Legal Aid educating community residents of home titles and the importance of will in transferring ownership. The meeting was organized and host by LUPE.

¹². Christmas in Action [<http://christmasinaction.org/mission>]

PROGRAM ACTIVITIES

DRH program, conducting post-disaster outreach and intake at their site, or hosting pre-disaster preparedness activities. Establish formalized partnership MOU's between community organizations and the DRH program.

[CS]2.0 Select and procure DRH Neighborhood Intake Centers.

[CS]2.1 Identify DRH Neighborhood Intake Centers. Neighborhood Intake Centers are pre-determined, centralized location that serve affected communities in the immediate aftermath of a disaster. These locations should be welcoming, comfortable and familiar to community members, perhaps suggested by community members. DRH Neighborhood Intake Centers could also be co-located with other disaster relief and response services such as shelters, food pantries, and supply distribution sites.

[CS]2.2 Draft an MOU between the jurisdiction (city, county, COG) and the owner of the selected site; this will establish an agreement for the use of the facility after a natural disaster.

[CS]3.0 Create coordinated outreach, case management, and eligibility policies and procedures for the Action Team.

[CS]3.1 Establish outreach and referral procedures with partnering community groups.

[CS]3.2 Create an easy-to-use intake process to enroll families in the DRH program. An easy-to-use intake process has various access points such as online, intake centers, and person-to-person outreach. A basic template for an intake form can be created pre-disaster and adjusted for disaster recovery based on specific administrative program requirements. [see intake form sidebar].

[CS]4.0 Work with federal and state agencies to create a streamlined eligibility process.

[CS] 3.2 INTAKE FORM

The intake should be a simple pre-screening application that does not require expertise or in-depth knowledge of specific eligibility requirements. It's best to keep the intake simple, yet effective at preparing the family for their first eligibility meeting. Suggested fields and attachments for the intake include:

- *Name*
- *Date of birth*
- *Social security number*
- *Number of dependents*
- *Names of residents living in the house*
- *Who is over 18?*
- *Do you own your property?*
- *Do you have your taxes current*
- *Attach most recent taxes*

PROGRAM ACTIVITIES

TRAINING GUIDE FOR NAVIGATORS

In the DRH program, Navigators are an essential support system for families. The primary role of the Navigator is to be a family's trusted advocate throughout the entire process, to help the family understand program requirements and activities, and to troubleshoot any problems or barriers that might prevent successful and rapid re-housing. The Navigator must also be a trusted member of the team and a partner to the other professional team members—Eligibility Specialists, Architects/Designers, Construction Managers—as they work together to help families complete each step of the DRH program.

While all Action Team members should be familiar with the DRH program, it is most important that Navigators understand the process in its entirety: Who are the professional experts on the team? What are the major activities and requirements of each step of the process? And who do I turn to in case a problem arises in the process? Navigators are not expected to become experts in each step of the DRH program. Rather, their role is to work together with both the family and the professional experts to move the case forward. With that in mind, Navigator training should include the following topics:

- Training on the DRH Intake Form
- Understanding the DRH model: pre and post disaster steps. Familiarize navigators with all aspects of the rehousing process: outreach, eligibility, application, design, closing, construction, relocation, move-in. Navigators will not need to be experts themselves on any one part of the process but will guide or navigate families through the process of meeting with various experts.
- Introductions to all members, roles and responsibilities of the Action team.
- Any specialized language or concepts important to understand in each phase: What's the role of the Eligibility Specialist? Why does an Eligibility Specialist need certain kinds of documentation? What's a Contractor? What does a bid mean? What to expect from construction timelines?
- Outreach training
- Understanding vulnerable communities and potential barriers to housing recovery
- Scenarios and example homeowner cases.
- What to expect in a disaster situation/crisis management.
- Social service or disaster response referral list.

Establish clear guidelines for program eligibility with the state and federal level and clarity with Action Teams for implementation.

[CS]5.0 Train Action Teams and partnering community groups.
After the Action Team partners are procured, the Client Services Administrator will conduct trainings for the Navigation and Eligibility Action Teams. This training will be required each year after MOUs are finalized.

[CS]6.0 Integrate community engagement practices.
Encourage the integration of community engagement practices

PROGRAM ACTIVITIES

into all municipal, county or regional departments that work directly in neighborhoods. This effort is led by the Community Preparedness and Client Services Administrators.

[CS]6.1 Support departments that work in local neighborhoods but do not incorporate community engagement into their planning or decision making. This could be departments such as Animal Control, Code Enforcement, Environmental Quality, Utilities, or Public Works.

[CS]7.0 Coordinate with Action Team Managers in pre-disaster response and recovery planning and community preparedness.

[CS] 7.1 Develop outreach contingency strategies for the Navigators, particularly if residents have been moved to shelters, or if the Neighborhood Intake Centers are not available post storm.

HOUSING ADMINISTRATOR [D + C]

Housing Administrator will manage all design and construction planning pre-disaster.

[HA]1.0 Coordinate with Action Team Managers in pre-disaster response and recovery planning and community preparedness.

[HA]1.1 Compile an active list of available rental stock and hotels that could serve as temporary housing immediately after the disaster during the response phase if warranted by the scale of the disaster. [PA]

[HA]1.2 Develop contingency plans, based on the scale of the disaster, for temporary housing if the response phase delays the housing recovery process. Determine a threshold for seeking HUD vouchers, and consider the possible budget implications for building COREs in the temporary-to-permanent system [PA] [CP] [HA] [N] [E]

[HA]2.0 Incorporate additional mitigation strategies into the recovery process.

Increase the standard of construction during the reconstruction process to lessen the risk of future disaster related home damage.

[HA]3.0 Manage YEARLY approvals and contracts

[HA]3.1 Pre-procurement of materials with suppliers. [refer to Technical Guide, Section 2.2.3.4] [C]

[HA]3.2 Manage master permitting for Home designs. [D]

PROGRAM ACTIVITIES

[HA] DESIGN PLANNING

Housing Administrator will manage the pre-disaster Design Team and activities [D]

[D]1.0 Build a force of trained local and regional Designers

[D]1.1 Engage the Texas Board of Architectural Examiners to require 4 Continuing Education Program Hours in disaster preparedness and the DRH plan¹³. The course will provide information on how the system works and what the role of local architects is.

[D]1.2 Engage AIA local chapters to establish a register of potential volunteers. Local chapters would provide training on building evaluation, and provide volunteers with the supplies needed to work with in the event of a disaster.



[D]2.0 Create a catalog of home designs.

The Local Disaster Planning Board [L], procured pre-disaster Design Action Teams, managed by the Housing Administrator [HA], to create a catalog of home designs [refer to Technical Guide Appendix - DR2 Houston Home Design Catalog], based on community engagement and neighborhood context. Neighborhoods will be able to choose between the County Home Designs Catalog or create their own local home designs catalog¹⁴.

[D]2.1 Organize neighborhood design meetings. Designers and the Local Disaster Planning Board will coordinate with local community organizations, local jurisdiction departments, faith communities and other community stakeholders to ensure an extensive engagement process. [L]

13. *Housing Recovery is a matter of health, safety and welfare, and it should be part of an architect's preparation requirements.*

14. *A Home Design Catalog could be used for non-disaster housing programs, by local developers, and local residents building their own home. Ideally it would be used as a resource for quality, context appropriate, pre-permitted single family home designs.*

PROGRAM ACTIVITIES

[D]2.1.1 Identify target neighborhoods that are highly vulnerable and/or within existing housing programs.

[D]2.1.2 Engage community leaders, project partners, and government officials. By engaging a diverse set of stakeholders, the design process will produce a wider variety of well-considered home designs than typically available in disaster recovery efforts.

[D]2.1.3 Select location. Designers, with the support of the Local Planning Board should identify an accessible and centralized place known by the residents. Pre-determined Neighborhood Intake Centers are good locations to start the design workshops. [L]

[D]2.2 Prepare a local design guide book before the workshop. Document the neighborhood context through quantitative and qualitative research. Determine design parameters for each neighborhood. Designs will differ across regions and will be historically and contextually developed. [refer to Technical Guide Appendix - DR2 City of Houston Design Guidebook]

[D]2.3 Hold design workshops. Set up a system of proposals and feedback where design professionals, residents and civic members can share their perspectives. The information gathered in the focus groups workshop will be key for the design team to generate a set of design development level catalog that can be shared back with the community. [refer to Design Workshop Step by Step on the following page] [refer to Technical Guide DR2 Appendix - Design Workshop Process]

[D]2.4 Develop a community-led home design selection process.

[D]2.4.1 Display the schematic home designs in a publicly publicized Design Gallery Workshop.

[D]2.4.2 Receive community feedback. Stakeholder groups will explore, review, comment and vote on the displayed home designs.

[D]2.4.3 Design Action Team will revisit their designs to include design selection input and produce master permitted construction sets. [refer to Technical Guide Appendix - DR2 Design Workshop Process]

[D]2.5 Housing Administrator coordinates check-ins with stakeholder groups at regular intervals (2-3 years) to evaluate the home designs catalog and ensure level of community buy-in and appropriateness.

[D] 2.2 Study the context:

- *Review existing studies of the targeted neighborhoods.*
- *Evaluate successful previous interventions in those areas or natural best practices that could apply for the specific geographic area.*
- *Document the existing conditions and typologies of the housing stock in the targeted neighborhoods.*
- *Document targeted neighborhood layouts.*

[D] 2.3 In flood zones or areas where water table is less than 3 meters down the top of the ground, the RAPIDO pilot used pre-cast piers as a solution. If this is the case, pre-disaster the concrete plant can prepare the piers, stored them and ship them to the site with Core flat-pack.

PROGRAM ACTIVITIES

DESIGN WORKSHOP STEP-BY-STEP

Listen (PD): Set up a process of listening where stakeholder groups share:

- Contextual preferences
- Programmatic preferences
- Aesthetic preferences

Envision (SD): With the stakeholders, envision a set of attractive, well-functioning and livable homes that engender pride not just to the homeowner but to the whole community.

Prepare (DD): The pre-procured design firm or multiple design firms will prepare schematic home designs. All designs should follow the program design requirements:

- Utilize the information gathered in the design workshops.
- Comply with HUD, GLO, and other guidelines. [jurisdiction to establish their guidelines]
- Include the CORE in the floorplan layout. Homes will achieve the most recent Energy Star compliance and will achieve substantial reduction in water use based on current code.
- Incorporate design alternatives for bedroom number, handicap, exterior/elevation option, and foundation requirements based on location. [refer to RAPIDO pilot case side note]
- Exceed local code requirements and ensure home is durable enough to withstand future natural disasters with minimal damage.

[D]2.6 Windstorm design and certification: All COREs and design catalog options shall be designed and certified under the applicable wind zone requirements.

[HA] CONSTRUCTION PLANNING

Housing Administrator will manage all construction planning pre-disaster.

[C]1.0 Create a pre-disaster Construction Plan.

Housing Administrator develops a series of construction protocols and tasks to must be put in place to prepare for construction mobilization planning and CORE components construction.

[HA]

[C]1.1 Review constructability of the home designs.

Housing Administrator (and/or agent thereof) reviews the selected home designs for feasibility, estimated cost and code compliance. The Housing Administrator then coordinates with the pre-disaster Design Action Team to eliminate or alter home designs to align them with program requirements. [HA]

PROGRAM ACTIVITIES

[C]1.2 Coordinate the pre-permitting of the Home Design Catalog.

The Housing Administrator coordinates with local permitting officials to establish a familiarity with the designs. [refer to Technical Guide, Section C5.2 for Temporary Certificate of Occupancy request] [HA]

[C]1.3 Procure pre-disaster and post-disaster construction.

The Housing Administrator sets up contracts and procures local builders for post storm construction mobilization and storage facilities to hold the COREs prior to a disaster. [HA]

[C]1.4 Establish contracts with local Material Suppliers.

In the event the CORE builder is not be the same entity as the Material Supplier, ensure that a Material Supplier has materials for 200 COREs reserved on site in a location out of the elements. [HA]

[C]1.5 Establish contracts with building evaluators to perform the homeowner damage assessment inspection.

[C]2.0 Begin Off-Site CORE Construction.

[C]2.1 Begin off-Site CORE Construction.

Activate local builders, Material Suppliers and/or manufactures to start CORE off-site construction. Build Core components in local lumber yards, warehouse, or factory¹⁵. [reference in [C] [HA]]

[C]2.1.1 A foreman should be assigned by each CORE manufacturer to supervise the storage quality and handling of CORE components.

[C]2.1.2 Protect CORE panels and components from exposure to water and weather elements. Store panels above ground.

[C]2.1.3 Organize panels for assembly efficiency: start with floor panels, follow with wall panels and finally ceiling panels. Stack the panels in a way that makes it easy to read the identification labels for easy deployment.

[C]2.2 Set up CORE construction and assembly trainings. Work within pools of local, established builders to set up trainings in core construction and assembly. Document process to glean any additional feedback on CORE constructability or construction process.

[C] 1.3 Selection criteria for core builders / facilities include:

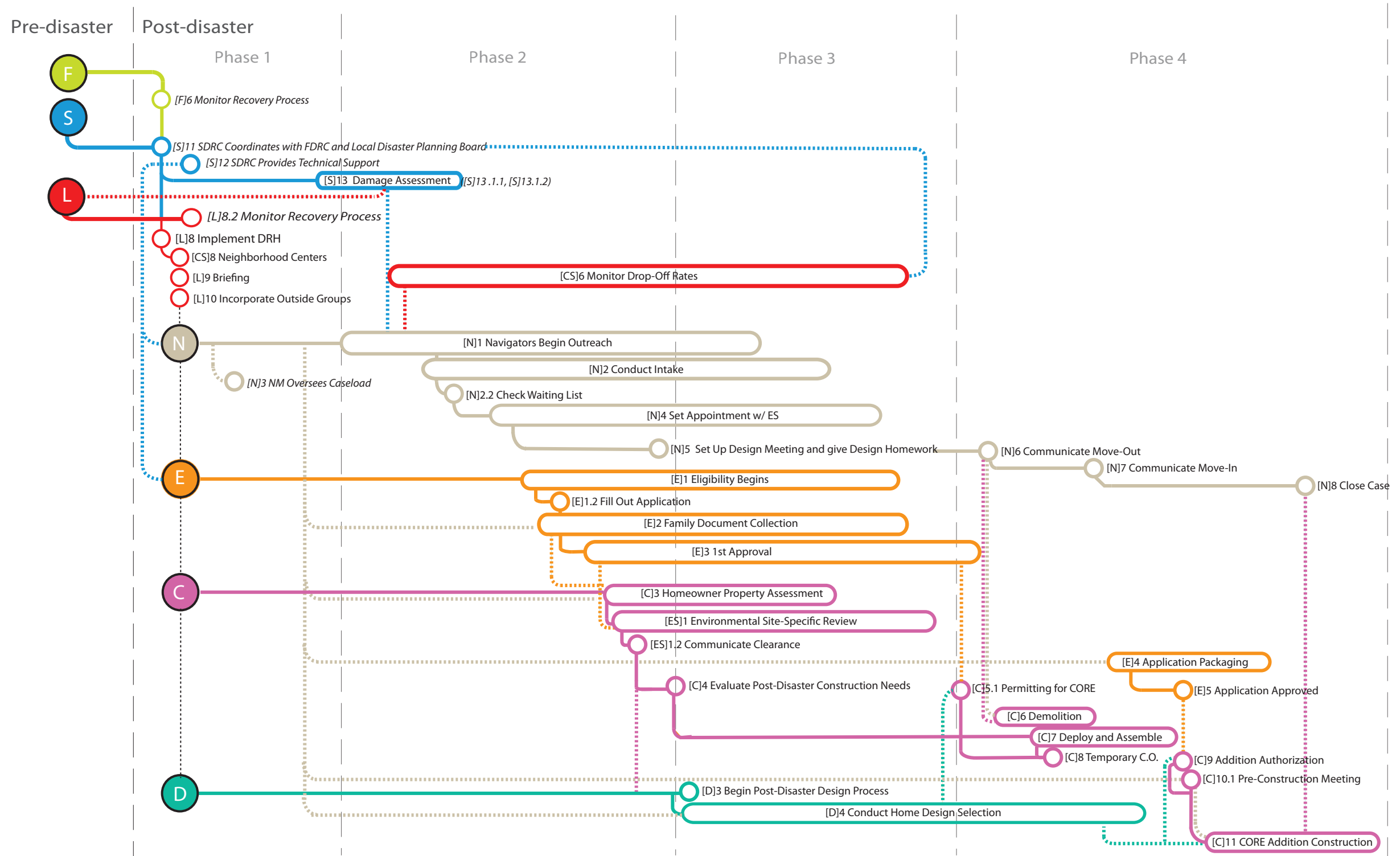
- *Storage: Ability to store panels after construction in a location protected from the elements.*
- *Access to materials: The use of local lumber yards, material warehouses, or home manufacturing facilities is encouraged.*
- *Location close to high risk disaster site: Builders and materials suppliers should be located such that they are able to quickly respond to disaster events without the need for long material and core transportation times.*



15. Each CORE consists of 24 exterior wall panels, 3 interior wall panels including the wet wall, 6 floor panels and 9 ceiling panels [refer to CORE Pre-fab and assembly set]. The CORE can be built in 4 days by 2 framers, 1 electrician and 1 plumber.

PROGRAM ACTIVITIES

3.2 POST-DISASTER



PROGRAM ACTIVITIES

3.2.1 PHASE 1

Disaster Declaration

After the disaster has been declared, based on the disaster scale, the Federal and State Disaster Recovery Coordinators and the Local Disaster Planning Board establish points of regular communication in the housing recovery process. In the event of a non-declared disaster, the State Disaster Recovery Coordinator and Local Disaster Planning Board will still activate. Consistent avenues for communication ensure that local jurisdictions are receiving the support they need, regular progress reports are submitted to the State and Federal Recovery Coordinators, and that Federal and State Recovery Coordinators are maintaining production and schedule oversight. [L] [S]10.0 [FDRC]

Team Mobilization

[L]8.0 Implement the DRH Program.

Once the response phase is completed activate the DRH Action Teams.

[L]8.1 Conduct an informing sessions with the Action Teams, collaborating government agencies, faith-based volunteers, and VOAD groups regarding the specifics of the disaster, areas and communities affected, response efforts, and support available.

[L]8.2 Oversee the progress of the Action Teams through a weekly meeting with the Action Team Lead.

[CS]8.0 Activate the Neighborhood Intake Centers.

Neighborhood Intake Centers serve as the base of operations for the Navigators, Eligibility Specialist, Designers and Local Disaster Planning Board during the period of housing recovery.

[L]9.0 Recovery and Response Briefing.

The Action Teams receive a recovery and response briefing from the Local Disaster Planning Board and collaborating government agencies regarding areas and communities impacted by the disaster event, available assistance, program partners and program eligibility.

[F]6.0 Monitor recovery progress and performance.

Using weekly reports from the State Disaster Recovery Coordinator, the FDRC make adjustments to the level of support and resources being provided to the local recovery effort. [S] [L]

PROGRAM ACTIVITIES

[S]11.0 State Disaster Recovery Coordinator acts as the point person for FDRC and the Local Disaster Planning Board.

[S]11.1 Direct resources and assistance to the Local Disaster Planning Board related to housing recovery. Coordinate all recovery funds and/or grant program allocation from the FDRC to the Local Disaster Planning Board.

[S]12.0 Provide technical support to providers using online family tracking (like CAN or TAAG).

Target Areas Determined

[S]13.0 Perform damage assessment with support of Local Disaster Planning Board.

[S]13.1 Local Disaster Planning Board activates local expertise to support State and FEMA's Preliminary Damage Assessment (PDA)¹⁶.

[S]13.1.1 Conduct a detailed Windshield Assessment residential property to assess the scope and severity of damage. Complete the Residential Windshield Assessment Form, identify type of residence, relative income of the residents, and estimated insurance coverage.

[S]13.1.2 Site Assessment (Door to door inspection). After receiving the disaster summary outline (DSO which includes PDA and windshield assessment report) and checking with Local Disaster Planning Board on Navigators report on affected neighborhoods; Local Emergency Managers, building evaluators and volunteer architects with training in building evaluation will visit preliminary targeted areas to gather more specific damage assessment information, confirm reported damage and ensure vulnerable neighborhoods have been targeted. [N]

[L]10.0 Incorporate outside groups and agencies into the DRH program and Action Team activities.

[L]10.1 Direct the efforts of volunteer groups toward CORE assembly or the fabrication of CORE components.

[L]10.2 Planning Administrator connects state level teams with members of the Local Disaster Planning Board to coordinate post-disaster tasks to ensure all efforts are working in concert with the local DRH plan. [PA]

[S]13.1 Damage Assessment cooperation/support participants:

- *City/County Engineers, and public works personnel for evaluating debris clearance, and road and street system damage.*
- *Building Inspectors or lending institutions for evaluating damage to buildings, homes and business.*
- *Departments managing levees, drainage systems, electric cooperatives and non-profit service facilities.*
- *Local AIA volunteer architects to participate in the damage assessment process.*

16. <https://www.fema.gov/public-assistance-preliminary-damage-assessment>

PROGRAM ACTIVITIES

3.2.2 PHASE 2

Outreach

[N]1.0 Begin outreach to homeowners in the designated target areas.

Navigators conduct extensive outreach in the target communities impacted by the disaster to inform families of and enroll them into the DRH program. Navigators work to identify families in need of housing recovery assistance through a combination of door-to-door outreach, town hall meetings information sessions, and referrals from disaster responders, social services and community organizations. Navigators work closely with the grassroots network of local churches, community centers, storm shelters, and service organizations to connect families in need with the DRH program.

[CS]9.0 Monitor family drop off rates.

Ensure proper levels of outreach and family support are being provided through the process.

[CS]9.1 In the event of recurring delays or barriers, the Client Services and Planning Administrator will coordinate with the State or Federal Disaster Recovery Coordinators to identify a solution. [PA] [S] [F]

Intake

[N]2.0 Navigator conducts intake and is assigned to families to help navigate them through the DRH process.

[N]2.1 Navigators begin enrolling families in the DRH program by completing an initial intake form with the family.

[N]2.2 Once identified as needing assistance, the Navigator meets with the family, cross-checks existing housing assistance waiting lists to see if the family is already registered or pre-qualified, conducts intake, gathers basic documentation, and refers the family to a Eligibility Specialists. [E]

[N]3.0 Navigation Manager oversees Navigator caseload.

As Navigators are assigned families the Navigation Manager ensures they maintain a manageable caseload. It is recommended that Navigators carry no more than 25 families on their case portfolio at one time, this number can be adjusted based on the difficult of the families being served, or the scale of the disaster.

[N]4.0 Set appointment with Eligibility Specialist.

[N]4.1 The Navigator gives intake and preliminary documentation to the Eligibility Specialist.

PROGRAM ACTIVITIES

[N]4.2 The Navigator sets an appointment with the family and the Eligibility Specialist to begin the process of completing a full application for grant assistance. Eligibility appointments can take place in the Neighborhood Intake Center, at the family's home or temporary place of residence, or at the Eligibility Specialist's office. [E]

[N]4.3 Navigator should determine if the family is able to access the office or if field appointments are necessary. [E]

[E]1.0 Family meets with the Eligibility Specialist.

[E]1.1 Prior to the appointment, the Eligibility Specialist double checks if the family is already on a housing assistance waitlist and reviews the intake and pre-screening paperwork.

[E]1.2 During the appointment, the Eligibility Specialist will begin to assist the family in completing an application for housing assistance.

[E]2.0 Documentation collection.

[E]2.1 The Eligibility Specialist determines the documentation that will need to be collected from the family.

[E]2.2 The Eligibility Specialist discusses the documentation with the family and the Navigator. If the family needs special assistance to gather documentation, the Eligibility Specialist and the Navigator determine what kind of support is necessary, i.e., recovering lost documentation, transportation, translation services, or accompaniment. Appropriate support is provided by the Navigator, the Eligibility Specialist, or by both in a coordinated effort. The family, the Navigator, and the Eligibility Specialist work together at follow-up appointments to collect all necessary paperwork. [N]

[C]3.0 Homeowner property damage assessment.

An inspector (building evaluator) conducts an assessment of the damage to the family's home, completes a verification of hurricane damage and provides a price for demolition. Navigator attends meeting to support family. [N]

Environmental Site Review

[ES]1.0 Issue environmental site specific review.

[ES]1.1 Submit an environmental site specific review to receive clearance on historic preservation zones, floodplain management, noise control, airport runways, toxic locations and aboveground storage containers on family's property.

PROGRAM ACTIVITIES

[ES]1.2 Communicate clearance (2 weeks timeframe) to Construction Manager and Eligibility Manager.

Family Approval - 1st Step

[E]3.0 1st approval granted.

Once the Eligibility Specialist has determined the family's income, verified that they live in the target area, received the damage assessment conducted by the inspector and the environmental clearance has been issued, the Eligibility Specialist will submit documentation to the state for the first step in a two step approval process. [CM] [EM]

[E]3.1 After the 1st approval is uploaded, the Eligibility Specialist will communicate to the Navigator, the Construction Manager, the Design Manager, and the family that they can prepare and move forward demolition and placement of the temporary housing CORE on the family's property. [N] [C] [D]

3.2.3 PHASE 3

Design

[C]4.0 Begin the post-disaster recovery housing construction. Evaluate the pre-disaster construction work and the material available in order to coordinate the necessary activities for the recovery phase.

[C]4.1 Gather Construction Action Team.

[C]4.1.1 Outline CORE distribution and deployment. The Action Team Lead and the Construction Manager will gather the pre-procured Contractors, [see [C]1.3 and [C]2.1] Material Suppliers, local permitting officials, and disaster assessment personnel immediately after the disaster.

[C]4.1.2 Assess construction material availability. Coordinate with CORE Manufacturers and Material Suppliers on the number of COREs available locally post-disaster. [MS]

[C]4.1.3 Mobilize construction on additional CORE units. The need for additional CORE units depends on need and location of disaster affected areas (coordinate with disaster assessment personnel).

[C]4.1.4 Steward CORE construction and additions through the permitting process. Coordinate with local permitting officials of predetermined geography.

[D]3.0 Begin post-disaster design process. Establish an implementation plan for the design process depending on the



An example of a design activity, conducted with local residents, that informed the design and layout of the Demonstration Project CORE unit.

PROGRAM ACTIVITIES

disaster scale, and prepare for all necessary post disaster design activities.

[D]3.1 Gather Design Action Team

[D]3.1.1 Determine an implementation plan for home selection and site design process. The Action Team Lead, Design Manager, architects, Navigation Manager will meet immediately after the event and gather volunteers or paid staff to support this process. [ATL] [N]

[D]3.1.2 Design Manager coordinates with the Design Team and distributes families to Designers depending on the scale of disaster.

[D]3.2 Prepare for home design selection process.

The Designer will meet with the family twice: during the home design selection meeting and the pre-construction meeting. The meetings will be held at the Design Manager offices or an Neighborhood Intake Center [refer to Section [CS]2.1 - Neighborhood Intake Centers].

[D]3.2.1 Coordinate with Navigator to set up appointment. Navigator shall set up the meeting with the family and Design Team. [N]

[D]3.2.2 Discuss design process with Navigator prior to the meeting. Navigator will go through the entire design and construction process to ensure that families are aware of the process prior to beginning design process. [N] [refer to Technical Guide Home Design Appendix, Page 4 - Design and Construction Process Diagram]

[D]3.2.3 Designer will gather all necessary documents.

[N]5.0 Navigator sets up the family's Home Design Selection Meeting, and hands-out Design Homework to the family. [D]

[D]4.0 Conduct Home Design Selection Meetings with family. [refer to Technical Guide Home Design Appendix]

Between Navigator, Architect/Designer and family.

[D]4.1 Present and discuss the process timeline with the family, explain the steps and milestones of the design process and the temp-to-perm strategy. Give a copy of the [refer to Technical Guide Home Design Appendix, Page 4 - Design and Construction Process Diagram] to the family.

[D]4.2 Discuss the Design Homework [refer to Technical Guide Home Design Appendix] answers with the family. If homework is not complete, guide the family through the activities and questions.



[D]3.2.3. Before the home design selection meeting the designer should gather or prepare:

- *Plat and/or Site Survey provided by city officials*
- *Site Specific Environmental Review Approval or Denial-*
- *Site Plan Design Tool [refer to site plan design tool appendix]*
- *Design Catalog [refer to D2.0] specific for each geography, the number of options shown to the family will depend on their design homework answers*
- *Design Homework [given out by navigator upon setting up meeting with family]*
- *Disaster Recovery Process Timeline*

PROGRAM ACTIVITIES

[D]4.3 Discuss the Local Home Designs Catalog with the family. Based on homework, show the options that better fit their needs.

[D]4.4 Discuss the design layout and aesthetic details of the selected option.

[D]4.5 Use the [refer to Technical Guide Home Design Appendix - Site Plan Design Tool] to place the selected home design on the family's site.

[D]4.6 Identify the area where the CORE will be placed.

[D]4.7 Select finishes. Document all choices in the [refer to Technical Guide Home Design Appendix - Finishes Selection Sheet].

[D]4.8 Designer and Navigator inform the family of the move out timeframe. [N]

3.2.4 PHASE 4

Temp Construction

[C]5.0 Coordinate CORE deployment and assembly.

After completion of the first step approval and the home design selection meeting.

[C]5.1 Permitting: Submit all required documentation to the building permit department or assigned jurisdiction department to obtain home design building permit and CORE assembly permit. [refer to the General Permit Requirements]

[N]6.0 Communicate the Move-Out and construction timeline. [C]

[N]6.1 The Construction Manager and Design Manager will provide the Navigator the timeline for demolition and CORE placement for the family. [CM] [DM]

[N]6.2 Navigator will coordinate with the Construction Manager on option for storing the family's personal items prior to demolition. Ideally the storage will be on the homeowner's property. [C]

[C]6.0 Conduct Demolition.

Demolish existing home and any other substandard structure on homeowner's property.

[C]7.0 Deploy and assemble COREs.

Coordinate with pre-procured Contractors, storehouses/Material Suppliers for CORE assembly as well as the construction of additional cores. [MS]

[C]5.1 General Permit Requirements:

1. Building permit application
2. Registered deed of property
3. Pre-permitted construction documents of selected home design with:
 - Structural drawings for foundation design
 - Site plan, indicating selected home design location and CORE placement
 - CORE pre-fab & assembly set
 - Windstorm Certificate and drawings provided by Windstorm State Certified Engineer [certified in pre-disaster design planning]
 - Initial Site Inspection
 - Elevation Certificate
 - Any other requirement jurisdiction needed to allow temporary unit assembly

[C]6.0 Homeowners shall be able to request that the contractor keep some infrastructure on their property like storage or existing driveway. The designer shall provide this recommendation to the contractor in the Site Plan drawings and pre-construction meeting, but the family should understand that if the structure or flatwork has sustained too much damage, then it will be demolished. If the conditions after the disaster don't allow for machinery to demolish existing structure, CORE will be placed on temporary footings in the family's lot. [D]

PROGRAM ACTIVITIES

[C]7.1 Transport and package COREs: Flatpacked and transport CORE in a standard flatbed trailer. [refer to Technical Guide CORE Appendix - Transportation Requirements]

[C]7.2 Construct foundation: determine foundation design layout depending on geography. Build entire home foundation to avoid concrete truck to deliver material twice. This will reduce total construction costs.

[C]7.3 Assemble the CORE: in 3-to-4 days. [refer to Technical Guide CORE Appendix - Prefab and Assembly]

[C]8.0 Obtain temporary Certificate of Occupancy (C.O.) for temporary unit after assembly. Contractor will submit all jurisdictional requirements to the building permit department or assigned department. [refer to C.O. general requirements]

Move - In

[N]7.0 Navigator communicates CORE Move-In to the family. [C]
[D]

Family Approval - 2nd Step

[E]4.0 Family Application Packaging.

Once the Eligibility Specialist receives final home costs from the Design & Construction Action Teams, they may proceed with the closing package required for the Pre-Construction/Closing [see [C]7.0]. [D] [C]

[E]4.1 The Eligibility Specialist will meet with the family and Navigator to complete the application/closing package. [N]

[E]4.2 The Eligibility Specialist will then send the package to the state for 2nd Step for Approval. The Eligibility Specialist will communicate with the agency until a final determination is made and to assure that any incomplete files or missing documentation is provided in order to get applications approved. [S]

[E]5.0 Application is approved¹⁷.

Eligibility Specialist notifies family and Navigator of approval. The Navigator informs the family about the next steps in the DRH process and makes arrangements to meet with Design and Construction Action Teams. [N] [D] [C]

[C]9.0 CORE addition authorization.

[C]8.0 Certificate of Occupancy General Requirements:

- 1. Certificate of Occupancy application*
- 2. Building permit number*
- 3. Name and address of homeowner*
- 4. Description of work*
- 5. Inspection reports*
- 6. License and contact information of contractor*
- 7. Any other special requirement jurisdiction needs for the temporary unit C.O.*



¹⁷ Application approval timeline is heavily dependent on the response time of the State

PROGRAM ACTIVITIES

[C]9.1 Eligibility Manager will report to the Design and Construction Manager when funds have been approved and the case is ready to close. [EM] [DM] [CM]

[C]9.2 Construction Manager will communicate with the Designer, Contractor and Navigator to start addition construction preparation. [N] [D]

Permanent Construction

[C]10.0 Prepare for addition construction.

[C]10.1 Pre-construction meeting (Designer, Construction Manager, Contractor, Navigator & family). [D] [N]

[C]10.1.1 Discuss design selection with Contractor at pre-bid pricing.

[C]10.1.2 Discuss construction timeline and additions construction logistics with the family.

[C]10.1.3 Discuss warranty and insurance details with the family. For example, the family shall not interfere in the construction process, unless a self-help agreement is in place. The family shall not request changes to approved drawings and agreements made during pre-construction meeting.

[C]11.0 Addition construction.

Grant notice-to-proceed to pre-procured Contractor when funding has been approved and the Eligibility Action Team is ready to close and submit to the State the family's case. [E]

[C]11.1 Conduct all required construction visits and jurisdiction inspections.

[C]11.1.1 The Construction Manager will visit the projects every 2 weeks.

[C]11.1.2 The Jurisdiction (COG, county, city) will inspect projects at: foundation, framing +MEP, nailing and insulation, and finishes. If the jurisdiction does not provide inspections, the Housing Administrator will contact a pre-procured third party inspector to inspect the projects. [HA]

[C]11.1.3 The Designer will visit projects at: framing, MEP, and finishes as minimum. [D]

[C]11.1.4 Submit WPI-1 to Construction Manager and the Texas Department of Insurance.

[C]11.2 Build CORE addition within a 2 month period after notice-to-proceed.

[C]11.2.1 Local Disaster Planning Board should establish



PROGRAM ACTIVITIES

the penalties that the Contractor will incur if construction is not complete after 60 days of starting the expansion construction. Examples of common penalties are fees on re-inspections or a deduction of 100 dollars from the construction contract final payment for each day construction is delayed. The construction Contractor will reimburse any costs incurred by the family as a result of construction delays. [L]

[C]11.3 Complete all construction requirements and handing any home key copy Contractor have to the Construction Manager or resident. [CM]

[N]8.0 Close navigation case with family.

3.2.5 PHASE 5

[L]11.0 Program follow up.

Once the housing recovery process is complete, the Planning Administrator will lead a review of the DRH program with the support and input of other Local Disaster Planning Board members, Action Team Managers, families of the DRH program, outside groups and faith organizations, and the State and Federal Disaster Recovery Coordinators. The results of the review will be used to update the local jurisdiction's DRH plan.

[S]14.0 Review disaster recovery and develop recommendations.

[S]14.1 Identify gaps and weak links as a community and/or household transitions from the disaster response to the recovery.

[S]14.2 Identify opportunities for improved coordination between the Local Disaster Planning Board, Action Teams, VOAD groups, faith based organization, and federal and state agencies.

[S]14.3 Audit legal or procedural barriers that prevent a timely recovery.

[C]12.0 Construction Follow up

Establish a home performance follow-up plan after all units are complete and Case Management is closed.

[C]12.1 Engage the assisted families post-occupancy at 1, 6, and 12 month intervals to solicit feedback. Feedback will focus on overall satisfaction, home performance, home repairs and utility expenses with particular attention on power and water usage.

PROGRAM ACTIVITIES

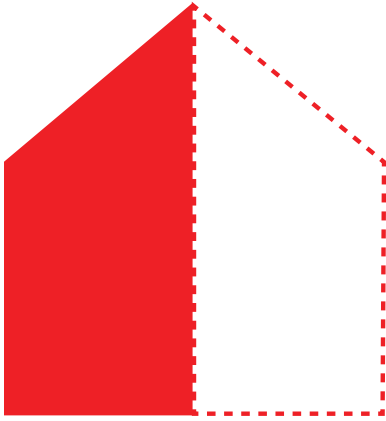
[C]12.2 The follow-up plan will include methodology to track energy consumption, analyze data, and provide feedback that will inform future occupant behavior and will help incrementally improve efficiencies in the design book home designs.

[F]7.0 Review DRH program and develop recommendations.

[F]7.1 Develop a set of recommendations targeted toward the federal response and management of the local disaster recovery housing effort. Identify changes to policies, practices, and opportunities for innovation and increased coordination prior to the disaster.

[L]12.0 Update local jurisdiction's DRH plan.

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PROGRAM COMPARISON REPORT

RAPID DISASTER RECOVERY HOUSING PROGRAM
JANUARY, 2015

CONTENTS

1.0 INTRODUCTION	78
2.0 DISASTER MANAGEMENT PHASES	81
2.1 Mitigation	81
2.2 Preparedness	82
2.3 Response	82
2.4 Recovery	82
3.0 HOUSING RECOVERY	84
3.1 The Evolution of Recovery in the United States	85
3.2 Federal Government	89
3.3 State Government	91
3.4 Local Government	94
3.4.1 Local Role in Recovery	97
4.0 PROGRAM COMPARISON CATEGORIES	98
4.1 Program Design	98
4.2 Damage Assessment	101
4.3 Outreach	105
4.4 Case Management	107
4.5 Design Decisions	112
4.6 Construction	120
5.0 CONCLUSIONS & RECOMMENDATIONS	126

PROGRAM COMPARISON REPORT INTRODUCTION

The Program Comparison Report serves as an appendix of sorts and includes materials that underlie the actions recommended in the Policy Recommendations and undertaken in the Technical Guide. The Program Comparison Report was generated by identifying post-disaster reports for every hurricane that has struck the Gulf and Atlantic Coasts since 2005 (including Katrina and Rita). This yielded forty (40) reports and articles, most of which covered only pieces of the recovery effort (case management, design, construction, etc.) These documents were systematically compared to one another to develop an understanding of issues and obstacles that have arisen repeatedly across comparable disasters as well as issues that may be more context-dependent.

- Hazard Reduction and Recovery Center, Texas A&M University [HRRC] (*author*)
- Community Development Corporation of Brownsville [CDCB] (*editor*)
- buildingcommunity WORKSHOP [bc] (*editor*)
- La Unión Del Pueblo Entero [LUPE] (*contributor*)
- A Resource in Serving Equality [ARISE] (*contributor*)
- Texas Low Income Housing Information Services [TxLIHIS] (*contributor*)

1.0 INTRODUCTION

The Rapid Housing Recovery Pilot Program (known as RAPIDO in the Lower Rio Grande Valley) is part of a state directed initiative to test ideas for the production and replacement of housing of federally declared disasters in Texas (State of Texas 2009). The pilot program is administered through the Texas General Land Office (GLO), which is tasked with distributing allocations of Community Development Block Grant Disaster Recovery (CDBG-DR) from the U.S. Department of Housing and Urban Development (HUD) to assist households recovering from Hurricanes Dolly and Ike in 2008. When Hurricane Ike hit Galveston Island and the Houston metropolitan area, it was the most destructive storm since the infamous 1900 storm. When Hurricane Dolly hit the south Texas coastline it was considered the most destructive storm to hit the Rio Grande Valley in 41 years. Both hurricanes left entire neighborhoods underwater and many families were displaced due to the severe damage of housing stock. Texas entered into a second phase of housing disaster recovery (DR2), which uses guidelines listed in the Natural Disaster Housing Reconstruction Plan created by an advisory committee in late 2010.

PROGRAM COMPARISON REPORT INTRODUCTION

Along with DR2, the temp-to-perm program goals are to design a 'temp-to-perm' home that would allow residents to participate in the outcome of their future permanent house. The temporary-to-permanent concept (i.e. temp-to-perm) is a disaster housing solution, whereby a temporary house is constructed rapidly after a disaster and a permanent house would grow and be constructed from the temporary house "core" component over time. The temp-to-perm RAPIDO Demonstration Project is meant to provide a single-housing solution that will meet both the needs of temporary and permanent housing processes. To do this, the demonstration program proposes the construction of a temporary house within 30 days of a disaster to transition into a permanent house within 90 to 120 days. The temp-to-perm RAPIDO Demonstration Project will construct 20 homes that test the feasibility of large-scale production with local and resident input. Houston, Galveston, and the Lower Rio Grande Valley have been identified as participants and funds are distributed through their respective Council of Governments (COG). Each COG is responsible for administering the pilot program in their community either independently or through contracts with other organizations. Specific communities were targeted within Houston, Galveston, and the Lower Rio Grande Valley in an effort to help residents that were originally overlooked during the first phase of recovery efforts in 2008. The program develops homes that emphasize the quality design, outreach, and education, in order to create shared vision and goals that are accepted by the community.

In order to successfully deploy the temp-to-perm housing solution four teams were created--Outreach and Community Participation, Case Management and Social Services, Construction and Design, and Policy--to identify strengths, weaknesses, strategy options, and policy implications. Teams gathered monthly to review progress, and seek insight from team advisors regarding policy development. The result was the creation of three interrelated reports: the Policy Recommendations, the Technical Guide, and this Program Comparison Report.

The DRH Program Comparison Report provides context and background to housing recovery. First, it describes the disaster management cycle and the role recovery plays after a disaster and as mitigation for the next disaster. Second, it specifically describes housing recovery and the evolution of federal, state, and local governments' responsibilities in disaster recovery. Next, it analyzes forty articles and case studies that address housing recovery. Five areas where gaps may occur in the temp-to-perm housing process were identified:

PROGRAM COMPARISON REPORT INTRODUCTION

- Damage Assessments,
- Outreach,
- Case Management,
- Design, and
- Construction.

The analysis quantifies these categories based on understood obstacles and promising practices in the literature. Several themes emerge where gaps occur and offer best practice solutions within the five categories including:

- Communication
- Proper personnel and training
- Use of community-based organizations
- Community participation
- Multi-sector partnerships and collaboration
- Knowledge and mapping of the vulnerable populations
- Pre-procurement of services
- Long-term planning pre-disaster

With these themes, the Program Comparison Report provides evidence that supports the Policy Recommendations and the Technical Guide. These documents describe a housing recovery program for Texas that will speed the transition from temporary housing to permanent housing as a way to foster resilience in Texas communities and abate social and economic impacts.

DISASTER MANAGEMENT PHASES

2.0 DISASTER MANAGEMENT PHASES

Over the years, disaster management has moved beyond the focus of the emergency response itself and toward an understanding of the phases a community should go through before, during, and after a disaster. We know that the impacts of disasters can linger for years and that the work of minimizing impacts can be broken into the four phases of disaster management--mitigation, preparedness, response and recovery (Phillips, 2009). Planning for each phase should be ongoing to reduce the overall disaster impacts. These phases have also been utilized to allocate programmatic tasks and appropriate funding.

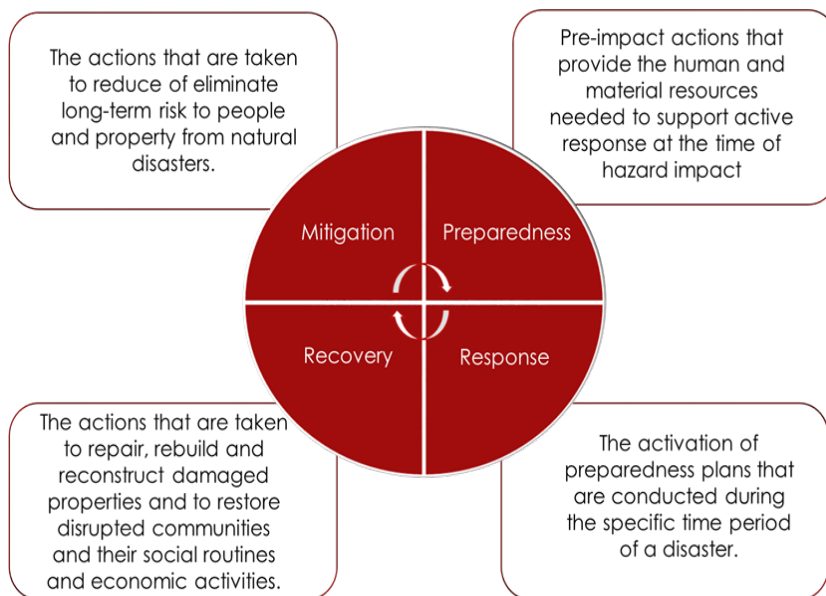


Figure 1. Disaster Management Cycle

2.1 MITIGATION

All activities that reduce or eliminate hazard exposures or minimize their effects. Mitigation activities are designed to reduce the impact of disasters by introducing two main reduction methods: structural mitigation and non-structural mitigation. Structural mitigation includes structural hardening activities to absorb disaster impacts, such as infrastructure improvements, levees, dams, seawalls, etc. Non-structural mitigation activities can include zoning and land use controls to prevent occupation of high hazard areas. Other non-structural activities can include educational programs, insurance programs, warning systems, etc¹.

1. For a review of mitigation strategies, see 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.

DISASTER MANAGEMENT PHASES

2.2 PREPAREDNESS

Preparing to handle an emergency event. Preparedness activities include planning, coordination between agencies, training programs, and assessments on all the necessary elements that will be needed during the response phase. Typical preparedness strategies include recruiting personnel for emergency services, the development of aid agreements and MOUs (Memoranda of Understanding), trainings and education efforts, conducting exercises to test the capacity of the existing plan, and coordinating with community-based organizations that provide safety nets for the most vulnerable.

2.3 RESPONSE

Dealing with the event of the disaster. Emergency response in the US shows a gradual expansion of government involvement as local and state responders require support. Response activities focus on saving lives. The main activities include: search and rescue, providing food, shelter and clothing, and the transition to long-term recovery. For example: the management of donations and volunteers, conducting damage assessments, securing temporary housing, restoring lifelines, and clearing debris.

2.4 RECOVERY

Working to restore communities to previous or an improved condition. Many activities can be considered as part of the recovery process. For example: rebuilding, reconstruction, restoration, rehabilitation, restitution are considered components of disaster recovery.

Short-term recovery -calls for temporary measures to get critical services and facilities up and running to a functional state as well as efforts to house affected populations. Short-term recovery can take days to weeks after the disaster (Haas, Kates, & Bowden, 1977).

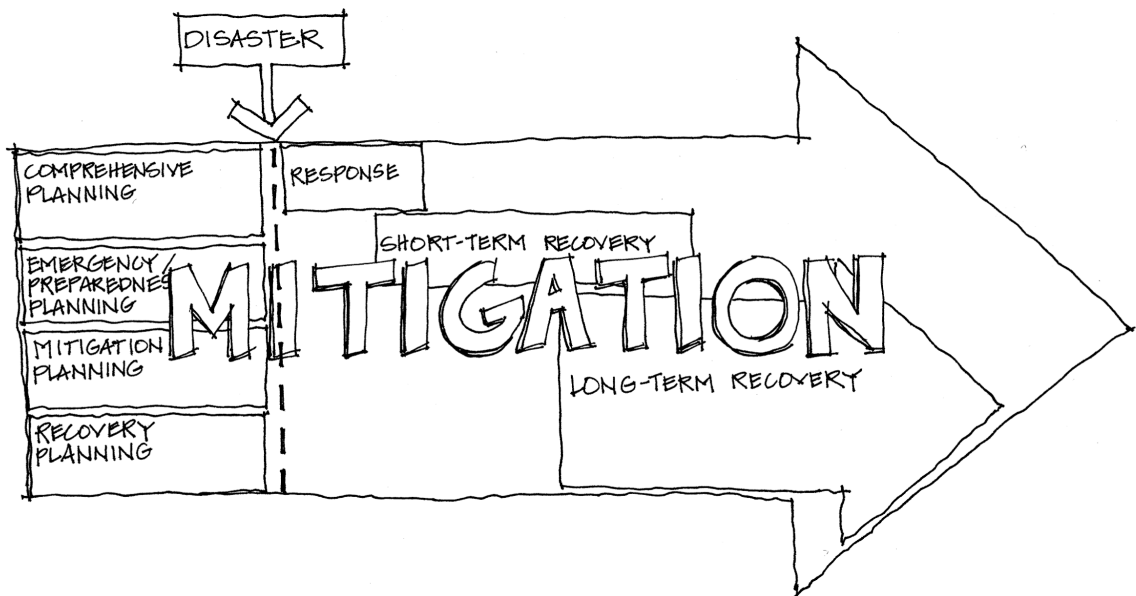
Long-term recovery - focuses on reconstruction and returning a community to a full operational state, usually lasting several months to years after the disaster (Haas, Kates, & Bowden, 1977; Masterson, Peacock, Van Zandt, Grover, Schwarz, & Cooper, 2014).

Typical recovery activities include disaster debris cleanup, financial assistance to individuals and governments, rebuilding of infrastructure and key facilities, full restoration of lifeline services, housing recovery, and health care.

DISASTER MANAGEMENT PHASES

While the disaster management phases, as displayed in Figure 1, have allowed practitioners and researchers to visualize the cyclical nature of activities for disasters, it does not fully portray the interconnectedness of each disaster phase. The following image (Figure 2), attempts to reimagine the disaster phases along a timeline. Prior to the disaster itself, planning activities should take place in communities. Plans to mitigate, prepare to respond to, and recover from disasters, along with consistency in city and regional plans--such as comprehensive plans--is critical. Mitigation activities should be ongoing in a community, to ultimately eliminate the exposure to hazards all together. The response to the disaster, is relatively short in comparison to other phases, usually lasting between days and a few weeks. Recovery is one of the longest phases due to short-term and long-term recovery activities. Short-term recovery can begin during the response and should transition resources to address temporary solutions. Long-term recovery takes much longer to achieve, anywhere from months after a disaster to years. Traditionally, most disaster planning and activities have focused on the response and preparedness of the response. While preparedness and response is a critical component and saves lives, the disaster literature points to a needed emphasis on mitigation and recovery planning and activities.

Figure 2. Mitigation Arrow



HOUSING RECOVERY

3.0 HOUSING RECOVERY

Housing recovery is a cornerstone to the whole community's recovery. As anyone who has experienced a disaster knows, the road back to permanent housing is long. Four typical phases of housing recovery, identified by researcher EL. Quarantelli, are emergency sheltering, temporary sheltering, temporary housing, and permanent housing (1995; see Figure 3).

Emergency sheltering is typically sought out for protection from a disaster and in the immediate aftermath of an event. Temporary shelter refers to structures used for a short period during the initial displacement period. Depending on the severity of the disaster event, individuals may be able to return home after this period. Typically, disaster victims transition from temporary shelters to temporary housing until permanent housing is established. Temporary houses are typically more private facilities for individuals and families to facilitate the establishment of daily routines. It is during the temporary housing phase, that the household begins to recover and reestablish a sense of normalcy in their lives (Johnson, 2007). Most remember the aftermath of Hurricane Katrina and large number of trailers for disaster victims. Trailers and other temporary structures are considered temporary housing. During this time, individuals and families are applying for permanent housing assistance to make needed repairs or to replace damaged homes. The temporary housing phase can drag on for years in some cases, and can become somewhat of a default permanent housing solution. Permanent housing is the fully recovered housing situation and the goal for communities and households.

Ideally, permanent housing, that meets all the daily needs of residents, is achieved as soon as possible following a disaster event. As survivors move through these sheltering and housing phases they progressively reestablish daily routines. The transition between these phases often involves further disruption of daily life and activities making it difficult for survivors to fully recover. The rebuilding of these routines is directly linked to the quality of housing obtained throughout the recovery process.

There are many difficulties that occur when transitioning from temporary to permanent housing. These difficulties are not unique to just the United States and "researchers all over the world have found that many households simply converted temporary housing into permanent housing because they lacked sufficient resources to procure or reconstruct permanent housing" (Masterson et al.,

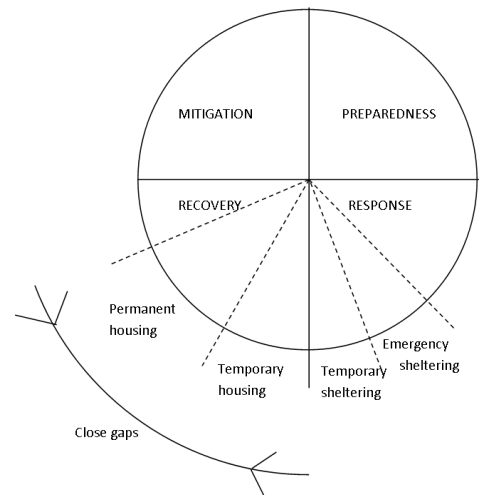


Figure 3. Housing Cycle

HOUSING RECOVERY

2014). Some populations face hardships before disasters that make them less able to prepare for, respond to, and recover from disasters. Marginalized populations before disasters have a more difficult time recovering from disasters due to perhaps unstable incomes, insufficient savings, access to enough credit or perhaps enough technical knowledge to expedite the process. Such populations are at greater risk of experiencing longer periods of displacement. There is also the possibility that temporary housing could become permanent when displaced households cannot, or refuse to return to their pre-disaster home (Bolin 1994; Bolin and Stanford 1991; Haas, Kates, and Bowden 1977; Masterson et al, 2014). The amount of time varies greatly in the transitioning from sheltering to housing due to the amount of resources one has (Peacock, Dash, & Zhang, 2005). A program to support a temp-to-perm housing solution must be more than just a basic solution. This should provide what is required to return to normal life, such as proximity to the former place of residence, the desired support structure of the neighborhood to maintain successful living and guidance on the procedures and process to lead to permanent housing (Johnson, 2007). Due to these difficulties, the process can range anywhere from weeks to months and even years.

3.1 THE EVOLUTION OF RECOVERY IN THE UNITED STATES

In 1974, Congress passed the Disaster Relief Act to establish a process for federal assistance to affected communities and the Federal Emergency Management Agency (FEMA) was established in 1979. FEMA brought together many agencies and departments under one roof to handle emergency and disaster related issues in the United States. The original principles of FEMA were to, 1) anticipate, prepare for, respond to major civil emergencies; 2) use all available resources most efficiently; 3) be extensions of missions of current agencies, whenever possible; and 4) closely link hazard mitigation activities with emergency preparedness and response functions (Ad Hoc Subcommittee on Disaster Recovery, 2009). The focus was on effective response to emergencies and disasters, the preparation for the response, and the mitigation of hazards to ultimately reduce and eliminate the need for response. Recovery was not a part of the original focus, in and of itself.

In 1988, the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) established federal disaster relief policies and procedures. Most federal disaster policies and practices today

HOUSING RECOVERY

stem from this piece of legislation, which described the need and procedures for a managerial framework of disaster response under a set of Emergency Support Function (ESF) annexes within the Federal Response Plan. Originally there were twelve annexes, each annex describing agencies, departments, and organizations that play a role and are to be 'activated' based on the characteristics of the disaster and the need of the public. This framework builds off the philosophy that disasters ultimately occur at the local level, where emergency responders are on the ground to provide support (Perry & Lindell, 2007). The emergency support functions (ESFs) were intended to be a logical extension of the daily responsibilities of local emergency managers, police and fire departments and other response-oriented fields (Quarantelli, 1999). If the disaster is at a scale that goes beyond the capacity of local agencies, the state's ESF agencies are activated to provide support. If the scale of the disaster goes beyond the capacity of state resources, federal ESF agencies are activated to provide support. Generally, FEMA pursues the role as a partner to states and tribal nations to facilitate coordination or response and relief efforts. However, recovery was not specifically addressed in the legislation.

Today there is little coordination between federal, state and local organizations for recovery, in part, because there was not a regular necessity for coordination, as with emergency personnel (Quarantelli, 1999). The lack of attention for recovery was evident in 1990 when only two trainings were available annually on mitigation and recovery through FEMA's emergency management training program (Rubin & Popkin, 1990). However, while there seemed to be little evidence of attention to recovery in practice, FEMA has attempted to navigate the "interaction and decision making among a variety of groups and institutions, including households, organizations, businesses, the broader community and society" (Mileti, 1999, p. 240). For example, ESF 6- Mass Care included sheltering and temporary housing for victims—short-term recovery components. With this support function, the agency began to handle the loss of available housing (Ad Hoc Subcommittee on Disaster Recovery, 2009).

While the Stafford Act did not specifically address recovery, it established new funding streams to speed short-term recovery. The Public Assistance (PA) program made available funds for debris removal and critical infrastructure and facilities repair, such as sewage systems, water, schools, government facilities, and etc. Cost-sharing between local or state and federal levels to rebuild infrastructure and public facilities was established, taken from the Mt. St. Helen's eruption where the state assisted in covering 25% of the costs (Ad

HOUSING RECOVERY

Hoc Subcommittee on Disaster Recovery, 2009). Funds for recovery projects and grants for hazard mitigation and planning were also made available in the legislation.

In 2004, three more annexes were added to the Emergency Support Functions: ESF 13- Public Safety and Security; ESF 14- Long-Term Community Recovery, and ESF 15- External Affairs. The inclusion of ESF 14-Long-term Community Recovery marks a shift in FEMA's principles and scope, broadening recovery to 'long-term community recovery,' to help communities beyond immediate response and short-term recovery.

3.1.1 THE 2005 & 2008 HURRICANE SEASONS

Less than a year after the addition of ESF 14, the impact of Hurricanes Katrina and Rita quickly surpassed local and state capacity to handle response and recovery. In addition, it soon became evident the federal government also could not handle catastrophes of this magnitude (Ad Hoc Subcommittee on Disaster Recovery, 2009). At the time, under the updated Stafford Act, FEMA was expected to handle temporary housing for victims (Ad Hoc Subcommittee on Disaster Recovery, 2009). After Katrina for example, 150,000 trailers were ordered and still thousands of households were on wait lists. Each trailer cost roughly \$59,000, totaling \$5.5 billion in federal expenses (Ad Hoc Subcommittee on Disaster Recovery, 2009).

Trailers were the main solution following Katrina and Rita, due to legal interpretations of what FEMA could do under the Stafford Act. Specifically, the law was interpreted by FEMA leadership that FEMA could not provide funds for rental repairs, greatly limiting housing options, particularly for low-income households (Ad Hoc Subcommittee on Disaster Recovery, 2009). As a result, injustices and inequities permeated the entire recovery process. In some instances, FEMA delayed or denied assistance to qualified disaster victims, particularly for low-income households and minorities after Katrina (Hooks & Miller, 2006). In reality, it seemed FEMA's assistance was designed more for higher-income families that had alternative financial assistance options, than for low income families who were completely dependent on assistance from FEMA (Hooks & Miller, 2006). This left many, those with the greatest need, without options for recovery. When applicants did qualify, resources were slow to obtain. Still other housing programs were used at the time, though to a lesser degree, but also exposing major problems. For example, the Section 403 Hotel program, a temporary housing solution for victims,

HOUSING RECOVERY

created confusion and unpredictability as FEMA incrementally extended occupancy status, meaning tenants did not know if they'd be allowed to continue living in their current situation month-to-month. Likewise, the Rental Program, which provided vouchers to tenants, had several deadline changes, creating confusion and frustration among tenants and landlords alike. There were also flawed public assistance programs to help communities get back up and running (Ad Hoc Subcommittee on Disaster Recovery, 2009). These factors contributed to slow recovery following Katrina and Rita and exposed the ill-equipped recovery process under FEMA.

Prior to the creation of FEMA, the US Department of Housing and Urban Development (HUD) provided recovery assistance to communities. This is a logical step, because HUD's mission is to "create strong, sustainable, inclusive communities and quality affordable homes for all" (HUD, Mission). Since FEMA's creation, it has largely taken on all roles pertaining to disasters, including housing recovery. Following Katrina however, HUD was given authority to provide housing, but only to public housing clients affected by the hurricanes--a fraction of the total housing demand (Ad Hoc Subcommittee on Disaster Recovery, 2009). FEMA could have but chose not to give more authority to HUD due to concerns that HUD could not provide and support the large demand. (Ad Hoc Subcommittee on Disaster Recovery, 2009). That is, because HUD traditionally provided vouchers only for existing housing, many thought the limited housing choices available following a disaster would be insufficient to support the demand (Ad Hoc Subcommittee on Disaster Recovery, 2009).

From the criticisms following the 2005 hurricane season, FEMA and HUD agreed to work closely together to form the Disaster Housing Assistance Program. When Hurricane Ike struck the Texas coast in 2008, many looked to see improvements in the programs and the recovery effort as a whole. Unlike Hurricanes Katrina and Rita, in Hurricane Ike, the Disaster Housing Assistance Program (DHAP-Ike) limited the use of funds to purchase mobile homes or trailers and instead, housing vouchers were utilized. Unfortunately, because there was a shortage of rental housing, and housing in general, many residents were forced to find housing far from their pre-disaster homes. Prior to Hurricane Ike, typically only single-family homes received assistance. In December of 2008, a pilot program was created through the Federal Assistance to Individuals and Households (IHP) program to provide assistance to qualified multi-family properties.

HOUSING RECOVERY

3.2 FEDERAL GOVERNMENT

While the 2005 and 2008 hurricane seasons exposed deficiencies in the federal capacity to recover from disasters, these catastrophic events also created a window of opportunity (Birkland, 1997)—to improve the recovery process. To this end, in 2009, President Obama directed the U.S. Department of Homeland Security, which houses FEMA, and the U.S. Department of Housing and Urban Development (HUD), to develop a Long-Term Disaster Recovery (LTDR) working group to provide guidance on community recovery following a disaster. The LTDR working group released the National Disaster Recovery Framework (NDRF) in September of 2011.

Today when a disaster exceeds the capacity of state, local and tribal recovery programs the federal government provides assistance through the NDRF. This NDRF was designed to be paired with the ESF annexes and the new National Response Framework (NRF). The NDRF specifies that FEMA is the federal agency responsible for disaster response and HUD is the federal agency responsible for long-term housing recovery. When a disaster occurs, support functions within the NRF are to be activated. Once the disaster response begins to move to the recovery phase, responsibility transitions from the NRF to the NDRF.

3.2.1 KEY PLAYERS & STAKEHOLDERS

Just as response to disasters is scalable, the NDRF is intended to be scalable. Whether a disaster is presidentially declared or whether the disaster can be handled locally, the framework still applies. Federal assistance in disasters acts as supplemental to state and local resources, primarily because of the notion that emergencies and disasters are best handled at the local level. Only 1 percent of all disasters are presidentially declared disasters, meaning that state and local resources do not have the capacity to handle such wide-scale damage (Schwab, 1998). When local and state governments do not have the resources, the federal government provides assistance.

There are key players at each scale that focus on recovery. The NDRF establishes a Federal Disaster Recovery Coordinator, State or Tribal Disaster Recovery Coordinators, Local Disaster Recovery Managers, and Recovery Support Functions (RSF). Recovery Support Functions help activate key players to accomplish tasks and support efforts to recover. The Recovery Support Functions include Recovery Planning and Capacity Building; Economic, Health and Social Services; Housing; Infrastructure Systems; and Natural and Cultural Resources.

HOUSING RECOVERY

These RSFs are different from the Emergency Support Functions (ESF) found in the National Response Framework. ESFs timeframe exist within days to weeks following a disaster, while RSFs may overlap ESFs, but their timeframe exists months to years following a disaster. Each ESF transitions and hands over responsibilities to RSFs once response efforts are managed. Specifically for housing recovery RSF Community Planning and Capacity and RSF Housing are relevant.

RSF Community Planning and Capacity is coordinated by FEMA. The primary agencies providing support are FEMA and the Department of Health and Human Services (HHS) and thirteen other supporting agencies. A primary goal of the support function is to help organize, plan, manage, and implement recovery. Some of the key achievements of the RSF is to promote mitigation planning and to incorporate it and recovery into local community plans and initiatives. Another important component is to develop local leadership capacity through cross-training stakeholders, such as emergency managers, city managers, planning staff, economic development staff and other local officials, and nonprofit and private sector partners. It strives to utilize partnerships with extension programs, universities, national professional association, nongovernmental organizations to expand resources. The RSF also maintains communications in in preparation for recovery between all partners.

RSF Housing is coordinated by HUD with primary agencies being FEMA, the Department of Justice, HUD, and the U.S. Department of Agriculture. Supporting Organizations include Corporation for National and Community Service (CNCS), Department of Corrections (DOC), Department of Education (DOE), Environmental Protection Agency (EPA), Department of Health and Human Services (HHS), Small Business Administration (SBA), US Access Board, Department of Veterans Affairs (VA), American Red Cross (ARC), National Voluntary Organization Active in Disasters (NVOAD). The primary goals of the support function is to “address pre- and post- disaster housing issues and coordinate and facilitate the delivery of resources in the rehabilitation and reconstruction of destroyed and damaged housing and to develop new accessible, permanent housing options” (FEMA, 2011). FEMA is the coordinating agency under the National Response Framework (NRF) for ESF #6, now named Mass Care, Emergency Assistance, Temporary Housing, and Human Services. ESF 6 is able to move an individual or family from response, immediately after the disaster, where the primary concerns are mass evacuations, sheltering, distribution of supplies, donations management, support for dependents and pets through to short-term and long-term

HOUSING RECOVERY

recovery with temporary housing and repair loan assistance as well as non-housing loss concerns such as crisis counseling, case management, unemployment services, legal services, and other service programs (FEMA, 2011). The expanded ESF 6 is strongly linked to RSF Housing and RSF Health and Social Services. In a disaster, FEMA activates ESF 6 to respond to immediate needs of victims. As the ESF 6 role diminishes, HUD activates the Housing RSF which ramps up and assumes activities and roles. A part of the challenge is this period of transition from ESF #6 to Housing RSF.

3.3 STATE GOVERNMENT

States have been referred to as the 'linchpin' between federal policies and funding and local need during disasters (Sandler and Smith 2013; Smith and Flatt 2011). When disasters occur that exceed the capacity of a local government, the state can designate the area a state declared disaster to support local needs. When a disaster occurs that exceeds the capacity of the state, the state calls on the federal government to declare a presidential disaster. States vary widely in their own capacity and ability to assist local governments, but are recognized with having three influential powers. First, states can influence resources to address local needs. States take the role of distributing federal funds and their own share of funds to local governments. Unfortunately, many states have reduced budgets to address disaster needs, effectively increasing total disaster costs (NEMA, 2012). Second, states affect the timing of recovery through their own pre-event capacity, their ability to address and assist socially vulnerable populations, and the equitable access and distribution of funding (Smith 2011). Third, states can influence resources through the vertical and horizontal linkages they connect with. States with strong vertical connections have strong relationships and regular interactions with the federal level and local levels. States strong in horizontal linkages works effectively across its own agencies and other state level departments.

States play the central role in coordinating recovery activities. States typically help localities understand federal policy and regulations; create state programs that address local needs; and train, educate, and provide outreach to localities (Durham and Suiter 1991; Smith 2011). The state recovery section coordinates damage assessments, "prepares disaster declaration requests for the Governor's signature, and deploys staff to the affected area to coordinate the overall recovery process". Specifically states collect damage assessments from local governments. Within the TDEM Disaster Recovery Manual

HOUSING RECOVERY

(TDEM-62) damage assessment matrices are provided for local guidance. Hurricane Ike Round 2 Housing Guidelines, Texas General Land Office (GLO) has revised requirements to include photographic documentation and narrative descriptions of damages. The state also serves as a link with other recovery partners, like HUD and voluntary groups that are responding to community needs. The state provides direct funding for residential construction and serve as contact for federal resources. During a presidentially declared disaster there are a number of funding opportunities the state can allocate. For instance, TDEM Recovery staff carry out the Individual Assistance program, and aid entities and organizations through the Public Assistance program (<http://www.txdps.state.tx.us/dem/Recovery/> October 17, 2014). Unfortunately, there is little funding and guidance for pre-disaster recovery planning initiatives from the federal to state levels (Smith forthcoming). Even with the passage of PKEMRA and the relatively new NDRF policy framework, there is little incentive for state and local governments to plan for recovery (Smith, forthcoming). Currently, whether states and localities receive funding is dependent on the pre- and post-disaster planning activities they undertake, although there is no such incentive for recovery planning. The states of Florida and Oregon have created programs to help localities develop pre-disaster recovery plans (Smith forthcoming).

3.3.1 KEY PLAYERS & STAKEHOLDERS

The governor plays the key role in emergency management activities because the authority and responsibility is vested within governor's office. The National Governor's Association (NGA) has recognized that recovery activities might be better suited in a policy focused office instead (Durham and Suiter, 1991). Under the National Disaster Recovery Framework, the Texas Division of Emergency Management (TDEM) is the state agency responsible for disaster response and the Texas General Land Office is responsible for disaster housing recovery. Texas Department of Housing and Community Affairs (TDHCA) and the Texas Department of Rural Affairs (TDRA) were the agencies responsible for housing recovery prior to 2011.

The following is a list of all state agencies which provide primary or support roles in recovery (State of Texas Emergency Management Plan Draft 05/2012):

- Primary responsibility of NDRF at the state comes from the Texas Division of Emergency Management.
- Texas General Land Office- manages 19 million acres of state owned land; responsible for clearing public beaches

HOUSING RECOVERY

following a disaster, conducts oil spill prevention and response; recovery support; and is the primary role in long-term recovery

- American Red Cross helps with recovery efforts –emergency shelter, and cash vouchers for temporary housing, emergency home repair,
- Office of Attorney General- represents the state in civil matters, such as insurance, banking, financial litigation
- Texas Animal Health Commission
- Texas Commission on Environmental Quality- responsible for managing state’s water resources and to be sure they are clean and healthy for environment and people
- Texas Comptroller of Public Accounts- monitors and approves expenditures of state funds, estimates state revenues in order to certify legislative appropriations. Primary functions include administration, funds management, and central administration.
- Texas Department of Aging and Disability Services provide services and support to people who are aging or have disabilities.
- Texas Department of Assistive and Rehabilitative Services help disabled find work
- Texas Department of Insurance monitoring company handling of disaster claims for compliance and solvency concerns, issuing emergency licenses to adjusters who come to Texas following a disaster, and maintaining and testing TDI’s Disaster Recovery Plan.
- Texas Department of State Health Services primary agency for health response. Texas Department of Transportation maintenance and construction of state highways
- Texas Forest Service-provides support in recovery; coordinated plan for forest fire protection
- Texas Procurement and Support Services provides state agencies/customers with goods and services-manages fleets, alternative fuel vehicles, office machine repair,
- Texas Workforce Commission provides workforce development and career development services
- The Salvation Army-provide emergency shelters, recovery support
- Texas Department of Information Resources- operates a disaster-recovery site to prevent loss of information

HOUSING RECOVERY

3.3.2 STATE ROLE IN RECOVERY

- The state allocates CDBG-DR funding from HUD to COGs for residential construction and serve as contact for federal resources.
- Collects damage assessments from local gov't provides a request for presidential disaster declaration to FEMA.
- If the disaster is declared a national disaster from the president and FEMA arrives, the State serves as intermediary to the affected areas.
- Also it should serve as a link with other recovery partners, like HUD.
- Provide resources to voluntary groups that are responding to community needs.

3.4 LOCAL GOVERNMENT

Local governments take the lead role in managing disaster recovery. From an emergency response perspective, disasters occur at the level. It is at the local level where residents interact with their government more frequently--as opposed to state and federal levels--with things like the regulation of land use, building permits and construction, and civic services, like police, fire, schools, and infrastructure needs. The local government provides access to the participation in democratic processes that are not always possible at higher levels of government. Because of residents' connection with local government, it is fitting that disaster recovery would also primarily take place at the local level. Unfortunately, many recovery programs provide little opportunity for the community to engage in the process. The measuring stick that is often held to public participation practices is Sherry Arnstein's ladder of engagement, which ranges from non-participation to full citizen control (Arnstein 1969). Many recovery programs have limited involvement and employ passive methods of informing, consultation, or placation. This exchange of information between the public and the program administrators is typically based on generalized assumptions gathered from a small sample of participants or from outside programs. As the mode of participation moves up the ladder, participants are more and more engaged in designing the process itself. A grassroots movement where leadership of the recovery process comes directly from the beneficiaries or disaster victims themselves is an example. Ideally, participation informs the recovery process.

Community participation in post-disaster housing projects in developing countries provides examples. In El Salvador, beneficiaries

HOUSING RECOVERY

were engaged through requirements to physically construct portions of their homes and participate in “grassroots” social committees that were actually initiated by the program administrators themselves. These programs did little to create a sense of “community” and furthermore, efforts by participants to form an independent local representative body were eventually stifled by program administrators out of fear of losing control of the process. The top-down design of this engagement process was so rigid by the time participants were involved that the program was unsuccessful in meaningfully engaging residents and unable to fulfill its social goals. In Columbia, the recovery program was conducted by a group of local organizations already working in the area when the disaster occurred. The program required beneficiaries to use existing social and organizational networks as conduits to the recovery organization. The approach left most of the control in recovery process up to the individual participant and resulted in increased user satisfaction and efficient resource allocation. Early involvement in pre-disaster recovery planning with local community leaders will help ensure their needs are met and voices heard. Ideally, establishing relationships with local governments and community-based organizations should occur far in advance of a disaster event.

Local governments also play a key role in executing and implementing plans. The majority of mitigation measures and state and federal requirements are adopted, codified and enforced at the local level. It is often up to the local government to adopt and enforce state and federal standards (i.e. NFIP, IBC, IRC). Unfortunately, the capacity of local governments varies widely. Currently, there are no established standards or mandates for local governments to play a role in recovery and there is no specific policy in place to support housing recovery, in particular. According to standard emergency management actions by phases, recovery for local governments entails:

- Identifying unsafe structures and the recommendation of structures for condemnation,
- monitoring restoration activities,
- reviewing building codes and land use regulations for possible improvements, and
- communicating effectively with disaster victims (Brazos County Recovery Plan).

In reality, we know these are not the only activities that should take place in recovery, but should include a range of local service providers that engage with the community to fully understand and address local needs and values.

HOUSING RECOVERY

3.4.1 KEY PLAYERS & STAKEHOLDERS

Housing recovery should involve the whole community. A whole community approach utilizes the strengths and capacities of all facets of a community, including individuals and households, the private sector, the nonprofit sector, and the local government. At the local level this includes:

The Natural Disaster Housing Reconstruction plan (NDHR) made several recommendations on how to best handle recovery in Texas. Counties and Cities are the local entities that are responsible for disaster response. The Local Emergency Management Plan (LEMP) is approved by TDEM and FEMA in order to qualify for disaster funding. The Council of Government (COG) is the local entity responsible for long-term disaster recovery. COGs are recommended as regional coordinators for recovery because they play a role in supports all jurisdictions, counties and cities.

HUD typically allocates Community Development Block Grant (CDBG) disaster recovery grants or funding assistance to states. CDBG funds are only to be spent in areas with low- to moderate-income populations and based on damage assessments. Funding from HUD and the General Land Office (GLO) are divided up by a formulary process to COGs to distribute CDBG funds to their regions. The board of directors of the COG determines how to spend money within HUD's regulations. COGs provide a recommendation of how the region intends to distribute their portion of funding to foster long-term community recovery that is forward-looking and focused on permanent restoration of infrastructure, housing, and the local economy. The Methods of Distribution (MODs) are a regional breakdown by community and between housing and non-housing activities. The COG also develops MODs and utilizes the LEMP for funding (The Natural Disaster Housing Reconstruction). The Mitigation Action Plan is approved by GLO and HUD in order to qualify for CDBG disaster funds.

It is important to better connect strategies and initiatives of the COG to county and local governments. The NDHR recommended that COGs develop an Emergency Housing Procedures Manual to provide counties and cities with technical and financial assistance. The Procedures Manual should detail the efficient recovery of housing as well as the quality and aesthetic nature. The NDHR also recommended that COGs should release an RFP for architects to develop housing reconstruction designs with public input. Pre-bid contracts would then be developed. The State suggested that within

HOUSING RECOVERY

the Planning and Capacity Building fund of the CDBG, \$1 million should be marked for Disaster Housing Reconstruction Planning. This would allocate \$250,000 to four COGs annually.

The NDRF recommends the appointment of a Local Disaster Recovery Manager (LDRM). The LDRM would oversee pre-disaster responsibilities and serve as the main point of contact for local recovery with the state, tribal governments, and neighboring local governments (NDRF). The LDRM would be the local expert on recovery and would manage the many players that are needed to recover and carry out a recovery plan. The NDRM would ultimately develop the recovery plan, train and coordinate exercises to properly carry out that plan and foster resilient and sustainable development practices (NDRF). At this time, the NDRF has not been implemented at the local level in Texas and there are not designated LDRMs.

3.4.2 LOCAL ROLE IN RECOVERY

EMERGENCY MANAGER:

- Local emergency managers or other specified personnel document local damages (damage assessment, windshield assessment, door to door) to be sent to the state
- Local emergency managers provide oversight for the State, the Federal Government and the Volunteers Work during the disaster response.

COGs:

- COGs provide oversight for the State, the Federal Government and the Volunteers Work during the long-term disaster recovery.
- COGs or jurisdictions remove debris from roadways, yards, and homes (the federal government may pay up to 75% of these costs)

MUNICIPALITIES:

- Municipal planning office complete building inspections and provide building permits, which must comply with local codes and ordinances and state and federal regulations (NFIP and environmental clearance)
- Municipalities are responsible of perform electrical, plumbing and systems inspections.

LOCAL VOLUNTEER ORGANIZATIONS:

- Local volunteer organizations and VOADs provide Outreach or Case Management services in coordination with the COG

PROGRAM COMPARISON CATEGORIES

4.1 PROGRAM DESIGN

To implement a successful disaster housing recovery program, the programmatic design is just as important as the housing design itself and challenges in executing a housing recovery program continue to take place. Top-down programs tend to make more resources available, but also come with administrative processes that reduce the ability to innovate at a local level. At the same time, limited local capacity can reduce the overall effectiveness of grassroots mobilization (Wilbanks 2009). The housing recovery demonstration program approach includes the way in which households are funneled through the disaster housing recovery process.

To identify the issues and obstacles in the temporary to permanent housing recovery process a content analysis of housing recovery reports, articles, and policies was conducted. A qualitative evaluation of 40 articles and reports were assessed focusing on disasters from 2005 to present in the United States. Five overall categories were identified as broad phases where gaps occur in the temp-to-perm housing recovery process, including:

- Damage assessment,
- Outreach,
- Case management,
- Design decisions, and
- Construction

These five categories are somewhat linear, but often occur simultaneously and in parallel. In general, damage assessments are performed to determine the extent of damage, which directly impacts the recovery funds a household can receive. Once the damage assessment is complete an outreach team will identify significantly damaged areas and/or those in the greatest need in order to funnel them toward appropriate resources. Once disaster victims are identified, case managers determine their eligibility for federal and state financial assistance to rebuild. During this time, design decisions about the construction of the temp-to-perm housing should be conducted where the household interact with designers to provide input toward the final outcome of their home. Finally, the actual construction of temp-to-perm housing should take place efficiently and sustainably. Even though they are separate categories there is significant amount of overlap between the categories. This is especially visible between outreach and case management along with design decisions and construction. There were still enough differences to keep them as separate categories, but since all of these

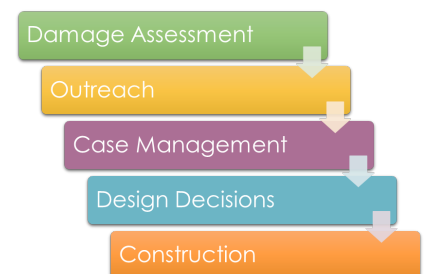


Figure 4. Program Comparison Report Categories

PROGRAM COMPARISON CATEGORIES

categories are a part of an entire process there will be some overlap. Of the 40 articles and reports assessed, 13 of them covered damage assessment, 15 covered outreach, 14 covered case management, 15 covered design decisions, and 20 covered construction. Some of the articles and reports covered a singular topic and some covered several, as seen in Table 1. Each category is evaluated based on the issues and obstacles that emerge and the best practices that have been identified in the literature. A meta-analysis was performed in order to quantify the frequency of issues and best practices in the literature. If an issue or best practice was mentioned multiple times, it was flagged. The higher the frequency the flags for a particular issue of best practice, the higher the relevance. To our knowledge there is no research that compares housing recovery reports and articles to identify issues and best practices of the five topic areas.

Table 1: Articles and Reports Compared and Analyzed.

TITLE	DAMAGE ASSESSMENT	OUTREACH	CASE MANAGEMENT	DESIGN DECISIONS	CONSTRUCTION
Case Management with Displaced Survivors of Hurricane Katrina: A Case Study of One Host Community.			X		
Case Management with Hurricane Katrina Survivors: Perspectives of Case Managers and Supervisors			X		
Closing Gaps in Local Housing Recovery Planning for Disadvantaged Displaced Households					X
Council on Accreditation- Disaster Recovery Case Management			X		
Creating a Safe Harbor after Hurricane Katrina: A Case Study of the Bayou La Batre Alternative Housing Pilot Program		X		X	X
CRS Report for Congress-Hurricane Katrina: Social Demographic Characteristics of Impacted Areas	X				
Developing a More Viable Disaster Housing Unit: A Case Study of Mississippi Alternative Housing Pilot Program		X		X	X
Digging Deeper: Participation & Non-Participation in Post Disaster Community Recovery		X			
Disaster Case Management Program Guidance	X	X	X		
Disaster Housing Assistance Program (DHAP) Case Management Guidelines			X		
Emergency Housing Program Research and Recommendations		X	X	X	X
Far From Home	X		X	X	X
Federal Immediate Disaster Case Management		X	X		
FEMA'S Disaster Declaration Process: A Primer	X				
Field Damage Survey of New Orleans Homes in the Aftermath of Hurricane Katrina	X				
GAO: Hurricane Katrina Improving Federal Contracting Practices in Disaster Recovery Operations					X
Handbook of Disaster Research	X	X			X
Housing Recovery in the Gulf Coast Phase 1: Results of Windshield Observations in Louisiana, Mississippi, & Texas	X				

PROGRAM COMPARISON CATEGORIES

TITLE	DAMAGE ASSESSMENT	OUTREACH	CASE MANAGEMENT	DESIGN DECISIONS	CONSTRUCTION
Hurricane Katrina Improving Federal Contracting Practices in Disaster Recovery Operations: Testimony before the Committee on Government Reform					X
Hurricane Sandy Rebuilding Strategy		X			
Impediments to Recovery in New Orleans' Upper and Lower Ninth Ward: One year after Hurricane Katrina	X				
National Disaster Recovery Framework	X				
National Disaster Housing Strategy		X	X	X	X
Natural Disaster Housing Reconstruction Plan	X	X	X	X	X
NVOAD Long-Term Recovery Manual	X	X	X		
OIG- Effectiveness and Costs of FEMA's Disaster Housing Assistance Program- AUG 2011			X		X
OIG- Effectiveness and Costs of FEMA's Disaster Housing Assistance Program- AUG 2011				X	X
OIG- Unless Modified, FEMA's Temporary Housing Plan will Increase Cost by an Est. \$76 million Annually- June 2013				X	X
RAND Study- Navigating the Road to Recovery		X	X		
Rapid Housing Recovery Program Research Summary		X		X	X
Rebuilding or Recovering? Considering Sustainability in the Context of Disaster Rehousing	X	X		X	X
Research Trends of Post Disaster Reconstruction: The Past and the Future					X
Resourcing Challenges Post-Disaster Housing Reconstruction: A Comparative Analysis				X	X
Returning to a New Normal- Texas Disaster Case Management Pilot Project		X	X		
SERRI Project				X	X
Sustainable Disaster Recovery: Operationalizing an Existing Agenda		X			
TDHCA: Community Development Block Grant Disaster Recovery Program Hurricanes Ike & Dolly Round 2	X				X
The Barriers to Environmental Sustainability in Post-Disaster Settings: A Case Study of Transitional Shelter Implementations in Haiti					X
The effects of housing assistance arrangements on household recovery: an empirical test of donor-assisted and owner-driven approaches				X	
TOTAL	13	15	14	13	20

PROGRAM COMPARISON CATEGORIES

4.2 DAMAGE ASSESSMENT

Damage assessment is an appraisal that is performed after the disaster in order to determine the amount of damage that an area has received. It is a “mechanism used to determine the impact and magnitude of damage and the resulting unmet needs of individuals, businesses, the public sector, and the community as a whole” (McCarthy, 2011). There are two phases of damage assessments that take place following a disaster. The first is the preliminary damage assessment (PDA) is an estimate of damage in an area and subsequently more generalizable. Under the Stafford Act, a PDA is required to be completed within 10 days of a disaster to determine whether or not damage is at a scale that exceeds state and local capabilities (NVOAD, 2004). The team that conducts the PDAs generally consists of a state official, a representative from that areas regional FEMA office, a local official that has knowledge of the area, and sometimes representatives from the American Red Cross and Small Business Administration (McCarthy, 2011). The governor will use damage assessments to assess what types of programs are necessary for the recovery process to begin. Damage assessments determine the amount of money HUD and FEMA will allocate to states to then disperse locally.

The second phase of damage assessment is conducted in greater detail to determine how much damage each home received during a disaster. The detailed assessment determines flood and/or structural damage and calculates the actual cost of damage. The damage assessment identifies ‘substantial damage,’ or structures or properties where damage is greater than its actual value, as determined by local building officials or floodplain managers. Upon completion of the final damage assessment, the total loss figure is calculated and finalized through a formulary process by FEMA. The available funds procured from federal disaster recovery grants can then be allocated to states. In Texas, funding is then allocated to Council of Governments (COGs) to be dispersed to the appropriate areas.

4.2.1 ISSUES & OBSTACLES

Thirteen of the forty articles evaluated discussed damage assessments. Of those thirteen, seven articles identified the methodology, or how the damage assessment was conducted as a major concern. In general, the damage assessment process is protracted; surveying and assessing every home for the amount of damage is lengthy and costly. Oftentimes, there are not enough inspectors (Far From Home), ultimately slowing the eligibility process for housing assistance.

PROGRAM COMPARISON CATEGORIES

Following Hurricane Katrina, damage and impact assessments created large lag times, because of the overwhelming amount of homes to inspect and the lack of certified inspectors (National Disaster Housing Reconstruction Advisory Committee, 2010). In some instances, slow assessments took as long as three months and in some cases, assessments were left incomplete (Far From Home). While FEMA has the staffing capacity--10 regional offices located throughout the United States--to conduct damage assessments for a disaster event, it often relies on contracted temporary employees during a major disaster or multiple disasters (McCarthy, 2011). Following hurricanes Katrina and Ike, FEMA's prolonged damage assessment process stalled eligibility for Section 408 housing program applicants. In order to expedite the process, FEMA attempted to use satellite data, but many have concerns of the accuracy and consistent methodological approach of damage assessments (Far From Home).

Because the amount of money a property receives is dependent on the outcome of the damage assessment, the methodology to conduct the assessment must be thorough and consistent. Many have found estimates may differ depending on which damage assessment methodology is used (Gabe, Falk, McCarthy). In any one disaster there may be multiple ways a damage assessment is completed based on who it is performed by (McCarthy, 2011). Depending on the agency performing the damage assessment, an inspector may assess different outcomes. It was also found that "even though a set of common guidelines was established and a set of cross-calibration activities were conducted, due to the subjective nature of damage rating exercise, it is difficult to be completely precise in the damage assessment" (Franco, Green, Khazai, Smyth, & Deodatis, 2010). For instance, damage assessments of properties performed by the Association of Community Organization for Reform Now (ACORN) were deemed less damaged than the neighborhoods surrounding it, which was true for the lower ninth ward (Field Damage Survey of New Orleans Homes in the Aftermath of Hurricane Katrina). Other damage assessments placed blanket assessments on particular areas, drawing a line in the sand of who and who was not affected, leaving those just outside the affected area at a disadvantage. The variation in training and inconsistency in the methodological process has created large discrepancies in housing assistance.

Disinterested inspectors are hard to come by and many have been found to be biased in reporting (Franco, Green, Khazai, Smyth, & Deodatis, 2010). For instance, the condition of the home prior to the disaster is taken into account when calculating the damage received.

PROGRAM COMPARISON CATEGORIES

Many inspectors associated the poor condition of the home pre-disaster with the resulting severity of damage post-disaster. This was especially the issue after Hurricane Katrina in the Upper and Lower Ninth Ward (Green, Bates, & Smyth, 2007). The location of the property and the condition of the neighborhood pre-disaster also resulted in biased damage assessments—more impoverished areas received less damage assessment values. Ultimately, poorer neighborhoods with significant damage received less assistance than other neighborhoods. While damage assessments may not be considered overtly discriminatory, the implications for funding assistance result in proportionally fewer resources for low income and minority households. Also, the challenge of reaching severely damaged properties and interior assessments of severely damaged homes was a limiting factor (Franco, Green, Khazai, Smyth, & Deodatis, 2010). Obstructed pathways, to physically reach a home to conduct a damage assessment, resulted in incomplete assessments or approximate value determinations based on surrounding areas—also known as location bias. During Hurricane Katrina, many damage assessments had a location bias toward less damaged areas. Another inconsistency occurred in the length of time between the disaster and the damage assessment. In the lower ninth ward damage assessments that were completed later were more detailed and resulted in assessments portraying less damage than those inspected soon after the disaster event.

Other issues in conducting damage assessments included communication between the inspector and a representative of the property. One requirement was that households must be present during the times of inspections in order for residents to be eligible for funding assistance. In some cases, the communication of the inspection date was not relayed to the households, which ultimately led to delays and limited assistance (Far From Home). Other uncertainties and ambiguities occurred, including disparate FEMA flood maps actual property layouts. There were discrepancies between the field observations and published flood maps, resulting in vague determinations for actual flood damage and unreliable damage assessments (Franco, Green, Khazai, Smyth, & Deodatis, 2010).

4.2.2 PROMISING PRACTICES

In all thirteen articles assessed that discussed damage assessments, two best practice themes emerged—mapping and connecting to local organizations.

PROGRAM COMPARISON CATEGORIES

Six of thirteen articles described geographical information systems (GIS) mapping as a way to determine areas that are likely to have received damage. By using social vulnerability mapping to determine where the most vulnerable populations exist, we can predict areas that may receive more damage (Van Zandt et al, 2012). Conducting social vulnerability mapping prior to a disaster can help prioritize efforts in the immediate recovery.

Three out of thirteen articles discuss the need for local/nonprofit organizations throughout the process. Local governments should work with nonprofits and local groups to “train community residents and business owners, recruit PDA volunteers, [and] expand on citizen corps efforts”(FEMA, 2011, p.92). Jurisdictions should use VOAD groups and the architecture community to quickly triage the damages of the housing stock to identify which units can be salvaged and which ones cannot (Natural Disaster Housing Reconstruction Advisory Committee, 2010). Then with the creation of maps, nonprofits can conduct damage assessments by identifying where the most severe damages exist in the community (Wilson, unpublished manuscript).

Table 2. Reports Addressing Damage Assessment

TITLE	ISSUES	BEST PRACTICES	
	HOW IT IS CONDUCTED	USE OF GIS MAPPING	USE OF LOCAL/NON-PROFIT ORGANIZATIONS
CRS Report for Congress-Hurricane Katrina: Social Demographic Characteristics of Impacted Areas	X	X	X
Handbook of Disaster Research	X	X	
Natural Disaster Housing Reconstruction Plan		X	X
Rebuilding or Recovering? Considering Sustainability in the Context of Disaster Rehousing			X
Far From Home	X		
Field Damage Survey of New Orleans' Upper and Lower Ninth Ward: One Year After Hurricane Katrina	X	X	X
FEMA's Disaster Declaration Process: A Primer	X		
National Disaster Recovery Framework	X		
Housing Recovery in the Gulf Coast Phase 1: Results of Windshield Observations in Louisiana, Mississippi, & Texas			X
Disaster Case Management Program Guidance	X		
TDHCA: Community Development Block Grant Disaster Recovery Program Hurricanes Ike & Dolly Round 2			
NVOAD Long-Term Recovery Manual			
TOTAL	7	4	5
PERCENTAGE	54%	31%	38%

PROGRAM COMPARISON CATEGORIES

4.3 OUTREACH

Outreach is the activity of identifying populations that will need funding assistance to rebuild homes following the disaster and is the practice of conducting local public awareness activities through targeted community interaction. The point of outreach is to identify eligible aid recipients and enroll them in the program to receive housing recovery assistance. Often it is imperative to identify vulnerable populations and other special needs populations, including individuals with disabilities, children, elderly, individuals with limited English proficiency, low-income residents, minorities, and people who have unmet disaster-caused needs. Outreach for housing recovery is conducted through local organizations, VOADs, faith-based organizations, and state organizations. The outreach process includes development of an outreach plan (National Team), implementation of the plan (Regional and Local Teams), and monitoring and adjustment of the plan as needed (Regional and Local Teams) (Federal Immediate Disaster Case Management). Successful outreach in housing recovery acknowledges the community's challenges and advocates for their needs to be addressed.

4.3.1 ISSUES & OBSTACLES

Of the 40 comparison articles, 15 were related to outreach (see Table 3). Of those 15, eight specifically mention the issues pertaining to socially vulnerable populations. In order for outreach to be successful, communities need to be able to identify the location of residents, particularly socially vulnerable populations (Acosta, Chandra, & Feeney, 2010). Identifying and reaching out to socially vulnerable populations is a critical step for outreach workers and a whole community recovery. Since Hurricane Katrina, there are still a variety of thought son ways to best conduct outreach. Several articles described unawareness of the location of socially vulnerable populations as an obstacle to successful outreach. The main form of outreach conducted following Hurricane Katrina, Rita, and Ike utilized a FEMA contact list. In Hurricanes Katrina and Ike, the list that was provided by FEMA for outreach did not have correct contact information for clients (AgriLIFE Extension; Acosta, Chandra, & Feeney, 2010). In Gulfport, Mississippi, call-centers had a difficult time reaching out to applicants using FEMA's contact information database (Natural Disaster Housing Reconstruction Advisory Committee, 2010). In Biloxi, Mississippi, letters were sent out to households, but oftentimes families had already moved. Outreach workers hand delivered many letters to applicants to make sure that they received them, a slow and tedious process (Abt Associates and Amy Jones &

PROGRAM COMPARISON CATEGORIES

Associates, 2009, p. 7). The inability to reach community members, particularly those in the greatest need is the largest impediment to providing housing assistance.

4.3.2 BEST PRACTICES

In all fifteen articles that discuss outreach, three best practice themes emerge—**the use of community-based organizations, developing and managing a long-term outreach process, and developing inter-organizational partnerships and collaboration.**

To identify vulnerable populations who are still in need of help **community-based organizations (CBOs) and networks that already exist in the community should be utilized.** Using these organizations, with already established trust, can help gain access to these populations and bridge the gap between government programs (FEMA, 2013) (Wilson, unpublished manuscript). Six of the fifteen articles on outreach discuss the importance of CBOs, which are so effective because they already understand the context, the residents' needs, and have greater accountability (AgriLIFE Extensions) (Wilson, unpublished manuscript). By giving assistance to CBOs, that already service low-income populations and promote self-sufficiency, communities and ultimately increase community capacity (Wilson, unpublished manuscript). CBOs are also a part of a longer-term outreach process—four of fifteen articles cite longer outreach as a critical component of outreach. Getting residents involved early—which CBOs already do—need to be a part of pre-disaster outreach effort. Outreach workers can help prepare families, such as getting critical paperwork in line for eligibility, in the event of disaster.

Finally, the literature cites 10 of 15 articles on outreach that describe **the value of inter-organizational partnerships and collaboration.** Working relationships between local, regional, state, and federal agencies, and public and private organizations need to be established prior to a disaster, which may include such activities as “sharing information, ideas, knowledge, and resources with one another and with those affected” (AgriLIFE Extension). Several studies found that local organizations and residents have local knowledge in the community and sharing knowledge can implement change (Emergency Housing Research & Recommendations, 2013, p. 10).

PROGRAM COMPARISON CATEGORIES

Table 3. Reports Addressing Outreach

TITLE	ISSUES	BEST PRACTICES		
	IDENTIFYING VULNERABLE POPULATIONS	USE OF COMMUNITY BASED ORGANIZATIONS	LONG-TERM OUTREACH PROCESS	INTER-ORGANIZATIONAL PARTNERSHIPS & COLLABORATION
Creating a Safe Harbor after Hurricane Katrina: A Case Study of the Bayou La Batre Alternative Housing Pilot Program	X			
Developing a More Viable Disaster Housing Unit: A Case Study of Mississippi Alternative Housing Pilot Program	X			
Disaster Case Management Program Guidance		X		
Emergency Housing Program Research and Recommendations	X	X	X	X
Hurricane Sandy Rebuilding Strategy	X	X		X
National Disaster Housing Strategy	X		X	X
Natural Disaster Housing Reconstruction Plan	X			X
NVOAD Long-Term Recovery Manual				X
Rapid Housing Recovery Program Research Summary		X		X
Rebuilding or Recovering? Considering Sustainability in the Context of Disaster Rehousing		X	X	
Returning to a New Normal- Texas Disaster Case Management Pilot Project	X	X		X
RAND Study- Navigating the Road to Recovery	X			X
Federal Immediate Disaster Case Management-Concept of Operations				X
Digging Deeper: Participation and Non-Participation in Post-Disaster Community Recovery			X	X
Handbook of Disaster Research			X	
TOTAL	8	6	5	10
PERCENT	53.3%	40.0%	33.3%	66.7%

4.4 CASE MANAGEMENT

Prior to Hurricane Katrina there were few guidelines on how disaster case management should be performed. Navigating through the complex bureaucracy of obtaining funding assistance for housing is a challenge for individuals and families. The role of the case manager is to walk disaster victims through an eligibility process to determine and funnel funding assistance and resources to victims based on disaster-related unmet needs (FEMA, 2013). Case managers often provide a direct connection between the disaster victim and the services they require. They hold an important position in the recovery process by having unique knowledge of individual needs and the resources available to serve them. Disaster survivors who do not have effective case managers to guide them through the process can fall through the cracks in the system and may never receive the resources they require for long-term recovery. They are

PROGRAM COMPARISON CATEGORIES

particularly important in providing resources to socially vulnerable populations (Acosta, Chandra, & Feeney, 2010). Case managers in housing recovery ultimately help participants toward self-sufficiency by assisting victims from shelters to temporary housing and to permanent housing (HUD, 2008). It is the intent that case managers advocate for their caseload and work with other organizations to meet their needs (Hall, 2010).

The primary goal of disaster case management systems is to develop a plan for addressing disaster-related unmet needs in the community (Bell, Madden, et al. 2010) Previous research on social service provision following disasters “indicate(s) the need for responders to be flexible, seek out survivors, coordinate services with multiple agencies, work with limited information, and intervene at the individual, organizational, and societal levels” (Bell, Madden, et al. 2010, p. 218). Key elements to case management success identified by Bell and colleagues are client motivation (individual effort to engage in programs), resource availability (actual active programs), and case manager’s effort (staying informed of current resources available).

The typical functions of case managers are the identification of clients, performing a needs assessment, planning for recovery, connection with services, monitoring outcomes, and advocating for clients to ensure all needs are met (Bell 2008). The relationship between disaster victim and case manager revolves around resource availability and knowledge. The more informed and connected case managers are to current recovery resources, the more prepared they are to link disaster victims with the most appropriate means to meet their needs.

Though housing is a large part of recovery, other needs such as securing employment and access to transportation are also important to meeting long-term recovery goals. It is unlikely that one program will meet all the recovery needs of an individual or family, so several resources must be utilized to build back their community. The case manager plays an especially important role in fulfilling the mission of long-term recovery by combining the available resources into a comprehensive individual recovery strategy. In essence, the success of one recovery program is not only dependent on its own operation, but also the successful utilization of the other programs available in the community to meet the needs of individual survivors. Effective case management provides a vital bridge between programs and disaster survivors to enable full recovery.

PROGRAM COMPARISON CATEGORIES

4.4.1 ISSUES & OBSTACLES

In all, 13 articles discussed case management with issues and obstacles ranging from miscommunication, training, inconsistency, tracking and documentation, and case load size. A lack of communication was discussed in six of thirteen articles. Miscommunication occurred because there were ambiguous roles and responsibilities of case managers, as well as, unclear roles and responsibilities among all levels of agencies involved (AgriLIFE Extension). Case managers noted that information was slow to obtain and some clients and case managers misunderstand the documentation process (AgriLIFE Extension). Four of thirteen articles also discussed the lack of training as a contribution to miscommunication. Not only that, but there was widespread inconsistencies in terminology, qualifications, and triage. For instance, across the variety of case management organizations, there were different definitions for special needs population, leading to inconsistent measurements. Also, there were different qualifications and triage criteria for clients across different organizations making the process confusing for disaster victims. Generally, a triage system is filtered and organized by need—those most in need are at the front of the line. With inconsistent triage approaches creates situations where some with the greatest need may be left out or in waiting for services.

Another recurring issue came in tracking and documentation (5 of 13 articles) reports cited difficulty tracking client location and needs to measure progress and duplication in data entries causing confusion. The case management organizations that helped during the Hurricane Ike DCM-P stated that having a streamlined documentation process would help significantly. Redundancy of paper work was common, along with the amount of time it took to get clients through the application process (AgriLIFE Extension). If they would have had a consistent, streamlined process they would have been able to get clients through in a sufficient manner. Also, some clients had several different case managers during the process, which led to mistrust, confusion, and delays. In two of the thirteen articles, case load sizes were widely inconsistent, resulting in case managers that felt overloaded and unable to provide quality assistance. The case load size of 35:1 that was recommended by the State of Texas and FEMA seemed to be too many for case managers. Another factor that impacted the case load size was the proximity of case managers to clients (AgriLIFE Extension). The proximity of clients to other clients and the severity of needs should be taken into consideration when developing an appropriate case load size. Common issues consistent throughout reports were the collection

PROGRAM COMPARISON CATEGORIES

of proper documentation to meet eligibility requirements. Proof of ownership, clear title, and heirship documentation are all required for housing assistance, documentation that is often difficult to access in disaster stricken areas. Settling all estate and property tax issues before hand management was nearly non-existent.

4.4.2 BEST PRACTICES

Of the 13 articles that discuss case management three best practice themes emerge—**the use of local community-based organizations, inter-organizational collaboration, and strategies to develop a streamlined application process**. As seen in outreach, **local organizations** have been cited (4 of 13 articles) as a more effective group to provide case management, because there is an established reputation and trust with residents. In the Hurricane Ike DCM-P the three providers that delivered the case management all had a direct link to the communities that they worked with (AgriLIFE Extension). The grass-roots, bottom-up approach is considered a successful way to established case management.

Ten of the thirteen articles found that **inter-organizational partnerships and collaboration** to be an important piece to the success of the case management process. The importance of the involvement and support from all parties involved throughout the disaster cycle for the sharing of knowledge that is useful to implementing productive changes in the way programs are designed and conducted. Organizational and working relationships between different levels of governmental agencies need to be established prior to a disaster (AgriLIFE Extension). Continued progress towards a long-term working relationship is ideal. With the established relationships in place, the process of information sharing can take place, which is important for all parties that are involved. This includes full disclosure and transparency to create consistency as a community works toward common goals.

Six of thirteen articles discuss the importance of an **effective triage system** to streamline client intake and recommend a consistent triage system across organizations. It has been found that simplifying the process by “[establishing] a project-wide communications system, [developing] a project-wide electronic document database to capture and store predetermined documents from each client,... [creating] a set of project-wide application forms, and [establishing] a memorandum of agreement (MOU) to share predetermined information with partnering organizations” can increase efficiency

PROGRAM COMPARISON CATEGORIES

(AgriLIFE Extension, p. 113). This core process would be accessible by all providers with clear deliverables that are specific, measurable, and realistic (Acosta, Chandra, & Feeney, 2010; AgriLIFE Extension). This type of centralized system, would allow a client to fill out one set of paperwork to be qualified for any number of resources available (AgriLIFE Extensions). Within the system, establishing a simple timeline for clients and participants with clear goals and a plan for each client that they want to achieve throughout the process would foster communication and reduce confusion. Finally, using a centralized system for tracking, such as CAN, TAAG, or The Benefit Bank, across all providers can help streamline the tracking process and facilitate frequent contact with clients. The establishment of the Coordinated Assistance Network (CAN) following the September 11 attacks provided a platform for organizations working in the community to share information about the resources available. A web-based intake process standardized the case management approach in order to more quickly link clients with resources (Coordinated Assistance Network 2010). The utilization of systems such as this can greatly improve the coordination and effectiveness of recovery efforts.

Table 4. Reports Addressing Case Management

TITLE	ISSUES			BEST PRACTICES	
	COMMUNI- CATION	TRACKING& DOCUMENTA- TION	CASE LOAD SIZE	USE OF LOCAL ORGANIZA- TIONS	STREAM- LINED PROCESS
Disaster Case Management Program Guidance		X			X
Natural Disaster Housing Reconstruction Plan	X			X	X
National Disaster Housing Strategy					X
RAND Study- Navigating the Road to Recovery	X	X		X	X
Returning to a New Normal- Texas Disaster Case Management Pilot Project	X	X	X	X	X
Council on Accreditation- Disaster Recovery Case Management		X			X
Federal Immediate Disaster Case Management			X		X
OIG- Effectiveness and Costs of FEMA's Disaster Housing Assistance Program- AUG 2011		X			
Case Management with Displaced Survivors of Hurricane Katrina	X				
Case Management with Hurricane Katrina Survivors	X				
Disaster Housing Assistance Program (DHAP) Case Management			X		X
Emergency Housing Program Research and Recommendations	X				X
NVOAD Long-Term Recovery Manual				X	X
Far From Home					
TOTAL	6	5	3	4	8
PERCENT	42.9%	35.7%	21.4%	28.6%	57.1%

PROGRAM COMPARISON CATEGORIES

4.5 DESIGN DECISIONS

The design of the home is a critical component to a housing recovery program. Many physical and cultural factors must be considered when rebuilding housing. Reconstruction efforts should take into consideration short-term and long-term needs of residents. Often the housing needs of survivors shortly after a disaster are very different five or ten years later. A sustainable design solution must not only work to provide for a rapid transition from temporary housing to permanent housing, but should also be adaptable to future needs of households.

In addition to meeting the appropriate design requirements, homes should also be constructed with multiple hazards in mind. Since coastal regions are at a greater risk of experiencing hurricanes and flooding, special consideration of wind and water hazards should be taken.

The damage anticipated by wind events varies with intensity and may cause wall failures, roof structure failure, chimney damage, uprooting of vegetation, failure of foundation, and damage from airborne debris. Building practices in wind hazard areas should place emphasis on the method and materials used in connecting building elements, such as walls, roof, foundation, and cladding materials used on roofs and walls. Utilizing reinforced connections and impact-resistant building materials may decrease the degree of loss experienced during a wind event. The method of attachment and quality of workmanship play a large role in preventing wind damage.

The Texas Windstorm Insurance Association (TWIA) regulates the issuance of windstorm and hail insurance policies in the state. This insurance is only provided in designated catastrophe areas which include the counties of Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kenedy, Kleberg, Matagorda, Nueces, Refugio, San Patricio, Willacy, and parts of Harris County. To be eligible for this insurance, structures must comply with either the 2006 International Residential Code with Texas Revisions, or the 2006 International Building Code with Texas Revisions unless otherwise stated in the manual. Specific wind speed resistance requirements are designated for each wind zone. In most cases structures are required to be inspected by an inspector appointed by the Commissioner of Insurance. Inspections are performed during construction for the foundation, rough framing, final framing, and exterior mechanical equipment. Each inspection phase considers specific characteristics of wind resilient construction referred to in the TWIA Plan of Operation.

PROGRAM COMPARISON CATEGORIES

GENERAL PRINCIPLES FOR UNIT DESIGN

DURABILITY

Meet or exceed local building codes, particularly windstorm requirements.

ACCESSIBILITY

Consider accessible design for residents with mobility impairments. This may be required.

VISITABILITY

At least one 36" entry door should be on an accessible route and provide an accessible route throughout the first floor. This also may be a requirement for state or federal recovery funding. If required, refer to federal and state government code requirements for single-family affordable housing. This is particularly challenging for units with a pier and beam foundation that raises finish floor out of the floodplain.

ENERGY EFFICIENT PERFORMANCE

Meet Energy Star rating with a HERS index target of 80. To meet this rating the design must incorporate energy efficient options for cooling and heating equipment, envelope, windows, doors, water heater, thermostat, ductwork, lighting, and appliances.

WATER EFFICIENT PERFORMANCE

Minimum 20% reduction of indoor water use as compared to the Energy Policy Act of 2005 or local code, whichever is more stringent.

SPACE, LIGHT AND FUNCTION

Provide storage, access to daylight and views in all regularly occupied rooms, and operable windows.

AFFORDABILITY

All work must not only meet project budget goals, but also consider maintenance and operational costs of the building in the future.

INDOOR-AIR QUALITY

Use low emitting interior materials and install bathroom exhaust fans and kitchen range hoods exhausted to the exterior for moisture control.

INDOOR-AIR QUALITY

Use low emitting interior materials and install bathroom exhaust fans and kitchen range hoods exhausted to the exterior for moisture control.

FLEXIBILITY AND EXPANDABILITY

Meet local codes and consider sidewalk adjacency. Use water-wise and non-invasive adapted plant species in landscape and collect rainwater for irrigation.

RESPONSIVE TO LOCAL CONTEXT

Consider the existing neighborhood fabric and involve community stakeholders in design decisions.

PROGRAM COMPARISON CATEGORIES

POTENTIAL WIND LOAD FAILURES INCLUDE

WOOD FRAME GABLE END ROOF STRUCTURE

These structures are susceptible to significant lateral loads and must be heavily braced from within the roof structure. Plywood sheathing is not a sufficient stiffener for the roof diaphragm. More aerodynamic roof structures such as the hip roof are recommended in place of the gable.

ROOF TRUSS BRACING

Lack of adequate truss bridging, lateral bracing, and cross bracing at end trusses are typical reasons for roof structure failure in wind events.

ROOF SHINGLES

Insufficient or incorrect securing of shingles can lead to significant roof damage. Shingles should be rated for high-wind areas and a water-resistant roof membrane should be applied to prevent water damage in the vent shingles are removed.

MASONRY WALLS

Vertical reinforcement is key in resilient masonry construction. Typical failures include poor mortar joints between the wall and slab, lack of tie beams, poor horizontal reinforcing, tie-columns, tie-anchors, and misplaced or missing hurricane straps between walls and roof structure.

FOUNDATION CONNECTIONS

Inadequate sill-to-masonry and sill-to-concrete foundation connections may allow the entire house to pull off the foundation. Ensure that connections provide a continuous load path from roof to foundation.

GARAGE DOORS

Wind can cause deflection in the garage door and induce excessive deformation of the entire system causing the door to separate from the structure. The breach of this opening can lead to extensive internal damage to the structure. Single car garage doors tend to perform better than double car doors in wind events.

DOUBLE ENTRY DOORS

These tend to fail at the center pin location and expose the interior to outside elements.

Windows Systems

Windows are particularly prone to failure and tend to dramatically increase damage to the house upon failure. Storm shutters and plywood coverings reduce wind damage to windows. The use of impact resistant glazing systems is also recommended.

Flooding and high velocity surge waters along the gulf coast can generate floating debris and cause erosion, damaging structures along the way. Water is also an incredibly destructive agent to many standard building materials. Physically avoiding flood prone areas

PROGRAM COMPARISON CATEGORIES

should always be the first recommendation in rebuilding housing. Avoidance will reduce future costs for homeowners and ultimately create more resilient communities. Where that is not possible, elevating structures and equipment above potential flood levels and incorporating water resistant materials can reduce the potential damage from flood events.

POTENTIAL FLOOD INDUCED FAILURES & MITIGATION PRACTICES INCLUDE

FOUNDATION WALLS

Hydrostatic pressure foundation walls leads to failure and displacement of the structure. Walls made of un-reinforced masonry are particularly vulnerable. Sufficient openings in foundation walls help maintain a continuous load path around the structure. It is important that these openings not to be too high or obstructed in a flood event.

ELEVATE STRUCTURES

Elevating a structure to the base flood elevation established by FEMA is one of the best ways to prevent flooding of structures in the floodplain. Freeboard requirements to elevate homes 12 inches or more above the floodplain further reduce damage risk. Elevating mechanical equipment with the building is also advised. Slender columns offer little resistance to lateral loads that can occur from flooding and debris. Accounting for gravity and lateral loads, not just elevation, should be considered in designing appropriate bracing. Consider the possibility of trapping debris when designing supports for elevated structures. Cross-bracing closely spaced piles, grade beams and other components may trap debris and transfer floor and wave loads to the structure.

ANCHOR MATERIALS IN THE FLOODPLAIN

Unanchored materials become dangerous floating debris in a flood event. Residents located in the floodplain should routinely ensure that fuel tanks, mechanical equipment and other potentially dangerous items are anchored to the ground.

BREAKAWAY ELEMENTS

Elements that break away from the main structure can cause some of the worst and most preventable damage in a flood event. Walls designed to breakaway should not produce debris that is capable of damaging structure. Elements such as decks and patios should be structurally independent of buildings and constructed to break away without producing damaging debris. Stairs and ramps should be designed and constructed to resist flood loads and to minimize transfer of flood loads to foundation, or break away without causing damage.

FLOOD RESISTANT MATERIALS

Flood resistant materials should be used in areas below flood elevation. This includes structural steel that may be exposed to salt water, salt spray, or other corrosive agents. This structural steel should be hot dipped galvanized after fabrication and other metal components should also be used in all open or vented areas.

PROGRAM COMPARISON CATEGORIES

Design decisions should also involve the future residents, guided by designers and outreach workers. As previously stated, it is important to provide housing solutions that satisfy the geographic and spatial needs of families working to resume their daily routines. Design decisions not only impact the future homeowner, but influence neighborhoods and communities. It is important that the design of the home fits the needs of the household as they move through the temp-to-perm process and is accepted by the community. By including the applicant in the design process of their home, they have the ability to add a more personal touch to what is available to them, which generates a higher level of buy-in, not only to the new property owner, but the community and the program as a whole.

4.5.1 ISSUES & OBSTACLES

In all but 4 of the 15 related articles, the issue of community acceptance of housing designs emerged. Out of all the housing recovery pilot programs since Hurricane Katrina, the main issue, in all instances, was the community's acceptance of the temporary and permanent homes. In many instances, the residents were not fully informed of the temporary to permanent housing transformations. Many people did not realize the Katrina Cottages--a temp-to-perm home after Hurricane Katrina--were a permanent housing solution. The timeline and process was not relayed and many residents did not fully understand the temporary house was a step towards the final permanent housing outcome. For the Alabama Alternative Housing Pilot Program (AHPP) team, there was lack of clear communication to the community because of the quantity of service areas and generally overextended. It also became difficult to deliver accurate and timely information to the community because plans were continuously changing and it was cited that "providing concrete information about the units' standards and a model home for people to walk through could help minimize rumors and speculation" (Abt Associates and Amy Jones & Associates, 2009, p. viii). An important finding of pilot housing programs in Mississippi and Louisiana following Hurricane Katrina was that managing community expectations was vital to the perceived success or failure of a re-housing approach. Due to their late adoption following the disaster event, both programs struggled to satisfy growing resident expectations of unit size and construction schedule as they progressed through the recovery process.

Additional concerns were raised related to fair compensation and residual effect of post-completion values. Following Katrina, residents felt that the style of homes did not fit with the character of the

PROGRAM COMPARISON CATEGORIES

neighborhood (Natural Disaster Housing Reconstruction Advisory Committee, 2010; Abt Associates and Amy Jones & Associates, 2009). Many residents feared that the aesthetic quality and size would lower their property values. The Katrina Cottages were thought to be too small in size, resembling a trailer and akin to 'outsider housing' (Wilson, unpublished manuscript). Because temporary housing was associated with FEMA trailer camps, many residents feared similar conditions in their communities. In the MAHP, a county supervisor said that if the homes had come on a flatbed rather than on wheels residents would have been more apt to acceptance (Abt Associates and Amy Jones & Associates, 2009). The stigma of low quality housing coupled with the permanent nature of the homes resulted in extreme measures from jurisdictions. Many jurisdictions only permitted temp-to-perm units on private residential lots if a FEMA trailer was previously located on site, if there was evidence that they were building a permanent structure, or if local zoning codes allowed modular or manufactured homes (Natural Disaster Housing Reconstruction Advisory Committee, 2010; Abt Associates and Amy Jones & Associates, 2009). Such reactions "constrained the ability of households to participate in the decision making process, including design locations and reconstruction of damaged homes" (Andrews et al, 2013, p. 18).

The site selection of the temp-to-perm housing also contributes to community acceptance. Private sites are preferred in non-floodplain areas. Temp-to-perm construction on private sites minimally displaces residents, provides community continuity, and is cost effective. When households are able to rebuild in their previous community, it significantly increases capacity for recovery, as it "determines whether an occupant's social network, community resources, and employment opportunities remain intact during the recovery process" (Perkes, 2012, p. 13). Unfortunately, many mobile homes that were purchased after Katrina could not be placed back on private properties if they were located in floodplains (Disaster, A.H.S.O, 2009). Instead, commercial sites or groups sites are an alternative option. Typically, displacing residents by selecting sites away from private property leads to rejection of temp-to-perm housing solutions. Many group sites were not well accepted in the communities where they were located. To incentivize host communities to participate, FEMA paid "impact fees" (Far From Home). To construct the Katrina Cottages, there were lengthy processes for obtaining properties, slowing housing recovery and contributing to mounting frustration with housing solutions (National Disaster

PROGRAM COMPARISON CATEGORIES

Housing Reconstruction Advisory Committee, 2010). The longer the time elapsed to construction housing after a disaster, the more negative the recovery outlook is perceived (Abt Associates and Amy Jones & Associates, 2009).

Managing the community's expectations is critical to determine the success or failure of a housing program. In general, a "lack of understanding and consultation with affected communities, have sometimes resulted in poor site selection for resettlement, or socially and culturally inappropriate housing layouts and design leading in administrative failures" (Andrew, Arlikatti, Long, & Kendra, 2013).

4.5.2 BEST/PROMISING PRACTICES

Of the 13 articles that discuss design decisions, there are two best practice themes in the literature—**'Grow Home Approach' and local aesthetics.**

Six of thirteen articles discussed a 'Grow Home Approach', which **emphasizes the design of the home to grow and transition along with the differing needs of the household from temporary housing to permanent housing.** A household's needs may be drastically different immediately after a disaster verses months to years after a disaster--moving through disaster phases, emergency sheltering, temporary sheltering, temporary housing, and permanent housing (Perkes, 2012). The life cycle approach takes into consideration the different phases that a resident will go through as they move through the recovery process. Households stated that during the Mississippi Alternative Housing Program (MAHP) it was easier to begin to return to their basic daily routines when having a larger, semi-permanent house (Perkes, 2012). This is one of the main benefits of the temp-to-perm housing solution and a successful housing program--residents are established in a temporary house quickly to make the transition to permanent housing more efficient.

Residents can work with the case managers and designers in order to make design decisions that are tailored to fit their long-term needs. When a resident becomes involved in the design decisions of what their new home will look like, it empowers the occupants. Perkes found that the more input a resident had on the decisions to their home the more successful the recovery process was (Perkes, 2012). Gives them a sense of control to be able to accommodate their new home to fit their specific needs whatever those needs may be. Maintaining a balance between offering them choices and

PROGRAM COMPARISON CATEGORIES

maintaining a sense of efficiency with the process. With the Gulf Coast Community Design Studio (GCCDS), clients were pre-qualified for the home details. The design team would perform a site analysis ahead of time before meeting with the client, this allowed them to have an idea of what was going to work and what was not, based on the client's needs (Wilson, unpublished manuscript). The client and designer also discussed what components of the client's damaged home they liked and disliked (Wilson, unpublished manuscript). The purpose of this was to get them to talk about the relationships between different rooms within their home to give the designer a better understanding. With the clients' story and the options that the design team presented to them they were able to do some quick variations of their already previous design (Wilson, unpublished manuscript). Even though the design team was changing floor plans around to cater to the each client the basic structural details and wall selections stayed the same so this did not add much time onto the recovery process (Wilson, unpublished manuscript). Other considerations for design choices include materials and uses for temporary and permanent housing (Abt Associates & Amy Jones & Associates, 2009).

Finally, eight of thirteen articles discuss the importance of **culturally sensitive housing designs**, appropriate for local aesthetics. The selection of materials for rebuilding houses should mirror cultural norms (Chang, 2010). Materials considered must take into consideration local motifs (Chang, Wilinon, Potanfaroa, & Seville, 2010). Neighborhood amenities should be worked into the community design. This will help maintain the community character along with maintain the attractiveness and desirability of the neighborhood for the long haul (Abt Associates and Amy Jones & Associates, 2009). The cultural design requirements may play as much of a role in meeting long-term recovery needs as the more classically utilitarian building necessities. The MAHP took into consideration the style of the homes that are built in the coastal South area when designing the Cottages. The majority of the homes in this area are the "shotgun" style homes with a front porch. The Cottages standing seam metal roof continues this design along with the variety of bright exterior colors (Abt Associates and Amy Jones & Associates, 2009). This choice of color allowed the units to fit in with the local aesthetics (Abt Associates and Amy Jones & Associates, 2009). With the GCCDS homes, local aesthetics with the current urban fabric was a priority primarily because they were largely infill construction and not one master-planned community (Wilson, unpublished manuscript). In all, a home should also be designed and structured in ways to establish a sense of community and help residents reconnect with their community.

PROGRAM COMPARISON CATEGORIES

Table 5. Reports Assessing Design Decisions

TITLE	ISSUES		BEST PRACTICES	
	COMMUNITY ACCEPTANCE	SITE PLACEMENT	"GROW HOME APPROACH"	FITTING IN WITH LOCAL AESTHETICS
Creating a Safe Harbor after Hurricane Katrina: A Case Study of the Bayou La Batre Alternative Housing Pilot Program	X	X		X
Developing a More Viable Disaster Housing Unit: A Case Study of Mississippi Alternative Housing Pilot Program	X	X		X
Emergency Housing Program Research and Recommendations	X		X	
National Disaster Housing Strategy	X		X	
Natural Disaster Housing Reconstruction Plan	X			X
OIG- Future Directions of FEMA's Temporary Housing Assistance Program- DEC 2011	X	X		X
OIG- Unless Modified, FEMA's Temporary Housing Plans will Increase Costs by \$76 Million- (June 2013)		X		
Rapid Housing Recovery Program Research Summary	X		X	X
Rebuilding or Recovering? Considering Sustainability in the Context of Disaster Rehousing	X		X	X
SERRI Project	X	X	X	X
Resourcing Challenges Post-Disaster Housing Reconstruction: A Comparative Analysis				X
Far From Home		X		
The effects of housing assistance arrangements on household recovery: an empirical test of donor-assisted and owner-driven approaches			X	
TOTAL	9	6	6	8
PERCENT	69.2%	46.2%	46.2%	61.5%

4.6 CONSTRUCTION

The construction of housing is the final phase assessed in the housing recovery literature and comes with a variety of challenges. While the construction process may appear to begin post-disaster, it really should begin long before, because "ad hoc arrangements after a disaster seem to be unable to perform well to alleviate resource shortages in the long run" (Chang, Wilkinson, Potangaroa & Seville, 2010, p. 250). A significant amount of planning goes into a proper temp-to-perm housing construction process prior to a disaster event and "the absence of pre-event planning and preparedness, the inadequacy of efficient and flexible institutional arrangements, and the lack of proactive engagement of the construction industry into disaster management are underlying contributions to undermining resourcing performance in a post-disaster event" (Chang, Wilkinson,

PROGRAM COMPARISON CATEGORIES

Potangaroa, & Seville, 2010, p.250). The construction process includes permitting and inspections, the procurement of materials, and the construction of homes. Solutions like the one proposed in this 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. The following describes the issues and best practices identified in the literature.

4.6.1 ISSUES & OBSTACLES

Twenty articles were evaluated in all, posing a number of issues and obstacles including—choice of contractors and local building codes and ordinances. Five of twenty articles discussed the variety of issues that come with contractors. Many states have laws that require cities to go through a competitive bidding process to select a contractor. This bidding process often slowed down the process and forced many pilot programs to make changes to their designs due to the cost of construction and high bids (Abt Associates & Amy Jones & Associates, 2009). While this does make the process more competitive for contractors, many still experienced high costs associated with contractor's bids. For instance, the Alternative Housing Pilot Programs (AHPP) bids were higher than expected, reducing the number of units able to be built (Office of Inspector General (OIG, 2011). In the past, there was a small pool of contractors to choose from, because FEMA required private contractors (Individual Assistance-Technical Assistance Contractors), typically large multinational companies. This stalled local business and housing recovery because local companies were not hired and money was not circulating back through the local economy (Disaster, A.H.S.O, 2009). On the other hand, construction materials were hard to come by because larger commercial orders were preferred to smaller ones (Abrahams, 2014).

Although the disaster recovery process has its own emerging set of regulations and mandates, they must still fit within the constraints of the current zoning and regulations of the affected area. Building codes and regulations were an obstacle, cited eight of twenty times. Many cities became less lenient with zoning the more time that passed after the disaster (Abt Associates & Amy Jones & Associates, 2009; OIG 2011). A significant number of issues came about during the transition process of temp-to-perm housing following Katrina. Many jurisdictions would not allow the former home with temp-perm home on the same parcel (Natural Disaster Housing Reconstruction Advisory Committee, 2010). An example of such mandates were that “before the hurricane many of the jurisdictions made efforts

PROGRAM COMPARISON CATEGORIES

through zoning and code enforcement to remove mobile homes as a permanent housing resource in their jurisdictions or permitted them to be installed only in designated areas” (Abt Associates & Amy Jones & Associates, 2009). This prohibited the temp-to-perm process to take place. Other related regulations included that manufactured homes do not meet the residential zoning minimum square footage requirements along with the temporary homes not meeting the municipalities’ setback requirements.

Working with a range of jurisdictions to design and build housing proved to be time-consuming. Following Katrina, memorandums of understanding (MOUs) were developed to agree on the design choices for disaster housing in communities. MOUs had to be tailored for each jurisdiction in MAHP, (Abt Associates and Amy Jones & Associates, 2009). The MOUs were used to give precise instructions in how the Cottages would be used in each jurisdiction. The reason for their use was because before the hurricane many of the jurisdictions permitted the use of mobile homes through zoning and code enforcement. Since each jurisdiction had different rules and regulations on where the Cottages could be placed, the non-profit decided that they needed to create a separate MOU for each jurisdiction so that the Cottages would be allowed (Abt Associates and Amy Jones & Associates, 2009). Also, modifications to the designs and construction occurred depending on the jurisdiction, all of which slowed housing recovery (Abt Associates and Amy Jones & Associates, 2009).

As previously discussed, in areas where there was little community acceptance of designs jurisdictions used zoning and code enforcement to limit the construction of temp to perm housing (Abt Associates and Amy Jones & Associates, 2009) (Wilson, unpublished manuscript). Federal regulations also limited the use of temp-to-perm structures, as FEMA requirements prohibited permanent installation of temporary to permanent homes in Coastal High Hazard Areas and floodplains (Natural Disaster Housing Reconstruction Advisory Committee, 2010). Rebuilding in the same area after a documented disaster now eliminated that area from being low risk. With it being a high risk area it was not suitable for long term housing with the increased probability disaster could occur again.

4.6.2 BEST PRACTICES

Three major best practice themes emerged from the literature—**local contractors, pre-procurement, and sustainable development.**

PROGRAM COMPARISON CATEGORIES

Using one pre-determined local or regional contractor, who is more in tune with local needs and cultural considerations was recommended in four of the twenty articles. Benefits to purchasing locally is that it will help stimulate local economies this not only brings purchasing power back to the local economy but it create a higher demand for more jobs as well (Abrahams, 2014). This also cultivates more investment by local labor and citizens into the success of the community. By using one local contractor to coordinate the efforts of the rebuilding, this will benefit all aspects of efficiency and consistency. The Alabama AHPP chose to use one general contractor to manage construction and was said to enhance collaboration and help reduce the chances of multiple contractors causing delays (Abt Associates & Amy Jones & Associates, 2009). Using one contractor can also cut down on the time for the bidding process (Natural Disaster Housing Reconstruction Advisory Committee, 2010). Using local contractors is a benefit due to the fact that they will be familiar with the local permitting and inspecting regulations. In the MAHP program they contracted with a local haul and install company to help ensure that the installation was coordinated with the permitting and the applicant preparation. This haul and install also served as a transition area where the homes were delivered and inspections can be done along with any repairs. This made the installation process go more smoothly and allowed them to make sure that all the units were consistent. (Abt Associates & Amy Jones & Associates, 2009).

Pre-procurement was recommended in six of twenty articles. Pre-procurement identifies vendors, contractors, materials, supplies, and services pre-disaster that will be at the ready to be deployed in the event of a disaster (Woods, 2006). Florida's Division of Emergency Management developed a pre-procurement database that identified supplies and services needed (Woods, 2006). A major factor in why pre procurement is done, is the effort to control costs of materials when available. Material cost historically goes up significantly after the onset of a disaster. In an instance where materials have not been pre-procured another tool that is useful is joint purchasing and shipping, which cuts costs, speeds procurement, and limits the total transportation (Abrahams, 2014). With the vendors and contractors pre procured, communities can also give advanced expectation levels and parameters to work within. As seen in MAHP, "uniform design standard that could be shared with housing providers and manufacturers in advance of an emergency could shorten production time and improve quality of the units" (Abt Associates & Amy Jones & Associates, 2009). A flexible approach to the unit design and construction allowed the Alabama AHPP team to make modifications

PROGRAM COMPARISON CATEGORIES

throughout the development process (Abt Associates and Amy Jones & Associates, 2009).

Sustainable development was also cited in three of the twenty articles that discussed construction. Sustainable houses can be environmentally sustainable, economically sustainable and socially sustainable. One of the biggest misconceptions is that sustainable development is not an option when it comes to disaster recovery. Sustainability is absolutely possible when rebuilding and by implementing these principles into the construction phase, as well as, the entire housing recovery process can lead to resilience and robustness of the built environment (Yi & Yang, 2014). An important aspect to successfully implementing sustainable development is by setting goals and involving stakeholders before the construction process (Yi & Yang, 2014). The phrase “building back better” should be used in conjunction with “building back safer” which not only incorporates building more aesthetically pleasing but also in a way that incorporates a more sustainable use of the land and resources available. Incorporating sustainable development into the housing recovery process is mainly based upon the pre-procuring of services as mentioned previously. Other forms of sustainable development are more holistic, or “alternative designs with flexible and interchangeable materials, proactive processing of waste from deconstruction, and coordinated recycling and reuse, can also be new research topics that respond to the challenges of construction waste reduction and resourcing problems during post disaster reconstruction” (Yi & Yang, 2014,p.28). Rubble reuse programs used for non-load-bearing structures can also be a part of a sustainable housing program. An example of this was that rubble reused as an aggregate for concrete blocks and in concrete slabs (Abrahams, 2014). By utilizing reuse programs communities can alleviate an additional hurdle in the recovery process. By reusing previous material it has shown that communities have adapted more quickly. A similar route for success involves the inclusion of the community in the sustainability efforts (Abrahams, 2014). The ability to construct homes in this way considers long-term longevity and resilience.

PROGRAM COMPARISON CATEGORIES

Table 6. Reports Addressing Construction

TITLE	ISSUES		BEST PRACTICES		
	CONTRACTORS	BUILDING CODES & ZONING REGULATIONS	USE OF LOCAL CONTRACTORS	PRE-PROCURING	SUSTAINABLE DEVELOPMENT
Closing Gaps in Local Housing Recovery Planning for Disadvantaged Displaced Households				X	
Creating a Safe Harbor after Hurricane Katrina: A Case Study of the Bayou La Batre Alternative Housing Pilot Program	X		X		
Developing a More Viable Disaster Housing Unit: A Case Study of Mississippi Alternative Housing Pilot Program		X			
Emergency Housing Program Research and Recommendations		X			
Far From Home		X			
GAO: Hurricane Katrina Improving Federal Contracting Practices in Disaster Recovery Operations					
Handbook of Disaster Research					X
Hurricane Katrina Improving Federal Contracting Practices in Disaster Recovery Operations			X	X	
National Disaster Housing Strategy		X			
Natural Disaster Housing Reconstruction Plan	X	X	X	X	
OIG- Future Directions of FEMA's Temporary Housing Assistance Program- DEC 2011	X				
OIG- Unless Modified, FEMA's Temporary Housing Plan - June 2013	X	X			
Rebuilding or Recovering? Considering Sustainability in the Context of Disaster Rehousing		X	X		
Research Trends of Post Disaster Reconstruction: The Past and the Future					X
Resourcing Challenges Post-Disaster Housing Reconstruction: A Comparative Analysis				X	
SERRI Project		X		X	
TDHCA: Community Development Block Grant Disaster Recovery Program Hurricanes Ike & Dolly Rd 2	X				
The Barriers to Environmental Sustainability in Post-Disaster Settings: Transitional Shelter Implementations in Haiti				X	X
OIG- Effectiveness and Costs of FEMA's Disaster Housing Assistance Program-Aug 2011					
Rapid Housing Recovery Program Research Summary					
TOTAL	5	8	4	6	3
PERCENT	27.8%	44.4%	22.2%	33.3%	16.7%

PROGRAM COMPARISON CATEGORIES

5.0 CONCLUSION & RECOMMENDATIONS

The relationship between the categories covered in the comparison report need to become a part of what is known as the RHRPP approach. By integrating the findings of the comparison report into the RHRPP process there is a higher rate for the ability to successfully complete the recovery process. The main areas highlighted through the comparison report that should be included in the RHRPP process are; Communication, proper personnel and training, use of local/nonprofit organizations, community participation, multi-sector partnerships and collaboration, knowledge of vulnerable populations, the pre procuring of services, and long term process that starts way before a disaster occurs. These highlighted topics are the most influential when trying to perform a recovery process. Regardless of the category (i.e. damage assessment, construction, etc.), these main points were evident in the subject matter. With these main ideologies found in the report, they do not simply relate to their own topics but have relevance to each other and can impact multiple areas. It has been found that they also cannot lead to the highest levels of success by utilizing them individually. These areas must be used in conjunction with one another due to their increased rates of success when used together. An underlying theme that must be constant throughout the process is effective communication. This includes communication between all parties involved during all steps of the process. Looking at the role of the case manager displays the importance of the connectivity between the main themes found. The case manager must be part of a local organization that has made steps prior to a disaster to help be prepared for its recovery. The case manager would need to be familiar with its vulnerable populations as well as a knowledge of pre procured services before events took place. In doing so, previous partnerships will have been made while the case manager was preparing and training for a disaster recovery situation. This will create a solid foundation for the case manager to achieve success through a long term process. A housing recovery approach needs to be implemented as a whole and each and every category is important to lead to a successful completion of the housing recovery process. Along with all steps to the housing recovery process it should guarantee households the right to move, right to stay, and right to have a say. Giving people the option of moving back to their original neighborhoods they should be able to do so. As mentioned previously that the greatest success has come from the households that are able to rebuild and recover within their same neighborhood.

PROGRAM COMPARISON CATEGORIES

Along with including all of these main points throughout, the order of events is equally as important. This process must start with the damage assessment in that when large areas and or neighborhoods have substantial damage and it is negatively publicized through the media along with any preconceived notions on how the area was prior to the storm severely impacts the way in which that area will recover. This was seen in the Lower Ninth Ward after Hurricane Katrina, in that with all the bad publicity and severe damage many did not believe that this neighborhood was worth rebuilding. This obviously did not take into account the lives, culture, and historical factors that is what made this area known for what is it today prior to the storm. (Green, Bates, & Smyth, 2007). All of the categories covered relate back to the disaster management process and how it is important for the cycle to be integrated into communities. Although this process focuses on the recovery aspect there are certain measures that need to be done throughout all phases of the system. One would be viewed as successfully completing the recovery process when they are in long term housing while regaining their role in the community permanently and able to return to everyday life.

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