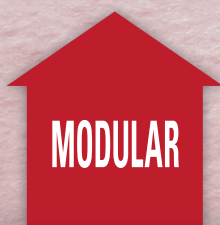


Pre-Disaster Planning for Permanent Housing Recovery

volume two

PLANNING STRATEGY



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Pre-Disaster Planning for Permanent Housing Recovery

VOLUME 2: Planning Strategy

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Office of Policy Development and Research

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Forest Homes

Louisiana Systems Built Homes

Palm Harbor Homes

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Foreword

Since Hurricane Katrina, many lessons have been learned about the importance of disaster preparedness planning and the impact of such planning on permanent residential housing recovery. The U.S. Department of Housing and Urban Development continues to explore new strategies for supporting state and local governments as they prepare and plan for disasters. In cooperation with the Federal Emergency Management Agency and the National Disaster Housing Task Force, we continue to address the temporary, interim, and permanent housing challenges that communities confront in a post-disaster environment.

This report introduces pre-disaster planning tools for permanent housing, with a special emphasis on community involvement in the planning process. We believe that when the community participates, a plan has a greater chance of success because it will reflect the specific housing needs and preferences of the residents. Our national disaster housing strategy recognizes that a “one-size-fits-all” approach is not sufficient for any disaster plan; thus, a flexible approach is encouraged within this report. In fact, the strength of this report is based on its utility and flexibility, which is captured within the electronic tool, worksheets, and checklist.

Planners will be able to use this report to guide the community through the planning process by identifying hazards, housing capabilities, and additional resources needed to implement a pre-disaster housing recovery plan. During the planning process, the community will discover what housing resources are needed to rebuild within a specified time and better understand if it is prepared based on current resources. By considering multiple rebuilding options, the community will be able to weigh the cost and benefits of any given recovery plan.

The planning tools presented in this report are limited to single-family housing needs. This is driven by a desire to keep this volume to a manageable size and not because of a view that other aspects are unimportant. It is vital that communities plan for multifamily and rental housing recovery as well.

Pre-disaster planning can provide a foundation for remaking neighborhoods into dynamic new communities following a disaster. This report provides tools to help make this a reality at the local level. Importantly, it does not direct but rather empowers the planner and community with the tools they need to find the right answer for their circumstance. This approach is aligned with our national disaster preparedness strategy, which emphasizes local involvement in the disaster planning process.



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Assistant Secretary for Policy Development and Research

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Executive Summary

Disaster preparedness planning is important to communities and local governments throughout the country, and particularly relevant to those communities located in regions prone to frequent natural disasters. As a result, it is important to develop strategic planning tools that can assist the local communities and governments to prepare before, during, and after a disaster.

The objective of this study is to provide communities and governments with strategic planning tools they can use before a disaster to prepare for rapid reconstruction. These tools are intended to aid with hastening reconstruction of housing during the recovery phase. The planning tools presented within this document are designed to be used by federal, state, or local officials that are responsible for disaster recovery planning. Nonetheless, the authors envision the planners and community working together to develop a permanent housing recovery plan based on the unique needs of the residents and the natural hazards they may experience.

The content is presented in four short volumes. The first volume provides an overview of the permanent housing options, which include manufactured, modular, panelized, and site-built housing. The second volume provides a summary of the national disaster housing strategy, and describes a straightforward planning approach for estimating potential losses and expediting rebuilding. The third volume presents the House Capacity Calculator, which is an easy-to-use application that estimates required rebuilding time based on available house production capacity. The fourth volume describes the basic plant design requirements for manufactured, modular, and panelized housing.

This document serves as both a primer on the subject of permanent housing recovery and a guide to planning for the rebuilding of housing after a disaster. The step-by-step layout of this document allows the reader to progress through the planning process, which makes it ideal for the community participant who is not a disaster management professional. The planning tools have been designed to (1) identify critical planning issues, (2) identify various options available to the community, and (3) compare options in a straightforward manner. The reader is encouraged to use the House Capacity Calculator when considering multiple strategies for the long-term rebuilding of permanent housing. We also have included several worksheets and checklists to facilitate the planning process.

1

Introduction



Volume 2 defines a pre-disaster planning strategy for permanent housing recovery. This volume is a primer for the reader who is unfamiliar with Federal Emergency Management Agency’s (FEMA) National Disaster Housing Strategy, risk assessment methodology, and the disaster preparedness planning process. It is also a key resource during the planning process because it guides the planner and community through the development of a recovery plan.

The planning strategy starts by identifying existing capabilities. The planner and community will need to consider the resilience of the existing housing stock, the natural hazards that are common in the region, risk assessment, loss potential, and opportunities for pre-disaster mitigation. By knowing the existing capabilities, the community can start to identify resources needed to recover based on a specific disaster type, damage estimate, and desired recovery time. The recovery plan will identify the resources needed and how they will be obtained. During the planning process, the community

is encouraged to discuss how and where to rebuild. The local government is encouraged to discuss options for expediting the house reconstruction process as part of the pre-disaster recovery plan.

This volume provides several worksheets for the planner and community to use as they consider the unique needs of their community. The worksheets are designed to facilitate the capability assessment process in a deliberate and structured manner. This effort should be part of a larger comprehensive disaster plan.

2

Disaster Planning for Recovery

This chapter provides an overview of the National Disaster Housing Strategy and recommends steps the community can take to plan for long-term permanent housing recovery. Since most emergencies are managed at the local level, the community has a tremendous responsibility to take care of its citizens.¹ To greater ensure success, it is important to provide strategic planning tools that may assist local governments and communities to prepare before, during, and after a disaster.

Housing is a critical part of any pre-disaster planning strategy and is considered vital to the recovery of the community in a post-disaster environment. When a community is faced with a major disaster, recovery can be slow and require major rebuilding of the infrastructure, housing, and public services. Although all phases of disaster preparedness are important, the “recovery” phase can be the most challenging, especially when the damage is catastrophic. The objective of this document is to provide communities and governments with pre-disaster planning guidance in order to hasten reconstruction of permanent housing during the recovery phase.

Overview of the National Disaster Housing Strategy

In January 2009, FEMA published the National Disaster Housing Strategy,² which defines six goals for providing a “broad range of housing options to meet urgent needs during a disaster and enable individuals, households, and communities to rebuild and meet their own housing needs.” The goals are:

1. Support individuals, households, and communities in returning to self-sufficiency as quickly as possible.
2. Affirm and fulfill fundamental disaster housing responsibilities and roles.
3. Increase our collective understanding and ability to meet the needs of disaster victims and affected communities.
4. Build capabilities to provide a broad range of flexible housing options, including sheltering, interim housing, and permanent housing.
5. Better integrate disaster housing assistance with related community support services and long-term recovery efforts.
6. Improve disaster housing planning to better recovery from disaster, including catastrophic events.

According to the National Disaster Housing Strategy, “planners must (1) assess the nature and magnitude of a disaster, (2) prioritize individual and household needs, (3) understand the broader community characteristics, and (4) be familiar with available housing options that are appropriate within their area.” These four factors and their interdependence are critical to any disaster recovery plan.

Generally, disaster housing is discussed in terms of sheltering, interim housing, and permanent housing. Sheltering is provided during an approaching disaster or after a disaster strikes, and is intended for short-time use. In fact, “shelters are not designed for, nor should they be used for, extended periods.”³ During catastrophic disasters, more sheltering may be needed, which may require the use of other facilities (including commercial or municipal buildings) for a short time period. When disaster victims cannot readily return to their residence because it has been destroyed, damaged severely, or contaminated such that it is uninhabitable, interim housing must be provided. It is defined as temporary housing (for up to 18 months) that can be used while permanent housing is being arranged. There are many types of interim housing, but in all cases, “[it] should provide more space and privacy than shelters, enabling families and households units to live together and start to resume their lives. This type of housing should also be designed and structured in ways to establish a sense of community and help reconnect households back to their community.”⁴ When developing a long-term recovery plan for permanent housing, the objective is to have displaced residents back into permanent housing

as soon as possible. But every community will have to consider three distinct groups of permanent housing residents: (1) renters, (2) homeowners, and (3) landlords. According to the National Disaster Housing Strategy, “displaced renters are not necessarily tied to a damaged property... [and] this mobility increases the uncertainty for their landlords as well as others working to identify housing requirements for the community. In contrast, a displaced homeowner has an owned or mortgaged asset. The homeowner’s permanent housing solution depends on his or her desire to repair or rebuild the damaged property or seek alternative permanent housing, and his or her financial ability to achieve a permanent housing goal. While landlords themselves may be displaced, they must determine whether it is in their financial interest to rebuild. The aggregate decisions by rental property owners in an area can have a significant impact on the supply of the permanent rental housing, especially affordable permanent rental housing.”⁵ The decisions of the residents to rebuild permanently will also depend upon the local economic conditions, the local building process (i.e., zoning, permitting, codes, etc.), the condition of the community infrastructure, financial ability, and the commitment of neighbors to return. The complexity of these factors may seem daunting, but they can be managed through pre-disaster planning and preparedness.

The “Best Case” Scenario Planning Strategy

Pre-disaster planning for permanent housing recovery must be completed before a disaster occurs. If the community delays the discussion of “how” and “where” to rebuild permanent housing until a disaster happens, the long-term recovery process will take much longer, and the community may never fully recover. When developing a pre-disaster plan, it should be integrated into the existing community planning process, open to the public, and reflect the specific needs of the community. Several planning tools and templates exist that facilitate the overall pre-disaster planning process, including FEMA’s Comprehensive Preparedness Guide (CPG) 101 [Version 2.0].⁶ The document provides guidance about how to conduct community-based planning, incorporate risk analysis, determine goals and objectives, develop a plan, identify outside support, secure funding, and update the plan periodically.

When considering permanent housing recovery, we recommend planning for the best outcome, even though the community will likely realize setbacks and unexpected circumstances during the recovery phase. A “best case” scenario strategy does *not* ignore known challenges or shortcomings; instead, it encourages the planner to identify what is needed to achieve the best outcome and adjust the plan to fit the resources that are available through the planning process. The steps are:

Step #1: Assume that all destroyed housing will be replaced, such that the community is made *whole* after a specified disaster.

To achieve this objective, the planner must discuss with the community members their commitment to rebuild and identify “generally” the ability for the community to do so. If the ability is lacking but the desire to rebuild is strong, the planner may identify the financial resources that are needed (including additional insurance and/or grant program assistance).

During this step, other issues may be identified such as “where” and “how” to rebuild. These are important issues that will be addressed during the planning process, but initially, the planner will need to focus on two basic questions:

1. Does the community have a strong commitment to rebuilding?
2. Does the community have the financial ability to rebuild?

If the answer to Question #1 is “No,” then the objective of rebuilding all of the houses may need to be “adjusted” by some percentage. If the answer to Question #2 is “No,” then the plan must address the need for additional financial resources.

Step #2: Identify the type(s) of disaster that is most likely for the community and perform a risk assessment to determine the severity of the potential damage, which will become the basis for estimating the number of houses that will need to be replaced.

To understand potential housing needs, the planner should use disaster assessment tools, such as FEMA’s Methodology for Estimating Potential Losses from Disasters (i.e., HAZUS[®]).⁷ The software estimates potential losses from earthquakes, floods, and hurricanes by using Geographic Information Systems (GIS) technology. The potential losses include physical, economic, and

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social impacts of disasters. Although this assessment is technical in nature, the planner should involve the community because the results can provide hazard awareness and a basis for mitigation and preparedness.

During the review of the risk assessment results and estimates of potential losses, the community should discuss questions of “where” and “how” to rebuild. For example, if the flood potential is great and affected residents decide to rebuild where they currently have houses, then the rebuilt houses may need to be elevated to protect against future floods. The community and planner should consider the added cost of elevated construction during the planning process. As an alternative, the community should also consider developing a new residential site outside of a flood-prone area (but within the community), which is what one community⁸ in Alabama did after Hurricane Katrina. It is important to emphasize that each community will need to discuss various options and weigh the costs and impact of any given decision. Nonetheless, the value of having these discussions in advance of a disaster cannot be understated.

When considering the potential losses, the planner and community will need to focus on four basic questions:

1. Based on the estimated losses, how many houses will need to be rebuilt?
2. Given the graphic data of the HAZUS models, what areas of my community are at the greatest risk for losses?
3. Where should we rebuild (i.e., same location or new site within the community)?
4. How should we rebuild? Depending upon the location, new construction requirements may need to be met. The community may also consider more durable construction, especially if disasters are common in the region.

Since the estimated loss in Question #1 is a “projection,” the community may want to consider a range of potential losses. If the answer to Question #2 indicates some areas have greater risks of catastrophic damage, the community may decide to focus the plan on the “high risk” areas. Question #3 is challenging because if rebuilding in the same location is not “financially” feasible, some part of the community must be willing to relocate. Can the same sense of “neighborhood” be recreated in a new location, given the attachment to the current site? Question #4 is important because future losses are not just a function of

the severity of the hazard, but also the durability of the construction and its location.

Step #3: Based on the number of houses estimated to be lost during a disaster, how quickly can the long-term permanent housing be replaced?

The rebuilding time is a critical consideration for any community. If the rebuilding effort takes too long, then the community may never fully recover even when there is a strong commitment to do so. In simple terms, the rebuilding time for permanent housing is a function of the number of houses that need to be rebuilt and the house production capacity available in a post-disaster environment. Nonetheless, before permanent housing can be rebuilt, basic infrastructure must be restored including roads, bridges, utilities (i.e., electrical, water/sewer, and gas/oil), and essential public services. In many cases, basic infrastructure and housing can be rebuilt concurrently, which means the overall recovery time may be shortened. Nonetheless, the planner and community must consider the time it takes to provide permanent housing based on the existing local house construction process, which assumes the basic infrastructure is restored.

By starting with the existing local house construction process, the planner and community will be able to (1) estimate a realistic rebuilding time for permanent housing recovery and (2) establish a benchmark for expediting the existing construction process.

The best case planning approach assumes that the existing construction process will not be delayed due to the typical construction issues (i.e., material, labor, permits, inspections, or weather) in order to identify the best possible rebuilding time. When estimating the best rebuilding time, the planners must consider five key variables:

1. Average House Size (of the houses that need to be replaced)
2. Quantity of Houses to Rebuild (based on estimated losses from HAZUS models)
3. Desired Rebuilding Time (expressed by the community)
4. Site-Built Housing Capacity (based on existing builders that serve the community)
5. Factory-Built Housing Capacity (based on existing manufacturers that serve the community)

To facilitate this planning approach, we have developed an electronic House Capacity Calculator,⁹ which calculates the best rebuilding time using the five key variables. The planner and community may discover that the best rebuilding time is longer than the desired rebuilding time; in this case, the House Capacity Calculator identifies other options to expedite the house production capacity and decrease the rebuilding time. When considering the rebuilding time and house capacity options, the planners and community will need to focus on five basic questions:

1. What is the existing home building capacity (i.e., site-built and factory-built resources) that serves my community?
2. Using only the existing home building capacity, can my community rebuild permanent housing within my desired rebuilding time?
3. How can my community increase home building capacity to expedite the rebuilding process?
4. Can the existing local house construction process accommodate a major increase in home building activity?
5. How can my community expedite the house construction process without sacrificing safety, quality construction, and expected oversight?

Question #1 is important because the planner and community will need to know their existing home building capacity in order to identify site-built and factory-built resources. When considering Question #2, the planner and community will determine if all permanent housing can be rebuilt within a desired rebuilding time given the existing home building capacity. The House Capacity Calculator is designed to answer this question, and the tool allows the planner and community to consider various options in a straightforward manner. Question #3 encourages the planner and community to consider home building options that increase capacity. Again, the House Capacity Calculator is designed to consider various options that increase home building capacity. For most disasters, the answer to Question #4 will be “No,” because local building code agencies are staffed to accommodate the normal home building activity; and to expedite permanent housing recovery efforts, the local house construction process will need additional staff and resources. The community can partner with other local governments, the International Code Council, or third-party building code official organizations to increase

building inspector capacity. Question #5 is important because many communities will need to coordinate and streamline the existing house construction process especially if they decide to use a wide range of housing types (i.e., manufactured, modular, panelized, and site-built). We discuss this issue further in Step 4.

Step #4: Consider modifying the existing house construction process to expedite the rebuilding effort during the disaster recovery phase.

A disaster event is an exceptional occurrence that requires an equally exceptional response. Therefore, when developing a pre-disaster plan, the community must consider ways to enhance and expedite the normal functions of the local government. In some cases, the enhancement may simply require additional staff or resources; but in other cases, it may also require new procedures or protocols that are only enacted when a disaster has occurred. This approach is very common during the disaster response phase because the local government is focused on keeping the community safe and rescuing those in harm’s way, but special procedures and protocols can also benefit the long-term recovery phase.

For example, if the community attempts to have public hearings for a new housing development or to address land use issues during the long-term recovery phase, permanent housing may be greatly delayed because normal participation in the process may not be possible in a post-disaster environment. The value of having some decisions made in advance of a disaster cannot be overstated; the challenge is for the planner and community to identify those decisions that can be made in advance and have them “pre-approved” as part of the pre-disaster planning process. It is important to note that special procedures and protocols *do not* represent a less rigorous process; instead, they simply allow the planner and community to have the discussion and make the decisions in advance of the need.

When considering permanent house recovery, the planner and community can expedite the existing house construction process by considering the following items in advance of a disaster:

1. Discuss land-use and site design issues with the community when developing a pre-disaster plan. If flooding is anticipated based on the HAZUS models, the community must understand the elevation and insurance requirements when rebuilding in the same

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area. In some cases, it may not be possible (or financially feasible) to rebuild in some areas, especially if insurance is not available.

2. Develop “Pre-Approved” House Designs that are certified and rated for specific performance criteria (such as high-wind, hurricane, earthquake, or Fortified Home).¹⁰ The “pre-approved” house designs can be for site-built and factory-built housing types.
3. Contact Existing Home Builders (i.e., site-built and factory-built); and identify the quantity of houses that they can provide during the disaster recovery phase. The community may decide to establish an agreement with existing home providers based on the “pre-approved” house designs.
4. Establish agreements with local/state governments or certified third-party organizations to increase the number of fire and building officials during the disaster recovery phase. The number of additional officials should be based on the estimated quantity of houses that need to be rebuilt.
5. Identify and resolve all bottlenecks in the existing building inspection and permitting process. Clarify the process, such that the community and home providers are fully aware of what is required when rebuilding in a post-disaster environment.
6. Establish agreements with local utility providers to ensure that they have the capacity to provide service for the many houses that are being rebuilt during the disaster recovery period. If the utility is owned by the local government, plan for increasing the staff to expedite the recovery phase.
7. Identify construction management firm(s) to manage and coordinate the “day-to-day” housing construction needs based on the pre-disaster plan. Before entering an agreement, the community should ensure that the company has experience managing site-built and factory-built house construction in a post-disaster environment.
8. Depending upon the size of the disaster, the planner and community may consider establishing a temporary factory-built house production plant within the community.¹¹ Identify existing vacant facilities that can be converted into factory-built housing plants. Consider partnering with existing factory-built companies to expand their production capabilities within the community. Consider using residents as part of the labor force during the recovery phase.

When the planner and community consider these issues and incorporate their decisions within the pre-disaster plan, permanent housing can be expedited during the disaster recovery phase. The planner and community should periodically update the pre-disaster plan because the issues and decisions may change—as will the community over time. We have summarized the planning strategy for permanent housing in Figure 2-1.

Figure 2-1: Summary of Pre-Disaster Planning Steps for Permanent Housing Recovery



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¹ Are You Ready? FEMA, August 2004. <http://www.fema.gov/areyouready/>

² <http://www.fema.gov/pdf/emergency/disasterhousing/NDHS-core.pdf>

³ Ibid., p. 29.

⁴ Ibid., p. 56.

⁵ Ibid., p. 70.

⁶ http://www.fema.gov/pdf/about/divisions/npd/CPG_101_V2.pdf

⁷ <http://www.fema.gov/plan/prevent/hazus/>

⁸ The City of Bayou La Batre, AL; http://www.fema.gov/pdf/about/programs/ahpp/ahpp_al_case_study.pdf

⁹ Instructions for using the House Capacity Calculator are provided in *Volume 3: Planning Tools* of the **Pre-Disaster Planning for Permanent Housing Recovery** guide. We recommend using the House Capacity Calculator to estimate your current rebuilding capacity and to explore options for increasing rebuilding capacity.

¹⁰ The Fortified Homes program was created by the Institute for Business & Home Safety (IBHS) to strengthen the outer enclosure of the house (including the roof, wall systems, doors, windows, and foundation).

¹¹ We define the basic requirements for establishing a factory-built plant in *Volume 4: Basic Plant Design* of the **Pre-Disaster Planning for Permanent Housing Recovery** guide.

3

Defining Housing Capacity Details

This chapter discusses the importance of disaster preparedness and provides worksheets for conducting a preliminary assessment of the community's ability to rebuild permanent housing after a disaster. To develop a comprehensive pre-disaster plan, we recommend using FEMA's Comprehensive Preparedness Guide (CPG) 101 [Version 2.0] in advance of a disaster. The guide outlines the comprehensive planning process in six steps:

1. Forming the collaborative planning team
2. Understanding the situation
3. Determining the goals & objectives
4. Developing the plan
5. Approving the plan
6. Maintaining/implementing the plan

Assessing the capability and resources of the community is necessary when defining a baseline of preparedness and developing content for the recovery plan. "Disasters begin and end locally. After the response is over, it is the local community that lives with the decisions made during the incident. Therefore, communities should have a say in how a disaster response occurs. They should also shoulder responsibility for building their community's resilience and enhancing its recovery before, during, and after a disaster. The community may have capabilities and resources that do not exist in the volume needed or at all within the traditional government response structure."¹

Worksheet #1 encourages the planner and the community to identify: (1) the housing construction types that are currently allowed in the state, (2) the housing construction types that are currently built within the community, and (3) the housing condition of the community.

Worksheet #2 encourages the planner and community to identify: (1) the types of hazards that may affect the community, (2) the estimated house losses based on risk assessments, and (3) the pre-disaster mitigation practices that can strengthen existing houses.

Worksheet #3 encourages the planner and community to identify: (1) the existing home builders (i.e., site-built

and factory-built providers) that currently serve the community, (2) the home builders outside of the region (i.e., site-built and factory-built providers) that could serve the community, (3) an inventory of vacant facilities that can be converted for additional house production capacity, and (4) the home construction preferences of the community.

The **Checklist** allows the planner and community to verify that permanent housing issues have been discussed as part of the pre-disaster planning process.

After completing the assessment, the planner and community can develop specific disaster recovery plans based on the consensus of the community. The plans may require modification to the existing home building process or zoning ordinances, especially if the community decides to use factory-built housing for the first time. In any case, there are many resources (both public and private) that can help the planner and community during the pre-disaster planning process. This document identifies many of these resources and the support they can provide.

¹ *Comprehensive Preparedness Guide (CPG) 101 [Version 2.0]*, p.4-5.

Worksheet 1: Housing Type & Condition

Instructions:

The planning team and community will need to engage the local and state government resources in order to complete this document.

Community: _____

Address: _____

#1. Identify Housing Construction Types (allowed in the State)

- Site-Built Housing[^] [State Building Code] Yes
- Manufactured Housing* [HUD Code] Yes
- Modular Housing[♦] [State Building Code] Yes No
- Panelized Housing [State Building Code] Yes No

#2. Identify Housing Construction Types (allowed in your community)

- Site-Built Housing[^] [State/Local Building Code] Yes
- Manufactured Housing* [HUD Code] Yes
- Modular Housing[♦] [State/Local Building Code] Yes No
- Panelized Housing [State/Local Building Code] Yes No

Can manufactured housing be used in all residentially zoned areas? Explain _____

#3. Describe the condition of the existing housing in your community

- **Excellent:** Meets or Exceeds Current Building Code & Mitigates Known Hazards _____%
- **Good:** Meets or Exceeds Current Building Code _____%
- **Moderate:** Needs Minor Repair and is less than 25-Years Old _____%
- **Fair:** Needs Minor Repair and is equal to <or> older than 25 Years _____%
- **Poor:** Needs Major Repair [independent of age]/Blight _____%

[^]Site-built housing is currently built in all 50 states.

* The HUD Code allows for compliant housing to be installed in all 50 states.

[♦]To determine which states allow Modular Housing, please refer to http://www.ibts.org/mod_home.shtml

Worksheet 2: Estimated Housing Losses (1 of 2)

Instructions:

A risk assessment must be completed to estimate the quantity of houses lost. The assessment will consider hazards and threats based on the frequency of occurrence, magnitude of the event, duration of the event, location, and range of damage.

Community: _____

Address: _____

#1. Identify the types of Natural Hazards that may affect the Community (Check All That Apply)

- | | | |
|---|------------------------------------|--|
| <input type="checkbox"/> Avalanche | <input type="checkbox"/> Flood | <input type="checkbox"/> Tsunami |
| <input type="checkbox"/> Disease Outbreak | <input type="checkbox"/> Hurricane | <input type="checkbox"/> Volcanic Eruption |
| <input type="checkbox"/> Drought | <input type="checkbox"/> Landslide | <input type="checkbox"/> Wildfire |
| <input type="checkbox"/> Earthquake | <input type="checkbox"/> Tornado | <input type="checkbox"/> Winter Storm |

#2. Estimate the quantity of houses lost based on Risk Assessment

Estimated Quantity of Houses Loss _____

Explain the basis for the estimate: _____

#3. After the Risk Assessment, did the Community consider implementing any pre-disaster mitigation practices to strengthen existing housing (and possibly reduce estimated losses)?

- NO
- YES[◇] Please identify mitigation practices and the hazard(s) they mitigate. _____

#4. Identify whether any geographic areas within the community possess the following levels of flood risk as defined by FEMA. (Visit FEMA's Map Service Center to locate your community at www.msc.fema.gov and identify the percentage of each flood risk type on the back page.)

[◇]If the risk assessment has been performed using HAZUS-MH, the planner and community may also decide to develop a Hazard Mitigation Plan. Depending upon the type of hazard and condition of the housing, some enhancements may be possible for a modest cost.

Worksheet 2: Estimated Housing Losses (2 of 2)

Area	Zone	Description	%
Moderate-to Low-Risk Areas	B and X (shaded)	Areas of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than 1 foot, or drainage areas less than 1 square mile.	_____ %
	C and X (unshaded)	Areas of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. C Zones may have ponding and local drainage problems that don't warrant a detailed study or designation as a base floodplain. X Zones are the areas determined to be outside the 500-year flood and protected by levee from the 100-year flood.	_____ %
High-Risk Area	A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.	_____ %
	AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.	_____ %
	A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).	_____ %
	AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.	_____ %
	AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.	_____ %
	AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A Zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.	_____ %
	A99	Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.	_____ %
	High-Risk Coastal Areas	V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
VE, V1 - 30		Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.	_____ %
Undetermined Risk Areas	D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.	_____ %

Worksheet 3: Resources for Additional House Production

Instructions:

A risk assessment must be completed to estimate the quantity of houses lost. The assessment will consider hazards and threats based on the frequency of occurrence, magnitude of the event, duration of the event, location, and range of damage.

Community: _____

Address: _____

#1. How many “Site-Built” Home Builders currently serve the Community?

#2. How many “Site-Built” Homes were built last year within the Community?

#3. Identify the “Factory-Built” Home Builders that do <or could> serve the Community.

- | | | |
|----------|-----------|-----------|
| 1. _____ | 6. _____ | 11. _____ |
| 2. _____ | 7. _____ | 12. _____ |
| 3. _____ | 8. _____ | 13. _____ |
| 4. _____ | 9. _____ | 14. _____ |
| 5. _____ | 10. _____ | 15. _____ |

#4. Identify the number of vacant facilities in the community that could be converted into factory-built plants*. _____

#5. The planner and community should discuss the various housing types available and determine if there is a preference. Some zoning regulations may currently limit different housing types, so this should be done during the planning process because it may impact the speed of rebuilding permanent housing. In any case, the House Capacity Calculator is designed to consider many house production scenarios.

Summarize Housing Preference(s) (if any):

*Volume 4: Basic Plant Design of the Pre-Disaster Planning for Permanent Housing Recovery guide defines the basic plant infrastructure requirements needed to convert a vacant facility into a factory-built plant.

Checklist: Are You Ready to Plan for Permanent Housing?

Instructions:

If you answer “YES” to the following questions, you are ready to develop a pre-disaster plan for permanent housing.

Community: _____

Address: _____

Understanding the current capability and specific needs of the community

- #1. Does the community know its existing home building capacity? Yes No
- #2. Does the community know its disaster risk and the potential impact on housing? Yes No
- #3. Has the community discussed “how” and “where” to rebuild after a disaster? Yes No
- #4. Has the community discussed an expedited house construction process? Yes No
- #5. Has the community discussed the rebuilding time for permanent housing? Yes No

Identifying the resources and rebuilding options available to the community

- #1. Has the community discussed the resources needed to rebuild after a disaster? Yes No
- #2. Has the community contacted home builders (i.e., site-built and factory-built)? Yes No
- #3. Has the community considered factory-built housing options for rebuilding? Yes No
- #4. Has the community discussed increasing house production capacity? Yes No
- #5. Has the community considered partnerships with neighboring localities? Yes No
- #6. Has the community discussed hazard mitigation to reduce potential losses? Yes No
- #7. Has the community discussed financial resources needed for planning? Yes No
- #8. Has the community discussed the financial resources needed for rebuilding? Yes No

Resources

Federal, State, or Local Governments

There are several resources that support disaster recovery for permanent housing.

U.S. Department of Housing and Urban Development

<http://www.hud.gov>

Federal Emergency Management Agency

<http://www.fema.gov>

List of State Governments

http://www.usa.gov/agencies/state_and_territories.shtml

Associations

There are several resources that support permanent housing.

National Association of Home Builders

<http://www.nahb.org>

Manufactured Housing Institute

<http://www.factorybuilthousing.com/Default.asp>

Modular Building Systems Association

<http://www.modularhousing.com>

Structural Insulated Panel Association

<http://www.sips.org>

U.S. Department of Housing and Urban Development
Office of Policy Development and Research
Washington, DC 20410-6000



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