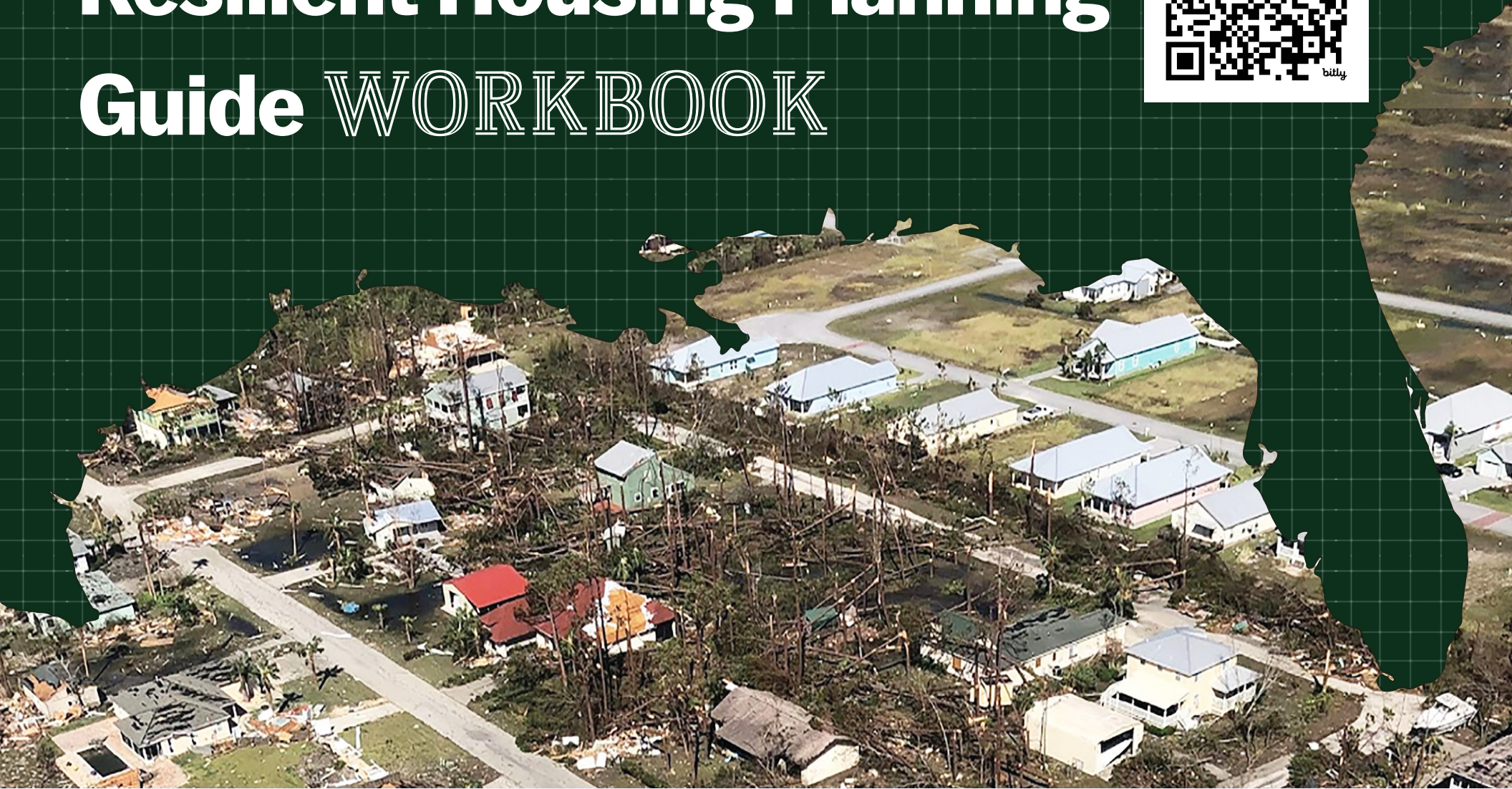


Resilient Housing Planning Guide WORKBOOK



Fannie Mae®



MISSISSIPPI STATE UNIVERSITY™
GULF COAST COMMUNITY
DESIGN STUDIO

INTRODUCTION

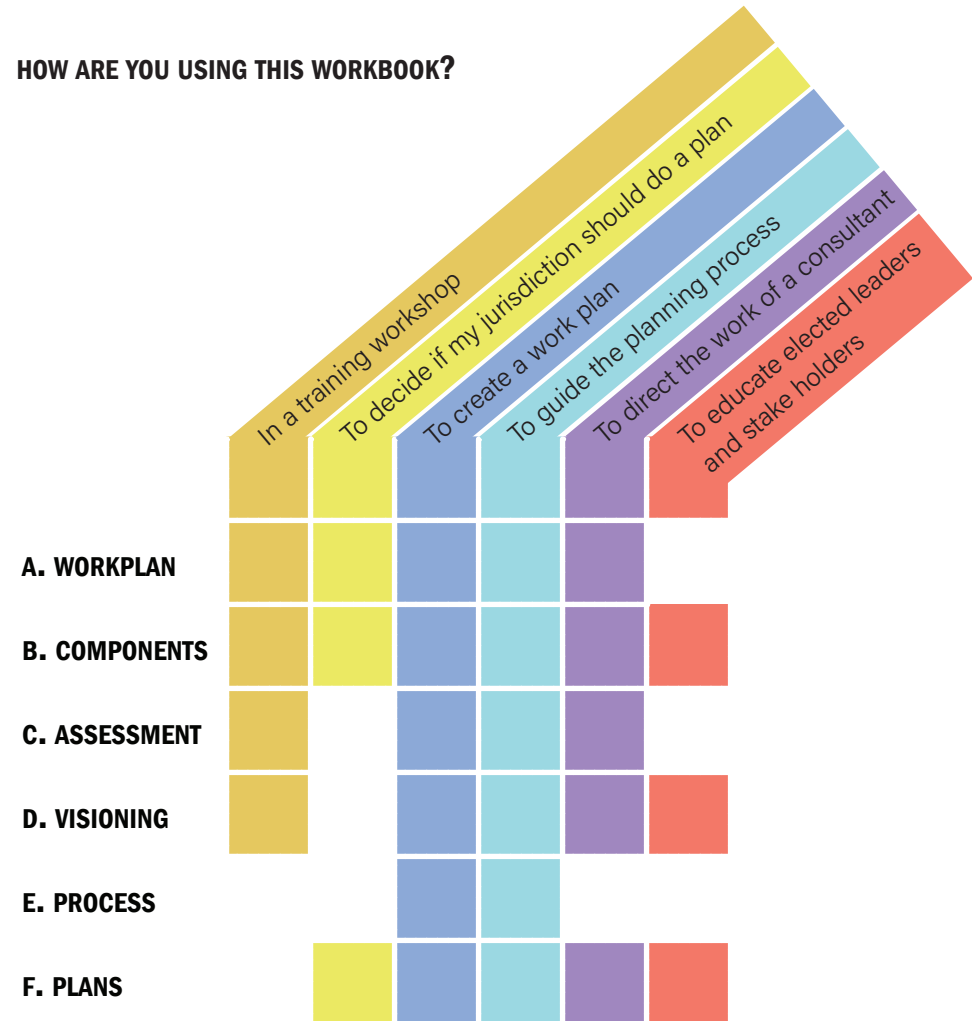
This workbook is a tool to accompany the Resilient Housing Planning Guide, which helps communities protect their homes, reduce disaster loss, and build long-term resilience. It can be used alone or with the Guide to help jurisdictions produce Resilient Housing Plans.

Resilient housing goes far beyond constructing stronger buildings. It is accomplished using a holistic approach to community development, shaped by risk-informed land use and improved building practices. It will protect existing housing, strategically plan future development, reduce long-term community vulnerability, and minimize economic and social disruption after a disaster.

Such a holistic approach will not happen without a plan. Destructive storms repeatedly expose the critical need for Resilient Housing Plans as unprepared communities struggle to lead, coordinate, and secure funding for repairing, rebuilding, and improving damaged housing stock. The Resilient Housing Plan aims to achieve three goals: reduce current housing damage and loss, secure and effectively utilize post-storm funding, and enhance land-use planning and building standards to protect new and renovated housing from future storms.

ACTIVITY	ASSIGNMENT	RESOURCES
Activities can be completed within the workbook.	Assignments are tasks completed outside of this workbook.	References to additional information.

HOW ARE YOU USING THIS WORKBOOK?



A. WORKPLAN A PLANNING APPROACH THAT LEADS TO CHANGE

STEP ONE

DECIDE WHY YOU ARE DOING A RESILIENT HOUSING PLAN.

- To be ready for the next storm event.
- To improve the day-to-day housing stock.
- To respond to an increase or change in development.
- To supplement existing plans.

STEP TWO

MAKE A WORK PLAN.

Decide who needs to be involved, determine the end goal and work backward. It is vital to engage decision-makers in the planning process.

The planning process is more than an efficient means of producing a plan document. Think of the planning process as a conversion process. Key decision-makers must transform their mindset and take specific actions to create resilient housing. Communities must actively evolve from traditional housing approaches to ones that prioritize resilience - making homes better able to withstand environmental challenges, last longer, and serve community needs more effectively. Forming the planning team is more than just dividing the work and creating a work plan. View the final planning document as an official record that advances decisions made during planning. The work to bring about changes to achieve resilient housing will be done along the way in the process of analyzing the existing housing of the city, county, or parish, in the process of understanding the wind and flood hazards that impact housing, and in the process of determining what communities need to do to improve current housing and plan future housing to be resilient in the face of those risks.

STEP THREE

EVALUATE YOUR EXISTING RELATED PLANS AND PROGRAMS.

Is resilient housing included in your existing plans:

- Comprehensive plan
- Hazard mitigation plan
- Housing programs

ASSIGNMENT

What are your relevant existing plans?

Review them to determine the gaps in housing planning.

ACTIVITY

List the names of the recommended participants that fill the suggested roles:

Planning and zoning

Building code

Flood management

Federal and state grants

Public or non-profit housing provider that serves families that need housing assistance

Private housing provider

Community advocate organization(s)

Homeowner who lives in a flood zone

B. COMPONENTS

PLANNING TOOLS

1

Housing Vulnerability Assessment

Assess the jurisdiction's existing housing stock, overlaid by flood and wind hazard zones, to categorize, map, quantify, and visualize housing density. Estimate wind and flood resistance based on building code application and foundation type. Produce an analysis tool to estimate the probable damage and loss from various storm scenarios.

2

Housing Land-Use Idealization

Create a housing land-use idealization map that shows the desired location and types of housing to meet predicted housing needs more resiliently, working with two sets of variables: density and housing type. The land-use idealization map will be used as a planning tool to create the land-use damage and loss reduction plan.

3

Housing Land-use Damage and Loss Reduction Plan

Produce action plans to reduce damage and loss with changes to land use policies that aim to bring about decreased and/or more resilient housing types in high-hazard areas and increased housing density in low-hazard areas.

B. COMPONENTS

PLAN SECTIONS

4

Housing Construction Damage and Loss Reduction Plan

Produce action plans to improve construction practices. This will increase the resilience of day-to-day housing renovation, new construction, and housing that is repaired and rebuilt following a disaster.

5

Disaster Recovery Housing Plan

Compile a plan for housing recovery following a disaster including sheltering, temporary housing, repair, and replacement housing.

6

Community and Stakeholder Education Plan

Plan short term outreach activities to educate the community and stakeholders about the Resilient Housing Plan, along with long-term, ongoing programs to promote resilient land use and construction practices.

7

Strategic Funding Plan

Create a strategic recovery plan kept current and modified as needed to be ready to pursue, receive, and effectively use federal funds before and following a disaster.

C. ASSESSMENT OF THE VULNERABILITY OF YOUR CURRENT HOUSING STOCK.

PURPOSE

The Existing Housing Assessment aims to better understand the municipality's overall and geographically defined housing resilience.

The assessment will provide two key understandings for the community's Resilient Housing Plan. First, it will predict flood and wind damage risk delineated by geographic districts, which will guide the housing land-use plan. Second, it will factor in housing structural vulnerability to predict damage and loss, which will guide the damage and loss reduction plan. The key understandings will also inform the Disaster Recovery Housing Plan.

In addition to providing base information for the planning work, the existing housing assessment will provide data needed to apply for federal grants and other financial assistance programs.

PRODUCT

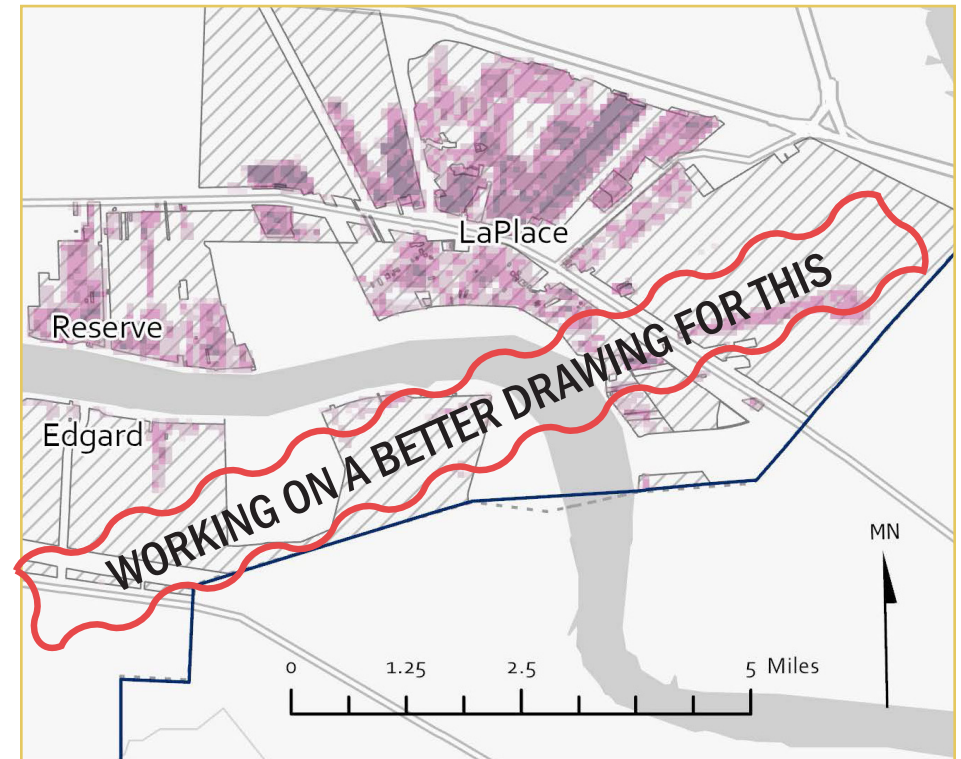
The product is two-fold: a summary of the overall conditions and vulnerabilities of the municipality's current housing stock and a GIS map dividing the city into layered districts. For each layer and district, the map should include the predicted flood and wind hazard, the approximate number of existing housing units, and the average structural vulnerability of the houses by using the information from existing houses and predicted hazards to map housing risks and guide future plans.

PROCESS

The factors below should be considered in the GIS assessment. See the Guide for more detailed information.

Housing Density: To visualize housing density, a map of the municipality should be overlaid with a small-scale grid, which is recommended to be 2.5 acres (so that four squares make ten acres). The GIS analysis used should be able to determine the number of housing units in each 2.5-acre square as a numerical density factor.

Simplified flood hazard zones: FEMA Digital Flood Insurance Rate Maps are a necessary and familiar part of a jurisdiction's day-to-day flood management work. However, these detailed maps are not well suited for planning work. For building construction, the most significant flood factor is the difference between the ground elevation and the base-flood elevation, or in other words, how high the floor



level needs to be above grade. For land use planning, it is helpful to determine a practical line within the AE zone between the highest hazard area, in which any building should be questioned as to whether the risk is justified, and areas with less hazard, in which the buildings still need to be elevated and built to withstand a flood but can be justified for other economic and community reasons.

Housing wind vulnerability based on building code implementation. With an understanding of the history of building code implementation, the approximate year the house was built can be used to determine the expected structural standards.

Housing flood vulnerability based on foundation type. A house's obvious flood factor is the floor height above the ground around the house. There are three basic foundation types for floor height: slab-on-grade, pier, or elevated.

Social and economic vulnerability factors. The Social Vulnerability Index is a valuable tool for determining 14 social factors present in census tracts.

C. ASSESSMENT OF THE VULNERABILITY OF YOUR CURRENT HOUSING STOCK.

ACTIVITY

Draw your jurisdiction with flood zones. On the same drawing, diagram housing - noting the foundation type and age of the housing.

D. VISIONING OF AN IDEALIZED HOUSING PLAN

PURPOSE

The housing land-use idealization planning work aims to create a housing land-use idealization map or multiple scenario maps that show the desired location and housing types to meet predicted housing needs more resiliently. A more resilient land-use plan can come about by working with two variables: density and housing type. Regarding density, the aim is to decrease housing density in high-risk areas and increase housing density in lower-risk areas. Regarding housing type, stronger structures are typically more economically feasible with the larger buildings associated with multi-unit housing.

PRODUCT

The product is a Housing Land-Use Idealization Map or several scenario maps showing the distribution of the desired housing density for increased resilience for the entire municipality. Because density is directly related to housing type, the density map will automatically define different housing types. Even though the map is idealized, actual, on-the-ground factors should be considered. Such existing factors include historic neighborhoods, proximity to downtown, waterfront districts, dominant non-housing land uses, areas deemed to be conserved open spaces, and other particular land-use considerations. Such land-use factors can be identified using an aerial image base map and a current zoning and land-use map. The map will utilize a 2.5-acre grid for the entire municipality layered onto the map of the hazard districts defined in the Existing Housing Assessment. The map will allow a comparison between the idealized and existing housing densities to show where housing density should increase and decrease.

PROCESS

The housing land-use idealization planning work cannot be done by consultants working alone or even effectively with just consultants and the planning director. To make this plan effective and provide input for the land-use work to follow, the idealized land-use planning work should happen as a group effort with an inclusive, well-informed, and forward-looking team approach to finding solutions. The idealization map should be considered a planning tool, not a final plan. Pitfalls of broad-stroke land-use planning should be kept in mind. However, as a planning tool, an idealized analysis will provide a way to more clearly see options that might not be considered with a more conservative approach. The idealized map will be used in the more critical and deliberate planning work to follow.

ACTIVITY

Design a planning activity for stakeholders to visualize future housing development from a resilient perspective.

Determine a planning target time period and projected number of housing units.

Work on top of the existing housing assessment map.

List the people that should be part of the planning activity:

-

-

-

-

-

What are some of the overall objectives for future housing that will shape the visioning activity?

-

-

-

-

-

Note: An effective way to ensure that the land use visioning work does not get bogged down in overly specific concerns is to make the decision-making process move quickly.

E. PROCESS FOR PLANNING

The standardized planning process in the Resilient Housing Planning Guide follows the process used in FEMA's May 2020 Planning Considerations: Disaster Housing. Consistently following the steps in the planning process will align the work of these four sections and arrive at coordinated goals, objectives, and recommendations.

ANALYSIS

Analyzing the topic for each section is, in essence, asking the question, "What is wrong here?" in the way a physician or a car mechanic begins a diagnosis. As with the diagnostic work of a physician or a car mechanic, that first question leads to multiple related questions, such as "How is this put together? What has happened in the past? What symptoms do I see? What does my experience tell me about what might be wrong?" etc.

GOALS

Goals are broad, general statements that indicate the intended solution to the identified problems. Goals are what people and resources are supposed to achieve.

The analysis creates the context for the goals. Because the analysis is synthetic and complex, the goals more or less grow out of the analysis and do not have the direct relationship that goals and objectives have with each other. The goals should come from the multi-valued power of the Decision-Making Group working with the Project Team.

OBJECTIVES

Objectives are specific, measurable, and focus on actions carried out during the operation. They help achieve the goals and determine the actions that participants in the operation must accomplish.

Each goal should have at least one or more objectives. Advancing a plan from goals to objectives is an essential step toward action.

COURSE OF ACTION (COAs)

The planning team will develop operational COAs to achieve each objective. The COAs should refer to a projected timeline and identify decision points and actions required to achieve the objective. When developing COAs, the planning team should determine which organization(s) have responsibility for which actions and whether those actions depend on any decisions, authorizations, or the completion of other tasks.

CAPABILITY ESTIMATES

After determining the COAs, the planning team develops capability estimates to identify the abilities and resources needed to accomplish the objectives. As the objectives are matched up with those of responsible organizations, the capability of the organizations within the timeline and expected resources are considered. In most cases, the capability estimate will require discussions with the responsible organizations and serve as a check to decide if pursuing the COA is realistic and supportable.

RECOMMENDATIONS

The capability estimates will reveal gaps or shortfalls in personnel, resources, authorities, or funding. Recommendations adjust the COAs to the capability estimates. On the other hand, a recommendation can describe how a gap or shortfall might be solved to overcome a barrier to a COA and achieve the associated objective.

F. PLANS HOUSING LAND-USE DAMAGE AND LOSS REDUCTION PLAN

PURPOSE

The Housing Land-Use Damage and Loss Reduction Plan aims to reduce damage and loss to housing by changing land-use policies and improving construction practices. This will increase the resilience of day-to-day housing renovation, new construction, and housing that is repaired and rebuilt following a disaster.

PRODUCT

HOUSING LAND-USE COMPONENT. One product is a prioritized action plan based on the work of the housing land-use idealization map. It recommends additions and modifications to the municipality's land-use/comprehensive plan.

PROCESS

ANALYSIS

STEP 1: HOUSING LAND-USE COMPONENT- ANALYZE EXISTING HOUSING LAND-USE.

Compare the existing housing map with the housing land-use idealization plan to analyze the existing density, location, and housing types with the distribution and types of housing projected in the future. *See the Housing Guide for Prompting Questions.*

GOALS

STEP 2: DETERMINE HOUSING STRUCTURE GOALS AND OBJECTIVES - Consider different hazards, such as wind, storm surge, and rain/river flooding, and different housing types, such as single-family slab-on-grade, single-family pier foundation, multi-unit housing, mobile and manufactured homes, etc. Decide upon one goal for each different combination of hazard, housing type, regardless of if it is renovation or new construction. *See the Housing Guide for examples of Goals and Objectives.*

OBJECTIVES

COAs

CAPABILITY ESTIMATES

RECOMMENDATIONS

STEP 3: USE THE GOALS AND OBJECTIVES TO DEVELOP ACTIONABLE

RECOMMENDATIONS FOR RESILIENT HOUSING STRUCTURES. Each objective will have at least one Course of Action (COA), and many objectives will have multiple COAs. COAs are the series of actions along a projected timeline with decision points, prerequisite tasks or authorizations, and assignment of responsibilities to organizations. The timeline for each COA might be coordinated in a master timeline created by the municipality planning department. Capability Estimates identify the abilities and resources needed to accomplish the objective. Recommendations include adjusting the COAs to match realistic capabilities or describing how a gap might be solved to overcome barriers to achieving the objective. Well-considered and actionable recommendations are the end product of goals and objectives being further developed into COAs assigned to responsible organizations, which are then evaluated and adjusted with capability estimates.

F. PLANS HOUSING CONSTRUCTION DAMAGE AND LOSS REDUCTION PLAN

PURPOSE

The purpose of the Damage and Loss Reduction Plan is to reduce damage and loss to housing by making changes to land use policies and improvements to construction practices to increase the resilience of day-to-day housing renovation and of new construction as well as increase the resilience of housing that is repaired and built following a disaster.

PRODUCT

HOUSING STRUCTURE COMPONENT. One product is a prioritized action plan for improving the resilience of housing structures by bringing about more resilient standards for renovations and new construction with education, incentives and changes to the building code.

PROCESS

ANALYSIS

STEP 1: HOUSING STRUCTURE COMPONENT- ANALYZE CURRENT BUILDING STANDARDS.

Consider the structural vulnerability of the existing housing stock and evaluate the effectiveness of the current building code application and enforcement. *See Guide for Prompting Questions.*

GOALS

STEP 2: DETERMINE HOUSING STRUCTURE GOALS AND OBJECTIVES - Consider different hazards, i.e., wind, storm-surge and rain/river flooding, different housing types, i.e., single family slab-on-grade, single family conventional foundation, multi-unit housing, mobile and manufactured homes, etc. Decide upon one goal for each different combinations of hazard, housing type and renovation vs new construction. *See Guide for examples of Goals and Objectives.*

OBJECTIVES

COAS

CAPABILITY ESTIMATES

RECOMMENDATIONS

STEP 3: USE THE GOALS AND OBJECTIVES TO DEVELOP ACTIONABLE RECOMMENDATIONS FOR RESILIENT HOUSING STRUCTURES.

Each objective will have at least one Course of action (COA) and many objectives will have multiple COAs. COAs are the series of actions along a projected timeline with decision points, pre-requisite tasks or authorizations, and assignment of responsibilities to organizations. The timeline for each COA might be coordinated in a master timeline created by the municipality planning department. Capability Estimates identify the abilities and resources that are needed to accomplish the objective. Recommendations adjust the COAs to match realistic capabilities or describe how a gap might be solved to overcome barriers to achieving the objective. Well considered and actionable recommendations are the end product of the process of goals and objectives being further developed into COA's assigned to a responsible organizations, which are then evaluated and adjusted with capability estimates.

F. PLANS DISASTER RECOVERY HOUSING PLAN

PURPOSE

The purpose of the Disaster Recovery Housing Plan is to prepare to direct the housing-related work of the city, county, or parish in the case of a disaster. The plan should include the four stages of housing needs: storm shelters, temporary housing, repair to existing housing, and replacement housing.

PRODUCT

The product is a Disaster Recovery Housing Plan that follows FEMA recommendations and utilizes the plan that a city, county, or parish might already have developed. It might improve or replace the housing component of a municipality's Emergency Response Plan.

PROCESS

STEP 1: DETERMINE WHAT DISASTER HOUSING PLANS ARE ALREADY IN PLACE. .

ANALYSIS

STEP 2: FORM THE EXPANDED DISASTER PLANNING TEAM. The core planning team of the Project Team and the Decision-Making Group should be expanded to focus on disaster recovery in order to create a Disaster Recovery Housing Plan. *See the Housing Guide for recommendations of organizations that should be included on the expanded planning team.*

STEP 3: ANALYZE THE DISASTER HOUSING SITUATION. The completed Existing Housing Assessment will provide most of the information needed to analyze the disaster housing situation and determine a worst-case disaster scenario to plan for. *See the Housing Guide for a list of additional information needed and Prompting Questions.*

GOALS

STEP 2: DETERMINE HOUSING STRUCTURE GOALS AND OBJECTIVES - Consider different hazards, such as wind, storm surge, and rain/river flooding, various housing types, i.e., single-family slab-on-grade, single-family pier foundation, multi-unit housing, mobile and manufactured homes, etc. Decide upon one goal for each combination of hazard, housing type, regardless of if it is renovation or new construction. *See the Housing Guide for examples of Goals and Objectives.*

OBJECTIVES

COAs

STEP 5: USE GOALS AND OBJECTIVES TO DEVELOP AN ACTIONABLE DISASTER HOUSING PLAN. Develop operational COAs to achieve each objective along a projected timeline for housing actions, ranging from sheltering to permanent housing. Using this timeline, planners can identify decision points and response actions required to achieve the objective. The timeline also helps determine how much time is available or needed to complete a sequence of actions. When developing COAs, it is essential to determine which organization(s) have responsibility for which actions and whether those actions depend on any decisions, legal authorities, or the completion of other tasks. After selecting housing COAs, develop capability estimates identifying the capabilities and resources needed to accomplish tasks. Capability estimates help planners decide whether pursuing a COA is realistic and supportable. Well-considered and actionable recommendations are the end product of goals and objectives being further developed into COAs assigned to responsible organizations, which are then evaluated and adjusted with capability estimates.

CAPABILITY ESTIMATES

RECOMMENDATIONS

F. PLANS STAKEHOLDER AND COMMUNITY EDUCATION PLAN

PURPOSE

The purpose of the Stakeholder and Community Education Plan is to determine short-term outreach activities to educate the community and stakeholders about the Resilient Housing Plan and long-term, ongoing programs to promote resilient land use and construction practices.

PRODUCT

The outcome of the Stakeholder and Community Education Plan will be three-fold: First, to engage stakeholders during the Resilient Housing Plan work to educate and receive input from those who the plan will impact; second, to determine an effective method to inform the general community about the Resilient Housing Plan once completed; and third, to plan and implement long-term programs to promote resilient land use and resilient construction practices including FORTIFIED Construction.

PROCESS

ANALYSIS

STEP 1: ANALYZE THE OPPORTUNITIES, NEEDS AND RESOURCES FOR AN EFFECTIVE STAKEHOLDER AND COMMUNITY EDUCATION PLAN.

Consider:

- Stakeholder engagement throughout the planning process.
- Community education about the Resilient Housing Plan.
- Long-term education and promotion of resilient housing practices.

GOALS

STEP 2: DETERMINE STAKEHOLDER AND COMMUNITY EDUCATION GOALS AND OBJECTIVES.

Determine goals and objectives for the three general areas explained above: stakeholder engagement during the planning process, community education about the plan output, and long-term promotion and education.

OBJECTIVES

See the Housing Guide for examples of Goals and Objectives.

COAs

CAPABILITY ESTIMATES

RECOMMENDATIONS

STEP 3: USE THE GOALS AND OBJECTIVES TO DEVELOP ACTIONABLE RECOMMENDATIONS FOR RESILIENT HOUSING STRUCTURES.

Each objective will have at least one Course of action (COA), and many objectives will have multiple COAs. COAs are the series of actions along a projected timeline with decision points, pre-requisite tasks or authorizations, and assignment of responsibilities to organizations. The timeline for each COA might be coordinated in a master timeline created by the municipality planning department. Capability Estimates identify the abilities and resources needed to accomplish the objective. Recommendations include adjusting the COAs to match realistic capabilities or describing how a gap might be solved to overcome barriers to achieving the objective. Well-considered and actionable recommendations are the end product of goals and objectives being further developed into COAs assigned to responsible organizations, which are then evaluated and adjusted with capability estimates.

F. PLANS STRATEGIC FUNDING PLAN

PURPOSE

Each objective will have at least one Course of action (COA), and many objectives will have multiple COAs. COAs are the series of actions along a projected timeline with decision points, prerequisite tasks or authorizations, and assignment of responsibilities to organizations. The timeframe for each COA might be coordinated in a master timeline created by the municipality planning department. Capability Cities, counties, and parishes should be prepared to pursue and use funding by having plans and needed information ready. The primary aim is for federally funded programs both for mitigation and recovery. However, the plan should also be helpful for other housing-related funding opportunities.

PRODUCT

The product of the Strategic Funding Plan is a compilation of funding programs identified in the plan, a list of these and other relevant funding programs with the application requirements, information from the city that matches the application requirements, and a template for adding additional funding program requirements.

PROCESS

ANALYSIS

STEP 1: ANALYZE THE CURRENT APPROACH TO RECEIVING GRANT FUNDING.

See the Housing Guide for Prompting Questions.

GOALS

STEP 2: DETERMINE STRATEGIC FUNDING PLAN GOALS AND OBJECTIVES. The analysis will reveal the work needed to obtain and use various funding opportunities. Keep in mind that one of the stated aims of the Resilient Housing Plan is to strategically target federal and other funding opportunities to pursue, receive, and effectively use available funding before and after a disaster.

OBJECTIVES

COAs

STEP 3: USE THE GOALS AND OBJECTIVES TO DEVELOP ACTIONABLE RECOMMENDATIONS FOR THE STRATEGIC FUNDING PLAN. Each objective will have at least one Course of action (COA), and many objectives will have multiple COAs. COAs are the series of actions along a projected timeline with decision points, prerequisite tasks or authorizations, and assignment of responsibilities to organizations. The timeline for each COA might be coordinated in a master timeline created by the municipality planning department. Capability Estimates identify the abilities and resources needed to accomplish the objective. Recommendations include adjusting the COAs to match realistic capabilities or describing how a gap might be solved to overcome barriers to achieving the objective. Well-considered and actionable recommendations are the end product of goals and objectives being further developed into COAs assigned to responsible organizations, which are then evaluated and adjusted with capability estimates.

CAPABILITY ESTIMATES

RECOMMENDATIONS