



Orleans Parish, Louisiana – 2015 Hazard Mitigation Plan Update
Section 9 - Mitigation Strategy

Section 9. Mitigation Strategy

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Changes between the 2010 Plan and the 2015 Plan Update.

The Mitigation Strategy section of the 2010 Plan has been updated, expanded, and completely rewritten to include updated goals. Objectives have been removed for the purposes of this update and the updated Mitigation Action Plan is organized solely by goals. The updated Mitigation Action Plan incorporates all prior mitigation actions, provides their status, and notes those actions that are being removed at this time. This Plan Update also includes an updated Implementation Strategy that identifies the hazards that are addressed with each action, the lead agency/support agencies that will implement the action, preliminary cost estimates, funding sources, and time frame for implementing the action.

9.1 Interim Final Rule (IFR) Requirements for Mitigation Strategy

IFR §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

IFR §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

IFR §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. [The mitigation strategy] must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.



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IFR §201.6(c)(3) (iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

9.2 Overview of Mitigation Strategy

The Mitigation Strategy is a long-term plan to reduce potential losses identified in the risk assessment. The Mitigation Strategy includes the 1) Goals, 2) Mitigation Action Plan, 3) Prioritized Mitigation Actions, and 4) Implementation strategy developed by the Planning Team and the community. The strategy was developed following a review of the capabilities of the Parish, including its authorities, policies, programs, resources, and ability to use these tools to reduce losses and vulnerabilities from profiled hazards. The goals provide the vision, the objectives identify measurable steps to achieve the vision, and the mitigation actions are specific projects that can be implemented to achieve specific goals and objectives. A comprehensive range of mitigation actions are included in the updated plan that will allow the Parish to reduce losses and vulnerabilities in a variety of ways. For example, the mitigation strategy includes specific capital improvement projects, as well as regulatory changes, public education efforts, and coordination with other entities to improve hazard mitigation planning intended to reduce losses and vulnerabilities. The mitigation strategy includes actions that can be implemented easily with current resources, others that will require long range planning and significant local resources, and still other actions that cannot be implemented until after a disaster event.

9.3 Goals

The Orleans Parish Hazard Mitigation Planning Team reviewed the findings of the updated local and state risk assessments, as well as the goals and objectives in the 2010 approved plan. Over the course of several meetings the City Hall Working Group and Advisory Committee reviewed and discussed the following set of questions in order to update goals and objectives for the 2015 Hazard Mitigation Plan Update.

Do the goals and objectives identified in the 2010 plan:

- a) reflect the updated risk assessment?
- b) lead to mitigation projects and/or changes in policy that help reduce the Parish's vulnerability?
- c) support changes in mitigation priorities?
- d) reflect current State goals?

After a detailed discussion of the 2010 goals and objectives, the City Hall Working Group and Advisory Committee determined that objectives would not be included in this update and decided upon a final list of goals for the 2015 Update. Foundational principles were also determined.

Foundational Principles: The following foundational principles are key to all of the Goals:

- 1. Consider the principles of equity in risk reduction decisions, including land use, zoning, and the allotment of funds and resources
- 2. Plan for future conditions, including development and climate change
- 3. Plan for minimizing damage and maximizing disaster recovery
- 4. Treat risk reduction and hazard mitigation as part of an integrated system, with an emphasis on safety.



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Goal #1: Reduce Risk and Vulnerability to the Human Environment including cultural resources, homeowners, renters, visitors, and transient populations.

Goal #2: Reduce Risk and Vulnerability to the Built Environment including current and future structures; critical facilities; historical structures; and, infrastructure including communications.

Goal #3: Reduce Risk and Vulnerability to the Natural Environment including wetland restoration and recognition of New Orleans as a coastal city.

Goal #4: Maximize the Involvement of Individuals, Businesses, and Groups in Risk Reduction Measures through Education/Outreach on Hazard Mitigation Appropriate to all Groups, Particularly Vulnerable Populations

Goal #5: Promote Coordination Locally, Regionally, and Nationally including all levels of government, private sector entities, as well as nonprofits and community based organizations.

Goal # 6: Ensure Continuity of Operations for local government and businesses, including protection of Critical Functions, Records, and Cultural Assets

9.4 Mitigation Action Plan

Review of 2010 Mitigation Action Plan and Accomplishments

The Hazard Mitigation Office, along with other City departments, have made significant progress towards several of the actions identified in the 2010 Plan. Highlights of accomplishments since 2010 include:

- Work to restore the damaged levee system to withstand at least a 1% annual chance of a hurricane event (formerly known as a Category 3 Hurricane) and to enhance the levee system to withstand a 0.2% annual chance of a hurricane event (formerly known as a Category 5 Hurricane).
- Improved pumping capacity
- Updated Comprehensive City Zoning Ordinance with greater requirements for on-site detention.
- Programs for Severe and Repetitive Loss Structures have been developed and are underway to reduce flood losses through implementation of mitigation actions to include elevation, relocation, demolition/rebuild, retrofitting and flood proofing.
- Geographic Information Systems (GIS) developed for all properties/parcels located in hazard areas and properties that sustain damaged during a hazard event.
- Public meetings held to present the FEMA Flood Insurance Rate Maps and to encourage homeowners and business owners to upgrade flood protection.
- Contra flow evacuation maps and a Citizen Assisted Evacuation Brochure produced and updated annually.
- Generators installed for some critical facilities.
- Creation of the Resilient New Orleans Strategy

The status of each mitigation action in the approved 2010 Plan is included in the Mitigation Action Table.



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2015 Mitigation Action Plan

In addition to reviewing and updating the 2010 mitigation actions for the 2015 updated plan, the planning consultant reviewed a number of recent planning documents to identify other potential mitigation actions to reduce risks from the identified hazards as discussed in Sections 6 and 7. Plans reviewed included: the Resilient New Orleans Strategy, various reports from The Data Center, reports from the Institute for Women & Ethnic Studies, and other documents.

In reviewing the area-wide plans, the planning consultant identified new potential actions that would achieve the following:

- Reduce or eliminate the long term-risk to human life and property from one or more of the hazards profiled, identified, and ranked in Section 6 and assessed for vulnerabilities in Section 7 of the updated plan.
- Meet one or more of the FEMA mitigation action categories (listed below)
- Fulfill one or more of the updated mitigation goals and objectives for the updated plan (described in Section 9.3)

A preliminary list of mitigation actions, including 2010 mitigation actions that are ongoing and new potential mitigations actions, was presented to the Hazard Mitigation staff for its review and then to the City Hall Working Group and Advisory Committee. The City Hall Working Group and Advisory Committee provided feedback on the proposed actions, including their input regarding the placement of the actions relative to the goals.

The list of actions was made available to the community in October and recommendations were reviewed by Hazard Mitigation staff. The Mitigation Action Plan includes 91 mitigation actions that meet the goals established by the City, meet one or more of the FEMA mitigation action categories, and will reduce or eliminate risks to human life and property from one or more of the identified hazards. The final list of mitigation actions is shown in Table 9-1.

FEMA Mitigation Action Categories

All of the mitigation actions included in the Plan fall within one of the following six FEMA mitigation action categories:

1. Prevention (P): Preventative measures are intended to keep hazard problems from getting worse. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or where capital improvements have not been substantial. Examples of prevention measures include:

- (a) Comprehensive land use planning
- (b) Zoning regulations
- (c) Subdivision regulations
- (d) Building code
- (e) Floodplain development regulations

2. Property Protection (PP): Property protection measures protect existing structures by modifying the building to withstand hazardous events, or removing structures from hazardous locations. Examples of property protection measure include:

- (a) Building relocation
- (b) Acquisition and clearance
- (c) Building elevation
- (d) Building retrofit



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3. Natural Resource (NR) Protection: Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their mitigating functions. Such areas include floodplains, wetlands, and dunes. Parks, recreation or conservation agencies and organizations often implement these measures. Examples include:
 - (a) Wetland protection
 - (b) Habitat protection
 - (c) Erosion and sedimentation control
 - (d) Best Management Practices (BMPs)
4. Emergency Services (ES): Although not typically considered a mitigation technique, emergency service measures do minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:
 - (a) Hazard warning system
 - (b) Emergency response plan
 - (c) Critical facilities protection
 - (d) Health and safety maintenance
 - (e) Post-disaster mitigation
5. Structural (S) Projects: Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event. The projects are usually designed by engineers and managed or maintained by public works staff. Examples include:
 - (a) Reservoirs, retention, and detention basins
 - (b) Levees and floodwalls
 - (c) Channel modifications
 - (d) Channel maintenance
6. Public Education and Awareness (PE): Public education and awareness activities are used to advise residents, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques that the public can use to protect themselves and their property. Examples of measures to educate and inform the public include:
 - (a) Map information
 - (b) Outreach projects
 - (c) Library
 - (d) Technical assistance
 - (e) Real estate disclosure
 - (f) Environmental education

9.5 National Flood Insurance Program (NFIP) Compliance

FEMA incorporated mitigation planning requirements for the Flood Mitigation Assistance (FMA) program on October 31, 2007 with published amendments to the 44 CFR Part 201. These amendments created a new requirement that all Local Mitigation Plans must address the jurisdiction's participation in the National Flood Insurance Program (NFIP). Orleans Parish participates in the National Flood Insurance Program as indicated below:



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Adoption and enforcement of the floodplain management requirements. Orleans Parish adopted the Floodplain Management Ordinance as part of the City Zoning Ordinance in 2008 to meet the NFIP minimum standards. The new ordinance includes regulating all new and substantially improved construction in Special Flood Hazard Areas (Appendix N). The Hazard Mitigation Plan Update includes a mitigation action to keep City ordinances consistent with FEMA's Grant and Assistance Guidelines, as well as with state and local priorities.

Floodplain identification and mapping. The City of New Orleans, in coordination with FEMA, USACE, the LaMP Team, and others, held a series of open house public meetings in the Spring of 2009 to present the preliminary digital Flood Insurance Rate Maps (DFIRMs) to business and home owners. These meetings were advertised in local newspapers, radio and television announcements and well attended. The City is currently in the process of adopting the new preliminary FIRMs for Orleans Parish.

City's participation in the NFIP's Community Rating System (CRS). The City also participates in the NFIP's Community Rating System. This program rewards participating communities that go beyond the minimum standard requirements of the NFIP. New Orleans is currently rated as a Class 8 community, which gives policy holders in the Parish a 10% discount on flood insurance premiums. Class 10 is the lowest (no discount) and 1 is the highest, with a 5% discount added at each level. The Department of Safety and Permits administers and enforces the NFIP and participates in the CRS.

As part of the planning process to update the Orleans Parish Hazard Mitigation Plan, the Hazard Mitigation Planning Team identified, analyzed and prioritized actions related to continued compliance with the NFIP and participation in the CRS. The updated Orleans Parish 2015 Hazard Mitigation Plan includes the following mitigation actions that will improve the Parish's participation in the NFIP and CRS:

1. Increase the City's preparedness by remaining in the StormReady program and by pursuing No Adverse Impact.
2. Develop a warning and notification system in the event of sudden river flooding.
3. Install rain gardens and storm water runoff filtration and water retention systems along streets to reduce subsidence and flooding. Develop and advocate the necessary site design and landscape standards for streets, neighborhoods, and building sites.
4. Pursue an acquisition/buy-out program wherein property owners could elect to move out of high risk area to a lower risk area.
5. Adopt freeboard and other higher regulatory standards such as cumulative substantial damage and requiring non-enclosure agreements. These are adopted through updates to the CZO and the Floodplain Management Ordinance
6. Develop a program to promote the purchase of flood insurance.
7. Implement a public education campaign about the Community Rating Systems and ways in which to reduce flood insurance premiums.
8. Utilize informational brochures, hold educational events, and utilize social networks to inform the public about risk levels, historic impacts, and hazard mitigation - including non-structural measures and alternatives to elevation.
9. Educate the community about risk through the use of high water markers.



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10. Require mandatory training in floodplain regulations for all building officials.
11. Continue compliance with the NFIP and adopt the revised flood insurance rate maps currently expected to arrive in 2015.

9.6 Prioritized Mitigation Actions

Once the final list of hazard mitigation actions was established, the City Hall Working Group and Advisory Committee used the same STAPLEE methodology from the 2010 Plan to evaluate and prioritize the mitigation actions for the 2015 Plan. STAPLEE is an acronym for Social, Technical, Administrative, Political, Legal, Economic, and Environmental. This methodology was used to examine opportunities (benefits) and constraints (costs) of implementing each action from the perspective of all seven of the STAPLEE criteria. By using the STAPLEE methodology, the City was able to evaluate and prioritize mitigation actions to determine whether the actions addressed specific goals and objectives and where the actions are appropriate for Orleans Parish. The City Hall Working Group and Advisory Committee considered each of the following seven (7) STAPLEE criteria in evaluating each action.



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STAPLEE Methodology

STAPLEE	Criteria Explanation
S – Social	Is the action acceptable to the community? Will the action achieve a social goal? If yes, it is a <i>benefit</i> . Does the action adversely affect one segment of the population? If yes, it is a <i>cost</i> . Or, will it negatively impact historical/cultural resources? If yes, this is a <i>cost</i> .
T – Technical	Is the action technically feasible? Does it provide long term solutions? If yes, these are <i>benefits</i> . Does it create new problems? If yes, there are <i>costs</i> .
A – Administrative	Does the Parish have the capability to implement the project? If yes, this is a <i>benefit</i> . Is there sufficient staffing and funding to implement and maintain the proposed action? If no, this is a <i>cost</i> .
P – Political	Is there political support for the action? Is there a local champion willing to promote the action? If yes, this is a <i>benefit</i> . Is there public support to ensure success? If no, this is a <i>cost</i> .
L – Legal	Is there legal authority to implement the action? Do the State and local governments have authority to implement it? If yes, this is a <i>benefit</i> . Is there a possibility that the action will be legally challenged? If yes, this is a <i>cost</i> .
E – Economic	Are there economic benefits for the action? Does the action contribute to other community economic goals? If yes, this is a <i>benefit</i> . Is there sufficient funding for the project? If no, this is a <i>cost</i> . Will the action create a financial burden? Does the action require other funding beyond what is available locally? If yes, this is a <i>cost</i> .
E - Environmental	Does the action comply with local, state, federal laws? Is the action consistent with community environmental goals? If yes, this is a <i>benefit</i> . Will the action adversely affect the environment? If yes, this is a <i>cost</i> .

Source: Adapted from Table 7-2, STAPLEE Criteria, Page 7-2, Multi-Jurisdictional Hazard Mitigation Plan, Lewis County, New York, URS, April 2010.

The Advisory Committee and City Hall Working Group considered the benefits (positive effects) and costs (negative effects) of each STAPLEE criteria as they completed their evaluations of the mitigation actions. Planning Team/Steering Committee members assigned a +|| for each criterion that was considered a benefit and a -|| for each criterion considered a cost. All mitigation actions were evaluated and prioritized, including the 2010 actions that were revised and carried forward to the updated plan.

The Advisory Committee and City Hall Working Group completed the STAPLEE evaluation forms in October. The summary of results of the STAPLEE Evaluation is included in Appendix L.



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The STAPLEE summary results were utilized to rank the Mitigation Actions. Adjustments were made to increase the priority ranking based on the critical need of certain actions or when there was a misunderstanding of the scope of the action. For example, the priority rankings for two actions that address compliance with the National Flood Insurance Program (NFIP) and participation in the Community Rating System (CRS) were moved from Medium to High to reflect the critical nature of these actions. The final priority ranking is shown in Table 9.1.

Benefit-Cost Review Methodology. The STAPLEE evaluation was used to perform a qualitative benefit-cost review based on Method B – Relative Rating as discussed in the FEMA 386-5 Guidance. The qualitative review was completed for the seven STAPLEE criteria -- social, technical, administrative, political, legal, economic, and environmental -- for each mitigation action. For each criterion, the total number of values received for benefits (+) was summed, reviewed, and an appropriate range of values was assigned for High, Medium, and Low. This procedure was then repeated for costs (-). Each action was assigned a High, Medium, or Low ranking for Benefits and a second ranking for Costs based on the number of --H and --L values for each criteria.

After evaluating benefits and costs for each of the seven criteria, an overall net benefit and net cost was determined for each action. Since each of the 7 criteria had between three and five measures, there were a total of 24 measures evaluated for each action to determine the net benefit and the net cost. The net benefit (+) range of values was determined by summing the benefit (+) values from each criteria ranked High, calculating the average value for all 7 criteria, and establishing the average value as the mid-point for the Low ranking. This procedure was repeated to determine the net benefit range for Medium and Low. Next, this same procedure was repeated for the net cost (-) range of values.

The overall net benefit and net cost for each action was reviewed to assign a priority ranking for the action. If the net benefit exceeded the net cost, the priority ranking was based on the net benefit. However, if the net cost exceeded the net benefit, the priority ranking was based on the net cost. For example, one mitigation action had a net benefit of --High and a net cost of --Low. This action was given an overall ranking of --High. However another action had a net benefit of --Medium, but the net cost was --High. Because the net cost exceeded the net benefits, the action was assigned an overall ranking of --Low.



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9.7 Implementation Strategy

The Hazard Mitigation Office in the New Orleans Office of Homeland Security and Emergency Preparedness (NOHSEP) will oversee the implementation of the Mitigation Action Plan shown in Table 9.1. The Action Plan identifies the information for each action that will guide the City of New Orleans in the implementation and administration of the actions. Table 9.1 identifies the lead and supporting agencies that will implement the actions, preliminary cost projections, funding sources, time frame for implementing, and priority ranking. This Action Plan will assist the City in coordinating mitigation activities among various agencies in order to avoid duplication or conflicts.

The Mitigation Plan lists all mitigation actions by goal and shows the specific hazards for which risks will be reduced or eliminated as specific mitigation actions are implemented. Specific mitigation actions supported by the community and identified in other plans also meet the requirements for hazard mitigation actions in the Orleans Parish 2015 Hazard Mitigation Plan Update. All of the 91 actions included in the updated plan will reduce or eliminate risks from the hazards identified in the plan. As shown, some actions are already underway and will remain ongoing. Others can be implemented quickly in the next year or two, while some will require more planning and are projected to be implemented over the next 10 years. The projected costs for the actions are preliminary and will require a more detailed cost projection before implementation. The following description of the column headings provides a key of the information provided in the Mitigation Action Plan table.

Column Header	Description
Action Item/Benefits	Contains a description of the action and potential benefits.
Goals and Objectives	Identifies the hazard mitigation goals and objectives addressed by the mitigation action.
Hazards	Lists all hazards for which risks will be reduced or eliminated with implementation of the mitigation action.
Lead Agency/Support Agency	Lists the agency that has primary jurisdiction over the mitigation action. The listed agency will be the primary point of contact for the mitigation action. Supporting agencies will assist in implementation, funding, or maintenance of the mitigation action.
Potential Partners	Lists possible partners from outside of government.
Preliminary Costs	General projected costs associated with implementing each mitigation action. Projected costs also include ongoing maintenance costs, where applicable.
Funding Sources	Identifies possible sources of funding including the City's capital improvement budget, the City's operating budget, staff time, grants (federal, state, other), and other types of funding.
Timeframe for Implementing Action	Estimates when the project will begin and approximately how long it will take to complete. "Ongoing" refers to actions that are either underway or have no definitive end date.
Priority Ranking	Lists the results of the mitigation action prioritization.



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Before implementing any action, the Hazard Mitigation Office will work with the lead agency to conduct a benefit-cost review. Such review will ensure that the City is optimizing the benefits to the community. For actions that require grant funding, a full benefit-cost analysis will be prepared to comply with FEMA requirements. For mitigation actions that call for a study to be completed, it is assumed that the costs and benefits of the actions being studied will be calculated as part of the study. For those strategies that call for an action (including public outreach) to be undertaken, a cost-benefit review will be completed by the agency or department responsible for implementation of the strategy prior to implementation. Projects with a benefit-cost ratio of greater than one will be considered appropriate for implementation; projects with a benefit-cost ratio of equal to or less than one will not be considered appropriate for implementation. As Project Scoping Reports are completed for specific mitigation actions, these reports will be added to the 2015 Hazard mitigation Plan Update and the Plan amended accordingly.

The Hazard Mitigation Office of the NOHSEP will be responsible for general management of the implementation of the mitigation strategies in the Plan. Accordingly, the Hazard Mitigation Office of the NOHSEP will have the authority to divide projects into phases to facilitate implementation. The Hazard Mitigation Office will also contact local universities and colleges for assistance with mitigation activities when appropriate.

In addition, NOHSEP will be responsible for preparing a strategy to implement the mitigation actions in the Plan as part of a disaster recovery process. Frequently, a disaster is followed by a very large infusion of Federal and State development capital for local jurisdictions. Combining mitigation actions with the recovery process can achieve many of a community's mitigation goals; however, communities often have difficulty combining mitigation and recovery actions if they have not prepared to do so in advance. Following final approval of the Plan, NOHSEP will identify the mitigation actions in the Plan that would be most appropriate to implement as part of a disaster recovery process. For example, mitigation actions that require a large amount of capital and are eligible activities under the major flood recovery programs are good candidates to be combined with recovery activities.



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Table 9.1 Mitigation Action Plan