

Greauxing Resilience at Home

City of Denham Springs, Louisiana:
Denham Strong Long-Term Community Recovery Plan



GEORGETOWN CLIMATE CENTER

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ABOUT THIS REPORT

Louisiana is one of the hardest-hit areas in the United States as extreme weather events and regular flooding become more frequent and intense.¹ These challenges often fall “first and worst” on Black, Indigenous, and People of Color or “BIPOC” and low-income communities.² This is especially true in the U.S. Gulf Coast region and the state of Louisiana.

Over time, these challenges are being exacerbated by population increases and transitions as climate and non-climate drivers (e.g., people moving out of urban centers into more rural areas) influence where people choose — or are able — to live.

In southeast Louisiana, resilient, affordable housing initiatives are critical to ensuring equitable adaptation that takes into consideration the myriad overlapping challenges facing all Louisianans, but especially those living in communities that have long borne a disproportionate burden of risk.

Over a two-year period between fall 2020 and spring 2022, **Capital Region Planning Commission** and **Georgetown Climate Center** partnered with dozens of people from government, private, and nonprofit sectors and community stakeholders in Region Seven of the **Louisiana Watershed Initiative**.³ The result of that partnership effort is **Greaxing Resilience at Home: A Regional Vision**⁴ (Regional Vision), a resource to inform Region Seven’s ongoing work to increase community resilience by promoting affordable housing and nature-based solutions.

Regional and local governments in Region Seven can use the Regional Vision to identify potential legal, planning, and policy tools and projects to increase the affordability and availability of housing and the use of nature-based solutions. In addition, the Regional Vision offers insights for policymakers across Louisiana, throughout the Gulf Coast region, and nationally.

This report is composed of 24 individual case studies developed by Georgetown Climate Center to support the Regional Vision. These case studies describe best and emerging practices, tools, and examples from Louisiana and other U.S. jurisdictions to make progress on these complex and challenging issues. These case studies are intended to provide transferable lessons and ideas for regional and local governments addressing housing and mitigating flood risk as integrated parts of comprehensive community resilience strategies. Collectively, these case studies present a suite, although not an exhaustive list of tools and approaches that can be used to facilitate any of these efforts.

1 STATE OF LA., LOUISIANA CLIMATE ACTION PLAN: CLIMATE INITIATIVES TASK FORCE RECOMMENDATIONS TO THE GOVERNOR 15–16 (Feb. 2022), available at <https://gov.louisiana.gov/assets/docs/CCI-Task-force/CAP/ClimateActionPlanFinal.pdf>.

2 See *id.* at 15–17.

3 The Louisiana Watershed Initiative is an effort to create a paradigm shift in floodplain management towards a strategy that approaches flood risk reduction from a nature-based solutions and land-use-based approach. A part of this approach includes identifying eight separate regional watershed management areas to assist in achieving cross-jurisdictional activities.

Region Seven is one of these eight watershed regions. Region Seven encompasses the upper part of the toe of Louisiana’s boot. It spans eastward from the Mississippi River near Baton Rouge across the Northshore (i.e., north of Lakes Pontchartrain and Maurepas) to Mississippi and along the Mississippi River to the Bonnet Carré Spillway. The region includes 13 parishes and 45 incorporated municipalities.

4 To reflect their connection to Louisiana’s cultural heritage, the project team and members of Region Seven that participated in this process chose to use the word “Greax,” a French-inspired phonetic spelling of the word “Grow,” to brand this product.

Where possible, all the case studies share a consistent organizational format to allow easier cross-comparison of tools, processes, and takeaways:

- The **Background** section introduces the regional and local context (e.g., location, demographics) for each case study, including the following facing each jurisdiction: extreme weather risks, housing and environmental challenges, and development pressures.
- The **Housing** section focuses on the legal, planning, and policy tools and projects that have been designed and implemented to support the growth and preservation of housing affordability and availability.
- The **Environment** section highlights how vulnerable habitats like floodplains and other open spaces are being restored, conserved, and protected as a part of comprehensive resilience strategies to provide important ecosystem and community benefits like reducing flood risk and creating community assets, such as parks and trails.
- The **Community Engagement** section summarizes how governments have provided different types of public engagement opportunities and how affected residents have contributed to these planning and decisionmaking processes.
- The **Funding** section identifies how the programs, plans, and projects discussed have been funded by federal, state, and local government and private and nongovernmental sources.
- The **Next Steps** section captures the anticipated future actions that featured case study jurisdictions may take in implementing these tools and strategies.
- The **Considerations and Lessons Learned** section concludes with the primary takeaways from each example that other regional and local policymakers and communities may consider when developing or implementing their own housing and resilience strategies using these legal, planning, and policy tools.

A few additional notes about the case studies:

- **The case studies selected prioritize relatable and scalable models from places similar to Louisiana:** Wherever possible, Georgetown Climate Center aimed to acknowledge and lift up the work of jurisdictions and nongovernmental actors in Region Seven and neighboring watershed regions to inspire peer-to-peer sharing and actions from as close to home as possible. These resources are drawn from 12 states, with an emphasis on regions and local areas in the Gulf and Mid-Atlantic: Colorado, Florida, Georgia, Illinois, Iowa, Louisiana, New York, North Carolina, Oregon, South Carolina, Texas, and Virginia. Examples and lessons drawn from these regions are easiest to apply to a Louisianan context because they feature similar geography or analogous impacts from flooding and other climate effects.
- **There are no perfect, “one-size-fits-all” solutions:** While the case studies and resource entries informing the Region Vision are instructive for Region Seven and beyond, none of them are “perfect” examples of how to solve these complex and challenging issues. Georgetown Climate Center found no single case study or resource that provides a point-for-point or model for what Region Seven is trying to accomplish. No other jurisdiction identified is currently trying to integrate housing, flooding, equity, resilience, and population changes together in a single plan, ordinance, or policy. However, some jurisdictions are moving in that direction, or are making progress on discrete elements of what will eventually become a more holistic strategy. Therefore, this report and the Regional Vision draw analogous connections and recommendations that can be combined to facilitate more comprehensive planning and land-use efforts.

The case studies in this report were informed by interviews with practitioners and community leaders in charge of designing and overseeing this work. No statements or opinions, however, should be attributed to any individual or organization included in the *Acknowledgements* section of this report.

It is also important to note that the examples described in each case study are ongoing and the content included in this report is current as of spring 2022. For future updates about these and other case studies and the Regional Vision, please visit [Greaxing Resilience at Home: A Regional Vision](#) and Georgetown Climate Center’s [Adaptation Clearinghouse](#).

City of Denham Springs, Louisiana

Denham Strong Long-Term Community Recovery Plan

EXECUTIVE SUMMARY

In August 2016, a historic flooding event severely impacted the infrastructure and people in the City of Denham Springs in Louisiana. In response to the flooding, the city worked with its residents to create a long-term recovery plan called Denham Strong. The goal of the plan to increase community resilience in the aftermath of the disaster. The plan lists various affordable housing and mitigation recovery projects under three main categories: (1) Flood Recovery; (2) Disaster Resilience; and (3) Community Development.

Denham Strong is a guiding document with the ability to adapt to future changed circumstances in Denham Springs. Denham Strong is a noteworthy example of a recovery plan that encompasses community input, provides examples of projects for stormwater management, includes resilient affordable housing considerations, and keeps the community updated as projects are implemented. Other local governments impacted by disaster events can consider similar opportunities to supplement local comprehensive plans and engage residents with proactive thinking about building long-term resilience.

BACKGROUND

The City of Denham Springs is located in Livingston Parish in Louisiana. As of 2019, almost 10,000 people resided in the city with 84.5 percent of the population being white.¹ Denham Springs is considered to be the banking and commercial center of Livingston Parish.² In 1999, Denham Springs's Historic District became a certified [Main Street District](#).³

The Amite River and Comite River intersect in the city and Denham Springs has many low-lying areas.⁴ This geography and elevation has caused the city to face major repetitive flooding events for decades. In August 2016, 24.75 inches of rain fell in the city causing great damage to the city's

¹ *QuickFacts Denham Springs city, Louisiana, U.S.* CENSUS BUREAU, <https://www.census.gov/quickfacts/fact/table/denhamcitylouisiana/PST045219> (last visited Dec. 20, 2021).

² DENHAM SPRINGS, LA., DENHAM STRONG: STRATEGY FOR THE FUTURE: LONG-TERM COMMUNITY RECOVERY PLAN 9, available at <https://denhamstrong.com/wp-content/uploads/2017/12/Denham-Springs-Recovery-Plan-121217-Final.pdf>.

³ *Id.*

⁴ *Id.* at 10.

infrastructure.⁵ Although there were no reported casualties as result of the flood, the impact on the community was nonetheless profound.⁶ In response to the August 2016 historic flooding event, the city initiated Denham Strong with a goal of creating a more resilient community.⁷

OVERVIEW OF DENHAM STRONG

In 2017, Denham Springs partnered with the Federal Emergency Management Agency to implement the National Disaster Recovery Framework, which became known as Denham Strong.⁸ Public meetings were held for community input. Through these meetings, the city and engaged residents developed a collective community vision for the future and projects that support that vision.⁹ The plan has been officially adopted by the Denham Springs City Council.¹⁰

Denham Strong is a long-term recovery strategy that addresses three main types of projects: (1) Flood Recovery; (2) Disaster Resilience; and (3) Community Development.¹¹ The plan is a guiding document with the ability to adapt to future changed circumstances.¹² It is intended to be used to inform “critical decisions about next steps, funding sources and resource allocation during the implementation phase of the recovery process.”¹³ The plan includes a list of projects, and for each project, steps for implementation, costs, potential funding sources, and a timeline for implementation. Denham Springs explains that the ability for the projects to succeed depends on the city’s and community’s ongoing commitment, project champions, funding, and collaboration.

During the community engagement process, residents identified projects with great community support. Projects were then ranked and implemented from highest priority to lowest priority based

⁵ *Id.* at 10, 13.

⁶ *Id.* at 13.

⁷ *About Denham Strong*, DENHAM STRONG, <https://denhamstrong.com/> (last visited Dec. 15, 2021).

⁸ *About Denham Strong*, DENHAM STRONG, <https://denhamstrong.com/> (last visited Dec. 15, 2021); *See National Disaster Recovery Framework*, FEMA,

<https://www.fema.gov/emergency-managers/national-preparedness/frameworks/recovery> (last visited Dec. 22, 2021) (“The National Disaster Recovery Framework (NDRF) enables effective recovery support to disaster-impacted states, tribes, territorial and local jurisdictions. It provides a flexible structure that enables disaster recovery managers to operate in a unified and collaborative manner. The NDRF focuses on how best to restore, redevelop and revitalize the health, social, economic, natural and environmental fabric of the community and build a more resilient nation.”).

⁹ DENHAM SPRINGS, LA., DENHAM STRONG: STRATEGY FOR THE FUTURE: LONG-TERM COMMUNITY RECOVERY PLAN 7, available at <https://denhamstrong.com/wp-content/uploads/2017/12/Denham-Springs-Recovery-Plan-121217-Final.pdf>; *About Denham Strong*, DENHAM STRONG, <https://denhamstrong.com/> (last visited Dec. 15, 2021).

¹⁰ *Master Recovery Plan Adopted!*, DENHAM STRONG, <https://denhamstrong.com/plan/> (last visited Dec. 15, 2021).

¹¹ DENHAM SPRINGS, LA., DENHAM STRONG: STRATEGY FOR THE FUTURE: LONG-TERM COMMUNITY RECOVERY PLAN 1, available at <https://denhamstrong.com/wp-content/uploads/2017/12/Denham-Springs-Recovery-Plan-121217-Final.pdf>.

¹² *Id.* at 7.

¹³ *Id.*

on various factors.¹⁴ The affordable housing and environment/flood mitigation aspects of the plan are highlighted in the following parts.

HOUSING

The plan includes affordable housing considerations for projects under the Flood Recovery category. Denham Springs hopes to improve neighborhoods by using blighted properties to build more affordable housing options.¹⁵ The plan explains that blighted properties raise social, health, and economic issues for the city. Some economic impacts include lower value for uninsured buildings, increased property sales to investors, and less available rental housing resulting in higher rent. Social impacts include increased mental health and drug usage issues, and lower school attendance due to displaced families. Thus, by improving blighted properties, the ability to develop affordable housing in neighborhoods increases.

The plan's most prominent affordable housing considerations fall under the Disaster Resilience category. One project identified under this category is to increase opportunities for affordable housing in Denham Springs that have an accessible design.¹⁶ The plan describes this project as follows:

DESCRIPTION: This project is intended to increase affordable and accessible housing stock and provide education for current and potential homeowners, with topics such as first-time homeowner education, purchasing flood insurance and how to add flood mitigation measures.

DESIRED OUTCOME: Attractive, affordable and accessible housing will be incorporated throughout the city, offering housing options for all ages, abilities and income levels. As flood recovery progresses, residents will be able to maintain and improve housing affordability and aesthetics.¹⁷

In Denham Springs, 21 percent of residents live in poverty.¹⁸ However, the 2016 floods placed additional economic burdens on more families that are now in need of affordable housing.¹⁹ For this project, the city will aim to partner with affordable housing organizations and determine which parts of the city can accommodate compactly designed homes that are energy efficient, have an accessible design, and are resilient to future hazards and disaster events. Concurrently, the city may have to consider whether zoning updates are required to make this work possible.

¹⁴ *Id.* at 24.

¹⁵ *Id.* at 29.

¹⁶ *Id.* at 43.

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.*

The city also suggested creating an educational workshop series for affordable housing and how to maintain a home in Denham Springs. Educating future homeowners about homeownership can create long-term community capacity to build individual and neighborhood-wide resilience and disaster preparedness.

One project under the plan's Community Development category includes redeveloping its centrally located Triangle Business District. The current plan is "to create a mixed-use business and housing district that supports a variety of entrepreneurial ventures."²⁰ The desired outcome for this project is to "provide affordable, accessible housing, business entrepreneurship and healthy restaurants" and "attract developers to create a new economic center in Denham Springs."²¹

Denham Springs notes that the area currently houses many low- and moderate-income families. Thus, the plan states that as redevelopment measures begin for the Triangle Business District, the city should maintain the affordability and accessible design of housing.²² Revitalization efforts are key for economic growth and maintaining local culture. However, it is important to maintain affordability of housing to avoid the displacement of residents.

ENVIRONMENT

The plan includes environmental considerations for projects under the Flood Recovery category. Here, the community identified stormwater management, building resilience for utility systems, and protecting critical facilities as priority projects.²³

Stormwater is rainwater that flows off of impervious surfaces (e.g., streets and rooftops).²⁴ For stormwater management, Denham Springs hopes to "improve the city's infrastructure to better regulate stormwater effects, by reducing the threat to life and/or property through management of existing infrastructure, stormwater planning and improvements to the drainage systems."²⁵ The desired outcome for this project is for Denham Springs to "have well-planned and maintained stormwater infrastructure and regulate future development and redevelopment to ensure that changes to the built environment will not create flooding hazards" as well as "actively participate in regional stormwater solutions."²⁶

²⁰ *Id.* at 53.

²¹ *Id.*

²² *Id.*

²³ *Id.* at 25.

²⁴ *National Pollutant Discharge Elimination System (NPDES)*, EPA, <https://www.epa.gov/npdes/npdes-stormwater-program> (last visited Dec. 20, 2021); *EPA Facility Stormwater Management*, EPA, <https://www.epa.gov/greeningepa/epa-facility-stormwater-management> (last visited Dec. 20, 2021).

²⁵ DENHAM SPRINGS, LA., DENHAM STRONG: STRATEGY FOR THE FUTURE: LONG-TERM COMMUNITY RECOVERY PLAN 26, available at <https://denhamstrong.com/wp-content/uploads/2017/12/Denham-Springs-Recovery-Plan-121217-Final.pdf>.

²⁶ *Id.*

Sub-projects/programs for improving stormwater management include: updating stormwater regulations; creating a drainage master plan/stormwater master plan; providing support for regional efforts; developing a maintenance program; and constructing and incentivizing green stormwater infrastructure.²⁷ Regarding stormwater management, the U.S. Environmental Protection Agency describes green infrastructure as “approaches and technologies to infiltrate, evapotranspire, capture and reuse stormwater to maintain or restore natural hydrologies.”²⁸ For each of these stormwater management sub-projects/programs, the plan includes a more detailed description as well as estimated timelines and costs for implementation.²⁹ As mentioned, Denham Springs expresses that they will continue to support regional and state flood resilience efforts, but the city plans to create their own stormwater plan to better prepare the local community.

In addition to improving stormwater management systems and promoting the use of green infrastructure and nature-based solutions, several other projects in the plan focus on the proper siting of utilities and critical facilities in lower-risk areas to protect environmentally and community beneficial floodplains.

For utility resilience, Denham Springs recognizes that due to the city’s low-lying topography, utility systems (i.e., water, sewer, and natural gas) face challenges when extreme weather events like flooding occur.³⁰ The city aims to increase the reliability of these systems, which includes flood-proofing the utility systems. The city hopes that building the resilience of these systems will allow residents to “have reliable utilities during flood conditions, enabling them to stay in their homes.”³¹ Bettering these systems will reduce a flooding event’s overall impact to infrastructure and enable citizens to recover more quickly. Reducing displacement during a storm is vital to community resilience.

For protecting critical facilities (e.g., hospitals, fire stations, police stations, and critical storage units), the city wants to make sure that most critical facilities are not located in flood-prone areas.³² Protecting critical facilities will allow communities to receive help and resources when disaster events occur.

Under the Community Development category, one project is the revitalization of the Antique District, which is a certified [Louisiana Main Street District](#).³³ Revitalization efforts may include restoring a park, beautifying streets, planting trees, and building green infrastructure that can help

²⁷ *Id.*

²⁸ *EPA Facility Stormwater Management*, EPA, <https://www.epa.gov/greeningepa/epa-facility-stormwater-management> (last visited Dec. 20, 2021).

²⁹ DENHAM SPRINGS, LA., DENHAM STRONG: STRATEGY FOR THE FUTURE: LONG-TERM COMMUNITY RECOVERY PLAN 27–28, available at <https://denhamstrong.com/wp-content/uploads/2017/12/Denham-Springs-Recovery-Plan-121217-Final.pdf>.

³⁰ *Id.* at 32.

³¹ *Id.*

³² *Id.* at 34.

³³ *Id.* at 48.

improve drainage in the city. Revitalization efforts that prioritize building green infrastructure with hazard mitigation in mind can help build community resilience and preparedness to future flooding events.

The city also includes a park enhancement and beautification project.³⁴ The city hopes to enhance the city's parks as well as build new ones. Through these efforts, the city wants to increase parks and open space while working with the city's Hazard Mitigation Program to improve stormwater drainage.

COMMUNITY ENGAGEMENT

The plan was developed with community “input on flood recovery issues, a vision for the future and projects to increase the resilience of the city.”³⁵ There were three community meetings, 84 subcommittee and steering committee meetings, meetings with various stakeholders, and media outreach.³⁶ The Denham Strong website provided information to the public about the planning process and feedback from community meetings was posted to the website.³⁷ Now, the Denham Strong website posts plan updates and the status of projects. The success of some Denham Strong projects may rely on volunteers, so updates and transparency may be one way to motivate residents to support project implementation.

NEXT STEPS

Project implementation began right after the planning process concluded in 2017.³⁸ The city explains that because of the long-term nature of the projects, implementation will take years.

Projects that are currently taking place include those related to stormwater management, blighted properties, utility reliability, and critical facilities.³⁹

The rest of the plan's projects will be implemented in three phases. Phase one projects include those that are identified as a high community priority and have significant volunteer support. Phase two projects include those that are a lower community priority and have less volunteer support. Of note, phase two projects include increasing affordable housing. Phase three projects include those that need planning and other actions to take place before they can be implemented. Regardless, the

³⁴ *Id.* at 50.

³⁵ *Id.* at 20.

³⁶ *Id.*

³⁷ *About Denham Strong*, DENHAM STRONG, <https://denhamstrong.com/> (last visited Dec. 15, 2021).

³⁸ DENHAM SPRINGS, LA., DENHAM STRONG: STRATEGY FOR THE FUTURE: LONG-TERM COMMUNITY RECOVERY PLAN 55, available at <https://denhamstrong.com/wp-content/uploads/2017/12/Denham-Springs-Recovery-Plan-121217-Final.pdf>.

³⁹ *Id.* at 56.

project implementation schedule is subject to change and will be modified as priorities shift and grant opportunities become available, among other things.⁴⁰

CONSIDERATIONS AND LESSONS LEARNED

Denham Strong is a notable example of a disaster recovery plan that comprehensively addresses both housing and flooding considerations. Disaster recovery plans can be tailored to the specific needs of a community and aligned with and adapted to fit changing circumstances, for example, to target the availability and amount of future federal post-disaster funding opportunities. Other jurisdictions can use Denham Strong as a model when they consider developing their own disaster recovery plan. Denham Strong can also help fill in gaps and details for project implementation where other existing plans, like local comprehensive plans, may not suffice.

Denham Strong includes several important housing considerations for other local governments. For example, one project in the plan is improving blighted properties. Addressing blighted properties is one opportunity a community can use to develop affordable housing with accessible designs in neighborhoods. The plan also suggests that Denham Springs should implement zoning updates to accommodate compactly designed housing. Compactly designed housing allows a city to fit more housing units for residents in one area in comparison to traditional housing. Additionally, compactly designed housing units are more energy efficient.

The plan highlights that affordable housing should also be built with hazard mitigation in mind. This is important in the context of growing overall community resilience to extreme weather events like flooding. If housing proactively takes hazard mitigation into account, there is a higher chance of a community being better prepared for the next disaster. The plan also promotes affordable housing homeowner maintenance efforts and includes a plan to host workshop series addressing homeownership. Educating future homeowners on homeownership can create long-term community capacity to build individual and neighborhood-wide resilience and disaster preparedness.

Denham Springs acknowledges that redevelopment and revitalization affect the affordability of housing in the project area. This is something that other jurisdictions should take note of when creating their own disaster recovery plan or starting a redevelopment or revitalization effort. These types of efforts can promote economic growth and maintain local culture. However, local jurisdictions should proactively establish a way to maintain the affordability and accessible designs of housing for low- and moderate-income families in project areas to avoid displacing residents.

Regarding the environment, Denham Strong emphasizes flood and stormwater mitigation as one way to plan for future flooding events. Creating regulations and a stormwater master plan on a city level are important for disaster preparedness. In Denham Strong, the city indicates its intention to

⁴⁰ *Id.* at 55.

support regional flood resilience efforts. However, the city also emphasizes that it is also vital that cities develop their own localized plans. Denham Strong also includes the plan to incentivize green stormwater infrastructure. This is another action jurisdictions may take to increase resilience to future extreme flooding events.

The process used to develop Denham Strong is illustrative of significant community engagement. The city engaged with the community before drafting Denham Strong and included community input in the final version of the plan. As such, the plan reflects community priorities and needs to guide future government actions. Furthermore, the city even updates the public on the Denham Strong initiative via a website. This can help build and maintain trust between city officials and residents. For example, project news can reassure community members who provided input on the plan's development and may reassure those individuals that this was a valuable use of their time. Additionally, the success of some Denham Strong projects may rely on volunteers. As such, consistent updates and transparency may be one way to motivate residents to support city efforts. It is important for policymakers at all levels to meaningfully involve residents throughout all stages of planning and project implementation and design.

Denham Strong includes implementation timelines, potential funding sources, and actionable steps for each project. The plan also prioritizes projects into three implementation phases, as informed by community input and the potential level of volunteer support. Local governments could similarly consider developing plans with an eye towards implementation to make sure that these are living documents that have a greater chance of leading to projects on the ground. Further, organizing projects by community support is another way to develop trust with residents.