

Greauxing Resilience at Home

City of New Orleans, Louisiana:
Resilient Housing Prototype in the Seventh Ward



GEORGETOWN CLIMATE CENTER

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Acknowledgments

The authors would like to thank the **Doris Duke Charitable Foundation** for its generous support and guidance, and without whom the partnership efforts with Louisiana and Capital Region Planning Commission and this report would not have been possible.

We also appreciate the work of the following individuals who helped us finalize, format, and publish this report: **Brent Futrell**, Director of Design, Office of Communications, Georgetown University Law Center; **Peter Raffle**, Communications Director, GCC; **Caren Fitzgerald**, Communications Associate, GCC; and **Mark Rupp**, Adaptation Program Director, GCC.

Last but certainly not least, we would like to specially thank and acknowledge the following individuals for taking the time to speak with us, review drafts, and provide insights that were invaluable in helping to

inform the development of the **Regional Vision** and these case studies: **Manny Patole**, Independent Consultant; **Christopher Tyson**, formerly Chief Executive Officer, Build Baton Rouge; **Gretchen Siemers**, Director, Planning and Special Projects, Build Baton Rouge; **Lee E. Melancon, III**, Director of Community and Economic Development, Mayor's Office of Community and Economic Development, City of Donaldsonville, Louisiana; **Bithia Ratnasamy**, Director of Housing, Executive Office, Atlanta Housing, City of Atlanta, Georgia; **Carolina Rodriguez**, Project Manager, Housing and Community Development, Department of City Planning, City of Atlanta, Georgia; **Jaren Abedania**, formerly Vice President of Real Estate, Westside Future Fund; **Bridget Wiles**, Chief Operations Officer, APD Urban Planning and Management, LLC; **O. Jesse Wiles**, Principal and Chief Executive Officer, APD Urban Planning and Management, LLC; **Amber Weaver**, Sustainability Officer, Office of Sustainability, City of Asheville, North Carolina; **Paul D'Angelo**, formerly Community Development Program Director, City of Asheville, North Carolina; **Stacy Merten**, formerly Long-Range Planning Manager, Planning and Urban Design Department, City of Asheville, North Carolina; **Vaidila Satvika**, Urban Planner, Planning and Urban Design Department, City of Asheville, North Carolina; **Marc Coudert**, Office of Sustainability, City of Austin, Texas; **Erica Leak**, Development Officer, Housing and Planning Department, City of Austin, Texas; **Erin Wood**, Planner, Watershed Protection Department, City of Austin, Texas; **Isaac W. Stein**, Design Principal, Dept.; **Maggie Tsang**, Managing Principal, Dept.; **Debbie Love**, City Planner, City of North Miami, Florida; **Christopher G. Miller**, President, The Piedmont Environmental Council; **John McCarthy**, Senior Advisor and Director of Strategic Partnerships, The Piedmont Environmental Council; **Cameron Herrington**, Living Cully Program Manager, Oregon; **Crystal Launder**, Housing Planner, Department of Housing and Human Services, City of Boulder, Colorado; **René C. Pastorek**, formerly Director of Planning and Development, St. John the Baptist Parish, Louisiana; **Tara Lambeth**, Coastal and Water Management Division Lead, St. John the Baptist Parish, Louisiana;

Jackie Baumann, Chief Engineer, City of Gonzales, Louisiana; **Dave Canaan**, formerly Charlotte-Mecklenburg Storm Water Services Director, Land Use and Environmental Services Agency, Mecklenburg County, North Carolina; **Darryl Neher**, Chief Executive Officer, Fauquier Habitat for Humanity; **Elizabeth (Betsy) L. Dietel**, Senior Partner, Dietel and Partners; **Angela Chalk**, DHA GIP, Executive Director, Healthy Community Services; **Joel Holton**, Owner, J.B. Holton and Associates, LLC; **Jeremy Sharp**, Zoning Administrator, City of Norfolk, Virginia; **Christian Kamrath**, Adaptation Program Coordinator, Office of Resilience, Miami-Dade County, Florida; **Tameika Devine**, Possibilities Institute (former City Councilmember and Chair of the Affordable Housing Task Force, City of Columbia, South Carolina); **Janet Tharp**, Center for Planning Excellence; **Lyneisha Jackson**, Community Planner, Center for Planning Excellence; **Simone Higginbotham**, Scotlandville Community Development Corporation, North Baton Rouge, Louisiana; **Rinaldi Jacobs**, Full Circle Development; and **Erica Sims**, HDA advisors, Maggie Walker Community Land Trust (Richmond, Virginia).

No statements or opinions contained within this case study report, the Regional Vision, or Georgetown Climate Center's Adaptation Clearinghouse should be attributed to any individual or organization included in the above *Acknowledgements*.

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Cover Photos:

(background image) Credit: **Rachelle Sanderson**.

(images from left to right) Credit: **Dee Love; Architects Southwest** for Build Baton Rouge in *Ardendale Master Plan and Guiding Principles*; and **Louisiana Sea Grant**.

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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 New Orleans, Louisiana

Resilient Housing Prototype in the Seventh Ward

EXECUTIVE SUMMARY

In the Seventh Ward of New Orleans, Louisiana, a local project team is planning to construct a resilient housing prototype that can adapt to changing conditions in a flood-prone neighborhood.

Spearheaded by J.B. Holton and Associates and in partnership with Healthy Community Services and others, the prototype will create two affordable housing units in a duplex specifically dedicated for low- to moderate-income community members. The two single-family homes will be elevated above base flood heights and use hemp-based materials for insulation as a sustainable building material that is more resistant to moisture and pests than traditional insulation. The site will also be landscaped with green stormwater infrastructure features. Overall, this pilot project can be a model for other home developers and communities of what homes in Louisiana can look like to overcome negative stigmas around affordable housing and inspire future actions to increase local resilience in the face of flooding and economic challenges.

BACKGROUND

The Seventh Ward in New Orleans, Louisiana is one of the city's 17 wards. The Seventh Ward is bordered by a small part of the Mississippi River and a significant portion of Lake Pontchartrain's coastline. The Seventh Ward is home to Claiborne Avenue, which "has been at the heart of the New Orleans' African-American cultural, commercial and political experience for over 200 years."¹

About 11,000 individuals reside in the Seventh Ward, with about 76 percent of this population being Black.² The average household income for the Seventh Ward is \$34,425 with 39.4 percent of residents living in poverty.³ In comparison, the overall average household income for New Orleans is \$71,938 with 23.7 percent of residents living in poverty.⁴ In the Seventh Ward, about 37 percent of homeowners and about 74 percent of renters are paying 30 percent or more of their

¹ Greg A. Beaman, *A "Holiday for the Disfranchised" on North Claiborne Avenue: Two Profiles*, THE NEW ORLEANS TRIBUNE, <https://theneworleanstribune.com/the-claiborne-avenue-history-project/> (last visited Jan. 10, 2022).

² *Seventh Ward Statistical Area*, THE DATA CTR. (Feb. 24, 2021), <https://www.datacenterresearch.org/data-resources/neighborhood-data/district-4/seventh-ward/>.

³ *Id.*

⁴ *Id.*

income on housing.⁵ For New Orleans, about 31 percent of homeowners and 61 percent of renters are paying 30 percent or more of their income on housing.⁶ This creates affordability challenges for people when such a large portion of their income is spent on mortgages or rent on top of other costs associated with housing like utilities. These additional costs compound total affordability problems.

In 2005, Hurricane Katrina's wreaked havoc on New Orleans and "damage was the most extensive in the region's African American neighborhoods."⁷ The Seventh Ward was one of the communities disproportionately impacted by the hurricane. Hurricane Katrina caused the London Avenue Canal to breach. This breach resulted in flooding that devastated the majority of the Ward and the surrounding area.

OVERVIEW OF THIS WORK

In 2016, Joel B. Holton bought the property located on 3012 Pauger Street in the Seventh Ward of New Orleans. On this 31 by 130-foot lot, J.B. Holton and Associates, LLC — in partnership with Healthy Community Services and others listed below — is planning to build a resilient housing prototype that is intended to be a model for the Seventh Ward and other communities throughout New Orleans and Louisiana.

J.B. Holton and Associates, LLC is a company that provides water restoration and environmental services to promote safe buildings.⁸

Led by Angela Chalk, Healthy Community Services is a New Orleans-based nonprofit that approaches climate issues locally by building stronger, more resilient communities with a focus on coastal issues, urban agriculture, and green infrastructure with nature-based interventions.⁹

Additional local team members collaborating on this project include the following development partners and community organizations that will make this project a reality:

- ☐ Troy Verrett of Insite Developments: Architect and design consultant.
- ☐ Frank Johnson of Johnson Brothers Construction: General contractor and project management.
- ☐ Dana Brown of Dana Brown and Associates: Landscape architect and green infrastructure design.

⁵ *Id.*

⁶ *Id.*

⁷ Thomas Frank, *Flooding Disproportionately Harms Black Neighborhoods*, SCI. AM. (June 2, 2020), <https://www.scientificamerican.com/article/flooding-disproportionately-harms-black-neighborhoods/>.

⁸ J.B. HOLTON & ASSOCIATES, LLC, <https://jbholton.com> (last visited Dec. 15, 2021).

⁹ *About*, HEALTHY CMTY. SERV., <https://www.hcsnola.org/about> (last visited Dec. 8, 2021).

Greg and Nicole Nixon of Ubuntu Construction: Green infrastructure and stormwater management general contractor.

- John Cato III of Darby Organics, LLC: Sustainable building materials consultant and site remediation services.
- Cameron McIntosh of Americhanvre: Hemp lime insulation application and installation consultant.
- Isaiah Byrd of Healthy Herbal Living Sustainable Building Materials Research and Development Consultant.

Overall, the project lead, J.B. Holton, wanted to assemble a team that is representative of the community in the Seventh Ward and reflects its concerns and needs. Approximately 90 percent of the firms and businesses on the team are BIPOC (Black, Indigenous, and People of Color) or women owned. This demonstrates how the project lead is being both thoughtful and intentional about how he is approaching this work.

HOUSING

As envisioned, the property will be a duplex that has two affordable housing units reserved for low- to moderate-income community members. Each unit will have two bedrooms and two bathrooms. The insulation for the duplex will be industrial hemp with the goal of building a healthier indoor environment for the local individuals or families living there. The team is also focusing on using hemp-based products for flooring materials and cabinetry. For future projects, the team can expand into using hemp for window decorations, OSB pressboards, and structural framing.

The Seventh Ward neighborhood is prone to flooding. As such, the project team wants to create proper infrastructure that addresses flooding, but also makes the building more resilient in general. Flooding events have had serious impacts on the local housing stock. Every hurricane and major flood can create serious issues for homes, such as mold and pests, by causing moisture to become trapped inside the walls. Industrial hemp-based products are more resilient to water, which can foster a housing environment that can better adapt to these types of events and eliminate or reduce issues with mold and pests. Hemp-based insulation has also been associated with lower heating and cooling costs.

In addition, the duplex will be elevated about 6–8 inches above base flood level to avoid damage from future hurricanes and precipitation-based flooding. Further, the project team will include solar features and Energy Star appliances, which will lower monthly utility costs for tenants — thereby reducing total housing costs and making the unit more affordable.

Hemp

Hemp is a crop that can be used as a source material for construction products. When compared to traditional building materials, it is a more sustainable alternative that can be employed in a variety of ways for construction including insulation, structural blocks, panels, concrete, and more.¹⁰ Hemp is “nontoxic, fireproof, carbon-capturing, mold- and pest-resistant” and “adaptable to any climate.”¹¹ Hemp is carbon negative, so it creates a healthier indoor environment for residents.¹² Additionally, the ambient temperature remains the same. Europe has been using hemp-based products for about 25 years with success.¹³

During the construction of a home, a developer can decide which parts of the home will consist of hemp-based materials. For example, a developer can choose to use hemp for insulation, the exterior walls, and the interior walls. This decision could replace materials like fiberglass, foam, concrete, or wood, which are much less sustainable.¹⁴

Despite the emerging benefits of hemp, it is important to note that the federal and state legal landscape around hemp is evolving. As industrial hemp has continued to emerge as a potential building material, there have been actions at both the federal (e.g., 2018 Farm Bill) and state levels (e.g., Act 164 of the 2018 Louisiana Regular Legislative Session) that may make industrial hemp scaleable for builders to use in the United States.¹⁵ Moreover, each state may have different requirements governing the growing, marketing, and use of hemp. Hence, developers considering hemp for home construction should first consult with their relevant government authorities and a legal expert.

¹⁰ Bob Woods, *Building your dream home could send you to the hemp dealer*, CNBC (Apr. 20, 2018, 9:34 AM), <https://www.cnbc.com/2018/04/20/building-your-dream-home-could-send-you-to-the-hemp-dealer.html>.

¹¹ Bob Woods, *Building your dream home could send you to the hemp dealer*, CNBC (Apr. 20, 2018, 9:34 AM), <https://www.cnbc.com/2018/04/20/building-your-dream-home-could-send-you-to-the-hemp-dealer.html>.

¹² *Hemp production in the EU*, EUROPEAN COMM’N, https://ec.europa.eu/info/food-farming-fisheries/plants-and-plant-products/plant-products/hemp_en (last visited Dec. 8, 2021); Global Hemp Group, *Sustainability Advantages to Building with Hempcrete*, HEMPBUILD MAGAZINE (July 9, 2021), <https://www.hempbuildmag.com/home/sustainability-advantages-to-building-with-hempcrete> (“Hempcrete walls provide superior breathability, allowing moisture to be absorbed and released when ambient moisture varies. This is highly desirable from a health point of view. The porous nature of the hempcrete wall ensures low thermal conductivity.”).

¹³ *Hemp production in the EU*, EUROPEAN COMM’N, https://ec.europa.eu/info/food-farming-fisheries/plants-and-plant-products/plant-products/hemp_en (last visited Dec. 8, 2021).

¹⁴ Bob Woods, *Building your dream home could send you to the hemp dealer*, CNBC (Apr. 20, 2018, 9:34 AM), <https://www.cnbc.com/2018/04/20/building-your-dream-home-could-send-you-to-the-hemp-dealer.html>.

¹⁵ See, e.g., *Hemp and Farm Programs*, U.S. DEP’T AGRIC., <https://www.farmers.gov/your-business/row-crops/hemp> (last visited Dec. 8, 2021); *Industrial Hemp*, LA. DEP’T AGRIC. & FORESTRY, <https://www.ldaf.state.la.us/industrial-hemp/> (last visited Dec. 8, 2021).

ENVIRONMENT

The landscaping around the property will also include green infrastructure and resilient design features. First, the property will be landscaped with native plants and other nature-based features that will help to mitigate future flood risks, improve water quality, and integrate natural features in an urban area. Using green infrastructure will support a healthier environment for residents in comparison to typical affordable housing.

Second, the team's landscape architects led by Dana Brown and Associates plan to use other high-quality, permeable, and eco-friendly materials for the property. The proposed design is anticipated to include green infrastructure features like permeable paver systems for the driveway and walkway, and French drains with non-woven geotextile fabric. These features improve stormwater runoff and drainage at the property.¹⁶

The use of hemp for the construction of the house, nature-based features for landscaping, and permeable pavers and French drains for the driveway and walkway represents an overall holistic and thoughtful use of materials for these affordable housing units. The intentional decision to use these materials will only increase the property's resilience to future extreme weather events and represents what well-built affordable housing can actually look like.

Healthy Community Services is based in the same community where the prototype is being built. The organization plans to use this project to bring increased knowledge about the benefits of natural stormwater management to residents and how nature-based solutions can manage water onsite. Through this project, Healthy Community Services seeks to provide tangible opportunities for Seventh Ward residents and other New Orleanians to learn about the different types of flooding in Louisiana and show how people can take steps to adapt to these risks.

COMMUNITY ENGAGEMENT

The project team will use a “work and learn” approach for engagement with the surrounding community. The team will allow community members to be on site during construction and see the housing as it is being built. Then, the team will invite those residents to come back to the housing site after construction has finished to see the property in its completed state. Currently, the team is preparing educational materials to share with the community about this project so they can observe a more resilient way to build homes.

¹⁶ *A Greener Choice: Advantages of Permeable Paving*, UNILOCK, <https://unilock.com/paver-technology/a-greener-choice-advantages-of-permeable-paving/> (last visited Jan. 28, 2022); *What's the Best Landscape Fabric for Draining Water?*, EASTGATE SUPPLY, <https://www.eastgatesupply.com/blogs/articles/what-s-the-best-geotextile-landscape-fabric-for-draining-water-1> (last visited Jan. 28, 2022) (“Non-woven geotextile fabric is the best choice for drainage applications where water flow through (permeability) is the main concern.”).

FUNDING

Because of the current lack of a domestic supply chain for hemp, using hemp-based materials does not necessarily make the overall project cost cheaper. However, if a regional supply chain is created, that may lower costs and hemp may become 10–15 percent cheaper than traditional building components.

For this project, the developer and property owner, Joel B. Holton himself has chosen to absorb the upfront costs associated with the purchase and construction of the duplex. Specifically, he believes that the long-term benefits of using the hemp products and providing affordable housing options for low- to moderate-income residents in his community will outweigh those expenditures. As the property owner, he will also be able to manage rental rates to keep the two units in the duplex affordable.

NEXT STEPS

As of early 2022, the project team is entering the local permitting process with the City of New Orleans–Orleans Parish. The team anticipates the permitting process to take about one to two months. If permitting is completed on schedule, construction could begin as early as the first quarter of 2022 and last about four to six months.

Once the two single-family dwellings in the duplex are built and the housing units are rented out to individuals or families, the project team intends to monitor the resilience investments made in the home to evaluate their long-term costs and efficacy. For example, the team wants to track whether the hemp insulation actually lowers total housing costs and improves the home's indoor air quality. The team will aim to share this information with other community organizations and home developers to inspire future resilient construction in New Orleans and beyond.

CONSIDERATIONS AND LESSONS LEARNED

In the near term, the completed project can provide immediate benefits for future renters of the duplex. Sustainable construction materials will both contribute to a healthier living environment and support lower housing costs that will preserve long-term affordability.

Over the longer term, this project can also be a model for what new quality homes can look like, especially for low- to moderate-income people already facing a lack of safe and quality affordable housing options and also housing located in the Gulf (i.e., a region that has high humidity for long periods of the year). In particular, the use of industrial hemp for home construction can build resilience for individuals and communities. The unique characteristics of hemp can also help people better adapt to the effects of climate change, such as increased flooding events.

Although this project is an example of how industrial hemp can be used to build a new home, hemp can also be included as a part of retrofits in existing homes (i.e., for home repairs and additions). This is especially valuable in Louisiana where homes have been repeatedly devastated by hurricanes and flooding events and repairs are unfortunately frequently needed. In the future, states

and local governments that are facing repetitive loss events could incentivize or provide opportunities to use sustainable or alternative building materials that allow homes to be more resistant to water damage.

Notably, the project team has a proactive vision and commitment to resilience in the Seventh Ward and beyond. Specifically, the duplex and green infrastructure will serve as a demonstration site or “proof of concept” that can educate home developers and builders about resilient design options. This can help to mainstream these concepts into future home construction and retrofits and dismantle negative stigmas often associated with affordable housing. This is a necessary and important investment to show what is possible compared to examples of poorly designed and cheaply built examples of affordable housing, which are common. Other developers and property owners can similarly think about ways to create more resilient home designs that include more environmentally friendly building materials and nature-based features.

Further, regional and local policymakers can make professional commitments to learn about sustainable building materials and the implementation of pilot projects like this one. As such, policymakers can serve as an important government resource and bridge to the development community to encourage the uptake of these ideas in their jurisdictions.

Lastly, the project team’s commitment to overall resilience in the Seventh Ward is an important takeaway. From assembling a project team that is 90-percent composed of BIPOC- and women-owned firms and businesses to using the property as a community learning site for green infrastructure, the characteristics of this project show how diverse partners can work towards inclusive resilience solutions. Here, the housing prototype will add to economic, social, and environmental, in addition to climate and flooding resilience. This is one model other private, government, and nongovernmental project managers alike can emulate in practice.