



Rising Above: **Raise the Roof**

Elevation of Structures in Flood-Prone Louisiana

CENTER *for* PLANNING EXCELLENCE

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Resilience entails reducing economic damage from weather events. **In Louisiana, elevating homes and businesses is key for protecting people, assets, and investment.**

This paper is the second installment of *Rising Above* — a series intended to inform and support ongoing flood recovery efforts and long term resilience-building for communities throughout our state. Produced by the Center for Planning Excellence with support from the Walton Family Foundation, McKnight Foundation, and the Greater New Orleans Foundation, the *Rising Above* series highlights best planning practices and implementation tools that state and local leaders can use within our specific geographic, regulatory, political, and cultural context. **This paper explores what local leaders can do to support the practice of elevating homes and businesses in a manner that benefits property owners and the community as a whole.**

Elevation is not just a coastal solution.

Over the past several decades, development of natural lands has included adding large swaths of paved surfaces, which, rather than absorbing water as the natural terrain once did, forces larger volumes of stormwater runoff into adjacent areas. Furthermore, the National Oceanic and Atmospheric Administration has found that the Southeast U.S. has experienced a 27% increase in "very heavy" precipitation since 1960. Experts predict that the same region will continue to experience more extreme precipitation patterns and longer periods of drought in the future. The combination of these factors is contributing to increased flood risk in areas typically not thought of as flood prone throughout the state. Many of Louisiana's inland subdivisions are now experiencing chronic street flooding and many of our roads become impassable after regular thunderstorms. Within this changed context, Louisiana communities need to re-examine their approach to development and re-discover the benefits of living and conducting business in in raised structures.

If Louisiana communities are to be more resilient and less vulnerable to flood damage, we need to re-evaluate the use of slab-on-grade foundations in future development.

Historically, architecture in Louisiana has responded to perpetual flood risk with raised foundations. However, in the 1950s, lower-cost slab-on grade foundations began gaining popularity as the growth of suburban neighborhoods accelerated, and they are now a common sight in both suburban and rural areas. Slab-on-grade foundations are not well-suited to Louisiana's low-lying lands,

subtropical climate, and high susceptibility to flooding from multiple sources, and they are difficult to elevate retroactively.



Traditional Architecture in Louisiana responds to the climate and geography of the state. The basic form of this architectural style consists of a first floor that is raised above the ground, a roof that is steeply pitched, and tall windows.

In order to use elevation to the greatest community benefit, we must address the cost of retrofitting slab-on-grade buildings, increase the consistency of how we elevate, and improve how we communicate about elevated buildings. Though elevation is the most desired of all small scale, individual risk-reduction measures, it is not implemented as widely as it should be due to high costs and a lack of clear guidelines. Furthermore, current elevation guidelines do not require analyses such as impacts on local hydrology and drainage. Resident input on any elevation guidelines is also needed to ensure that community character is maintained and that elevation creates value for the homeowner and the community.

Elevation is the most popular flood risk reduction strategy - and potentially the most effective.

It is therefore important that elevating buildings is affordable and widely available, and that proven best practices are applied consistently throughout communities to achieve the maximum benefit and value. The recommendations that follow are intended to assist local leaders and the communities that rely upon them to elevate structures to the greatest advantage.

Benefits of Elevation

Elevating existing and new buildings has economic, psychological, and cultural benefits.

- Reduced risk of flooding structures that people and pets inhabit in flood-prone areas
- Effective protection of building contents and person belongings from flood damage
- Lower flood insurance premiums
- Reduced vulnerability to termite damage
- Reduced cost to correct damage from settlement of the ground
- Reduced anxiety and stress related to flood risk
- Continued viability of historic areas
- Preservation of economic, social and cultural community fabric

"I talked to a developer and he wanted to put all the houses on the ground, but because there was no ditch in the back of the property, he was going to have problems. So I talked to him about putting them on piers. That way he can sell it faster and the insurance will be cheaper; he doesn't have to worry about water. He decided that is how the subdivision is going to be developed."

- Darla Duet, Lafourche Parish

Recommendations to Support Elevation of Existing Properties

Adopt Freeboard Ordinance. Though federal, state and local regulations may require minimum elevation height for buildings, property owners should be encouraged to go higher than required (known as "Freeboard.") Demonstrating ways in which the space created by the (additional) elevation can become an asset to the property, such as shaded parking, building access, storage, or any other type of function that still allows the unobstructed flow of water during flood events can serve as an additional incentive.

Identify Priority Elevation Areas. To provide consistency and reduce flood risk for the community as a whole, identify areas in which to focus building elevation efforts. Criteria for prioritization could include magnitude of flood risk, low median income, and the number of homes already elevated in the area. Historic flood patterns and records of previously flooded properties should be made available to help identify priority areas.

Support Funding for Elevation. Pursue and advocate for the funding and implementation of existing grant programs, such as CPRA's Flood Risk and Resilience Program, to fund elevation of homes, preferably at the block level. Identify funding mechanisms for elevation that are independent of disaster recovery funds.

Educate Residents and Businesses about Elevation. Provide property owners with clear and current information regarding best practices and options for elevating homes and businesses. FEMA, the LSU AgCenter, and the Association of Civil Engineers have numerous publications available that provide useful technical information.

In particular, property owners should be aware of their options for bringing slab-on-grade buildings into compliance with applicable height requirements, which include the following proven methods for retrofit elevation:

- Add a second story to serve as primary living space
- Separate the building walls from the slab foundation and construct a new, elevated ground floor
- Elevate the entire house with slab attached

Develop Guidelines for Property Design. Enhance the appearance, durability and value of elevated structures by working with the community to identify landscaping preferences as well as cladding and foundation enclosure options. Guidance should also direct utility placement and provide accessory building options that contribute to curb appeal and neighborhood character.

Case Study: Mandeville Design Guidelines

Concerned about the effects of disparate elevation efforts post-Katrina, Mandeville residents chose not to wait for the next disaster to address the issue. They took a proactive approach resulting in the implementation of a set of community-driven guidelines.

Using the *Louisiana Speaks: Pattern Book*, the City of Mandeville tailored and adopted development and redevelopment standards to maintain the town's historic and traditional character.

The *Design Regulations and Guidelines* offer site-specific adaptation techniques for meeting height and other hazard mitigation requirements and preserving the historic architectural fabric of Mandeville. The result is safer homes, preservation of community character, and strong property values.



<http://tinyurl.com/Mandeville-Design-Guidelines>

Recommendations for Future Development and Redevelopment

As new development occurs and other areas are redeveloped, mechanisms should be put in place to ensure that buildings are elevated as needed - whether it is one foot or 12 feet. These mechanisms should also address curb appeal, value retention, and cultural identity of the respective communities.

To address the flood risk reduction needs now and in the future, we urge local governments to consider the following recommendations and develop guidelines that meet their communities' needs. Many of these recommendations can be included in the municipal code of ordinances to encourage development and redevelopment that minimizes damages and reduces economic losses from flooding in flood prone areas.

Adopt/Update Ordinances to Guide (Re)Development.

To increase safety and reduce economic damage from flooding, a community can adopt ordinances that:

- *Prohibit slab-on-grade-foundation for new construction and prohibit fill as a method of complying with elevation requirements*
- *Require freeboard and use of storm- and flood- resistant building materials as indicated by the International Building Code*
- *Promote elevation of all structures to similar heights to address flood risk comprehensively, maintain community character, and enhance property values*

Comply With and Enforce International Building Code Standards.

Local building codes should - at minimum - reflect International Building Code standards. Local governments must ensure that building codes are enforced for all buildings, including secondary homes. Participating in the Building Code Effectiveness Grading Schedule Program, which assesses the building codes in effect and rates how the community enforces the International Building Code and can earn points towards the Community Rating System to lower insurance premiums.

Work With Community to Develop Guidelines for Property Designs. The guidelines should support flood risk reduction through landscaping and elevation designs that are appropriate for each community, including what the buildings should look like in terms of cladding, accessory structures and utility placement. This will ensure that new development is compatible with existing community character.

Adopt Elevation Standards. Develop and apply community-wide elevation standards that address issues of community character and hydrology.

Establish Value of Elevated Buildings. Engage private sector partners to establish the market value of elevated buildings. That could include working with developers to understand and market the benefits of elevated homes and working with appraisers and Realtor associations to develop a uniform method for assigning value to elevated homes that takes flood risk reduction and the utility of space created by elevation into account.

Support and Inform State Efforts. Parishes and municipalities should be actively engaged to inform the work of the state's Restore Louisiana Task Force that is responsible for overseeing the recovery process subsequent to the 2016 floods. The state Task Force is charged with making recommendations for recovery and redevelopment, coordinating collection of relevant data, identifying sources of funding to support, and presenting a legislative agenda to create the policy framework needed to support recovery efforts. The work of the Task Force is carried out by six work groups focused on different aspects of recovery such as housing, infrastructure, community planning and natural resources.