Keystone Heights

City Improvement Plan

2024

2024
City **Improvement Plan**
A strategic plan for sustainable **GROWTH**

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Title:	Women´s Club
Place:	Keystone Heights, Florida

Introduction & Purpose

While **Keystone Heights** is a small town, we face many of the same challenges that bigger cities face, from flooding to traffic and budget limitations. **Keystone Heights' City Improvement Plan** is all about preserving what we cherish while embracing practical innovations that enhance our way of life. It's not just about flashy technology or climate change jargon—it's about ensuring our town remains a place where traditions thrive, opportunities grow, and neighbors are family.

Stakeholders

Effective planning and execution of our initiatives necessitate collaboration with key stakeholders. These include the North Florida TPO, City Council, and vital partners from Clay County such as Clay Electric, Clay County Utility Authority, and Clay County Government. Additionally, Keystone Airport and Lake Region Economic Development Corporation play integral roles in our planning and implementation process. While the St. Johns River Water Management District is not a conventional stakeholder, their insights on septic-to-sewer conversions, the Black Creek Water Resources Development Project, and funding opportunities have been sought through a dedicated consultation session.

Vision

The **Keystone Heights' City Improvement Plan** highlights the potential for sustainable growth, connectivity, and accessibility by exploring innovative solutions to help us create vibrant centers that seamlessly integrate amenities and recreation within walkable distances for all residents, all while fostering environmental health

Core Objectives

In crafting a city improvement plan, the sheer number of potential avenues and innovations available can be overwhelming. While technology and urban strategies present an astonishing array of possibilities, it is paramount to focus on the core objectives that truly resonate with the community's aspirations and immediate needs.

The **City of Keystone Heights** has established the following

Institute Resilient Zoning & Land Use for Sustainable Growth

→ Reevaluate zoning and land use across **Keystone Heights** to encourage mixed-use development, thus creating the seamless integration of residential, commercial, and recreational spaces.

→ Implement a robust sustainability framework inspired by best practices in growing communities elsewhere across the United States.

→ Prioritize resource management and usage reduction strategies while increasing density and enhancing community integration.

Strengthen Residential Neighborhoods

→ Nurture the identity of single-family residential neighborhoods while fostering connectivity and ready access to amenities, services, and recreation, reinforcing a sense of community in **Keystone Heights**.

Integrate Our Parks

→ Elevate **Keystone Heights'** iconic beach as a symbol of community pride and recreation, fostering a shared sense of identity and connection among residents.

→ Ensure ready, walkable access to our parks for the entire community.

→ Provide park amenities that appeal to all residents.

Mitigate Climate Risk within Our Community

→ Assess potential physical and socioeconomic factors that could contribute to urban and environmental impacts.

→ Identify and implement measures to enhance air and water quality while mitigating urban flooding and heat island effects, contributing to a healthier, more comfortable urban environment.

Title: Friends talking
Place: At Lake Geneva

Existing Conditions

Keystone Heights can leverage existing infrastructure, capabilities, and resources to help us achieve our *Core Objectives*.
This section describes the foundation on which we will build our plan.

Keystone Heights by the numbers

1,488	Population
75%	of the population own their home.
44%	of the population is composed of children and seniors.
25 %	Children (1 to 7 years)
57 %	Adults (18 to 64 years)
19%	Seniors (65 to 85 years)
22	Acres of parks, including beautiful **Keystone Beach Park**.

MEDIAN HOUSEHOLD INCOME

74,580	Nation
61,777	Florida
56,182	Keystone Heights
$168,400	Median property value in **2020.**

U.S. Census Bureau.
2020 Census. www.census.gov/data.html

Square Miles
1.1

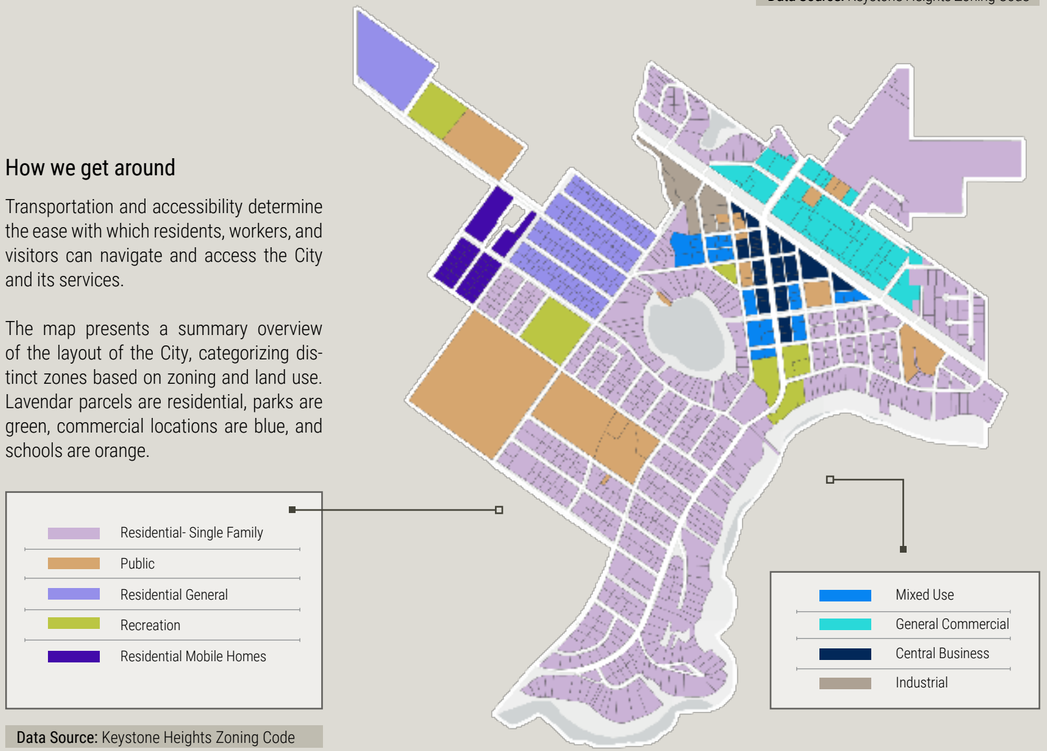
Who we are

Examining demographics ensures that the diverse needs of all population segments are addressed.

How we get around

Transportation and accessibility determine the ease with which residents, workers, and visitors can navigate and access the City and its services.

The map presents a summary overview of the layout of the City, categorizing distinct zones based on zoning and land use. Lavendar parcels are residential, parks are green, commercial locations are blue, and schools are orange.

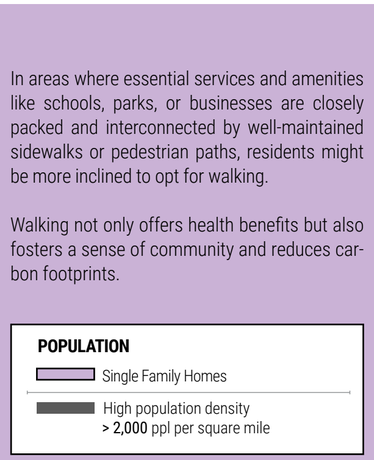


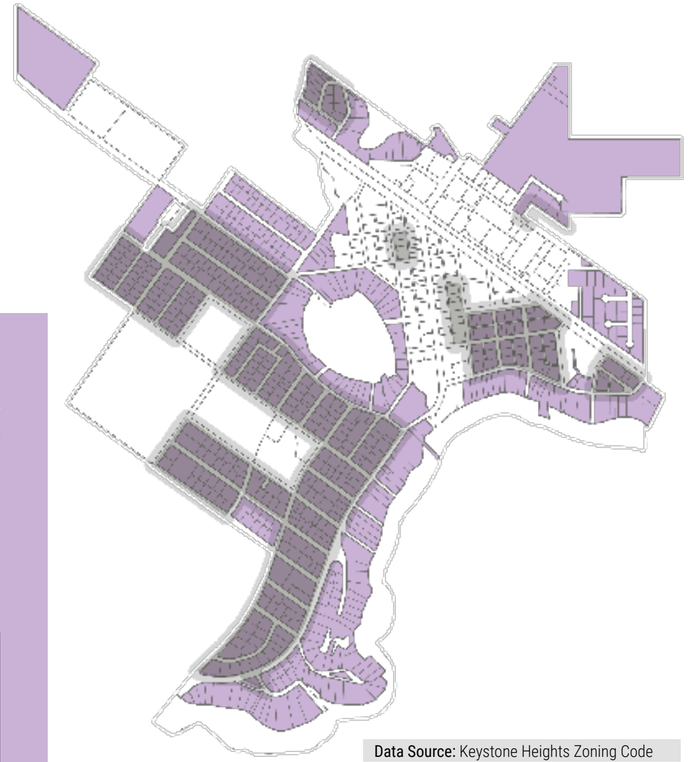
Data Source: Keystone Heights Zoning Code

Data Source: Keystone Heights Zoning Code

In areas where essential services and amenities like schools, parks, or businesses are closely packed and interconnected by well-maintained sidewalks or pedestrian paths, residents might be more inclined to opt for walking.

Walking not only offers health benefits but also fosters a sense of community and reduces carbon footprints.





Data Source: Keystone Heights Zoning Code

On the other hand, driving may be the more viable option for longer distances or in areas where pedestrian infrastructure is lacking or unsuitable. Additionally, factors such as, accesibility time constraints, carrying heavy items, or specific personal or health reasons might make driving a more attractive choice for some individuals.

5.7 Miles of roads without sidewalks
16.3 Miles of roads

- Main Road (class 2)
- Secondary Road (class 6)
- Wide (5ft) sidewalk
- Sidewalk
- Palatka-Lake Butler Bike Trail
- Road without sidewalks

Data Source: Florida Administrative Code Chapter 14-97: State Highway System Access Control Classification System and Access Management Standards.

SERVICES WE VALUE

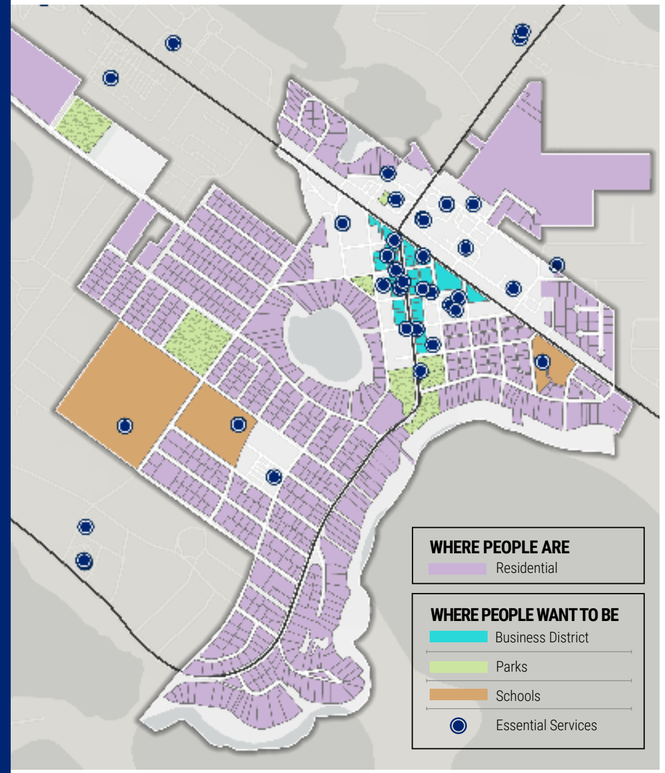
Essential services

Communities thrive when their residents have easy access to the services they value most. Essential services form the backbone of any vibrant community, ensuring that inhabitants can met all of their basic needs without the inconvenience or necessity of traveling long distances, thus enabling a sense of self sufficiency.

Keystone Heights Essencial Services

- **8** Medical Facilities
- **2** Veterinarians
- **3** Banks
- **1** Fire Station
- **3** Law Offices
- **2** Schools
- **1** Library
- **8** Churches
- **1** Post
- **7** Parks
- **1** Grocery store

Data Source: Keystone Heights Zoning Code
Google Maps 2023



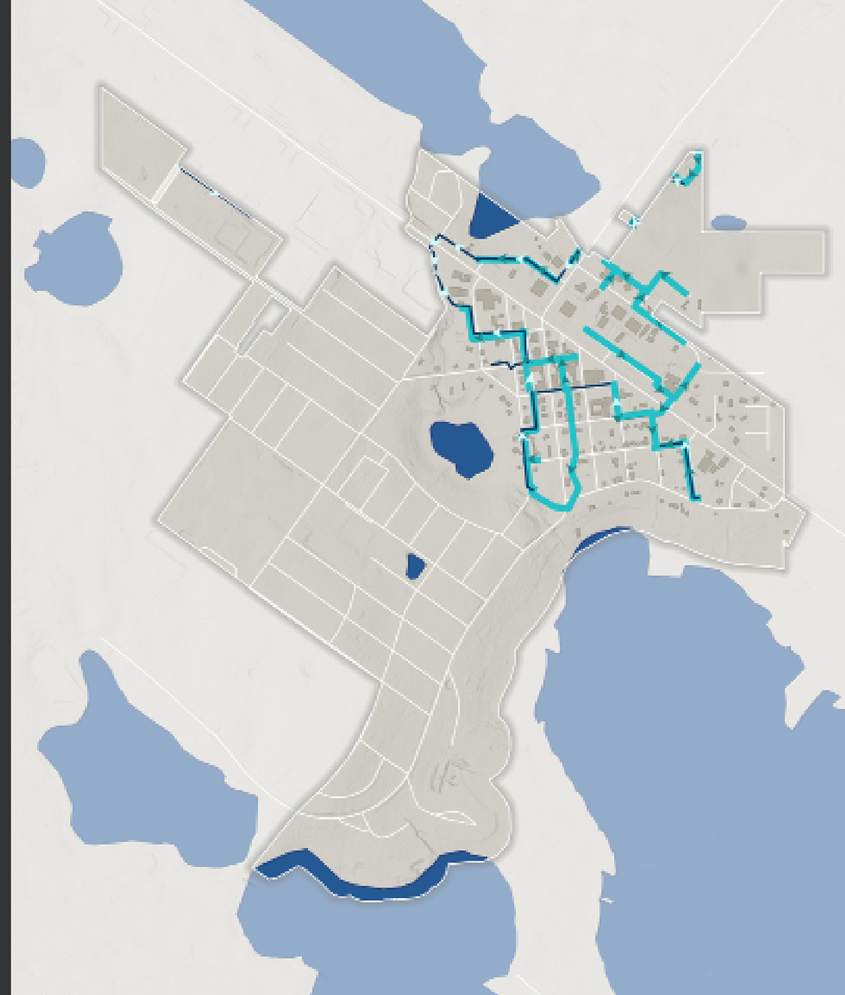
Data Source: Clay Electric

LIGHTING

Lighting plays a crucial role in ensuring access, walkability, and safety in urban and suburban areas. Well-lit streets and pathways enhance visibility at night, reducing the risk of accidents or mishaps for both pedestrians and vehicles.
Moreover, adequate lighting can deter criminal activities, making public spaces more secure and inviting. Ensuring consistent and efficient lighting is therefore essential for promoting pedestrian comfort and safety, and it encourages more people to walk, even after dark, further enhancing the safety and vibrancy of the neighborhood.

Utilities

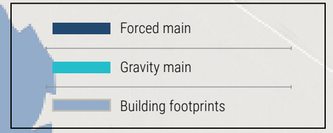
Utilities play a foundational role in the functioning of modern communities, ensuring power, water, and sewer are reliably managed for residents and businesses. Clay County Utility Authority (CCUA) provides sewer and water.



However, sewer service is limited to the commercial area and new development. Residential properties utilize septic systems to manage their waste. Clay Electric provides electricity and the City of **Keystone Heights** manages their own stormwater system.

Where we play

The seven parks within **Keystone Heights** provide more than just spaces for leisure and play. They represent communal well-being, fostering physical health, mental rejuvenation, and social connections between friends and neighbors, and they all offer free wi-fi. A striking 87% of single-family homes are conveniently situated within a 10-minute walk to a park. Such close access underscores **Keystone Heights'** commitment to promoting outdoor activities and ensuring that residents have opportunities for relaxation, recreation, and overall well-being.



Data Source: Clay County Utility Authority

Sunrise Park

Walking time to Sunrise Park from the high school is **20 minutes.**

The distance is **1 mile**.

1 Mile

1 Mile

0.9 Miles

Theme Park

Walking time to **Theme Park** from the high school is **19 Minutes.**

The distances is **0.9 miles** and traverses the busy **SR 21(State Road)**.

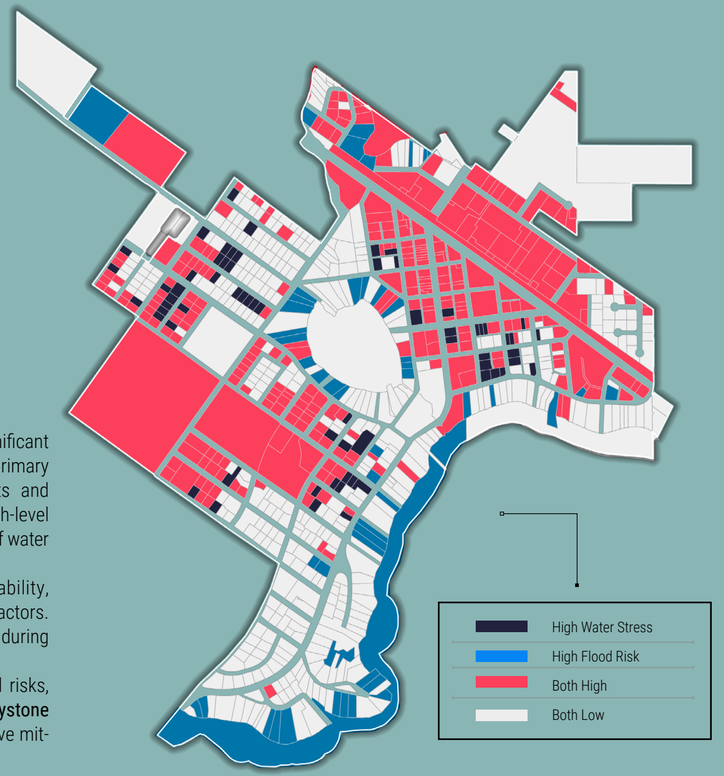
Parks

Schools

Major Roads
Walking Barrier

How our **CLIMATE** affects **US**

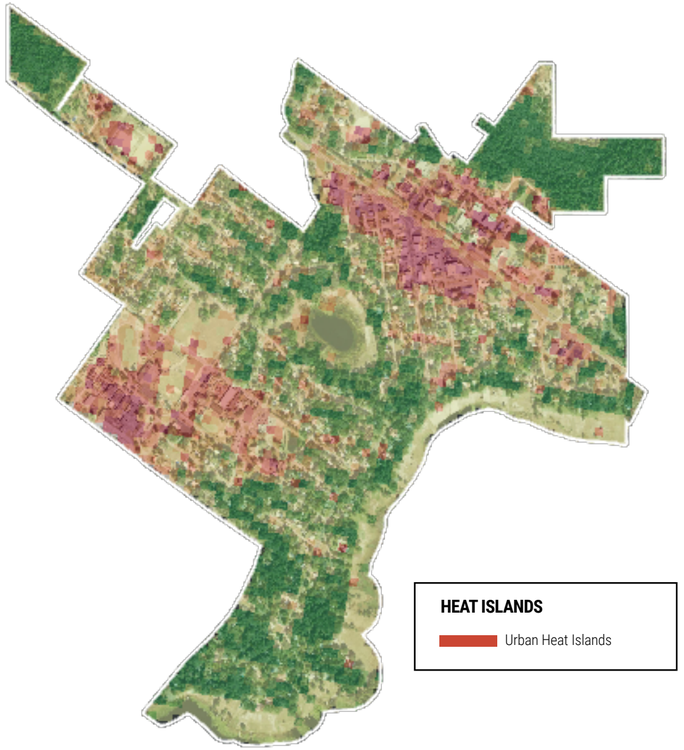
In **Keystone Heights,** climate plays a significant role in everyday life. The city faces two primary environmental issues: heat island effects and storm-related flooding. Implementing a high-level risk index allows us to evaluate the threats of water stress and flooding for individual parcels.
This index considers topography, permeability, vegetation cover, and built environment factors. It identifies areas vulnerable to water stress during dry periods, and those at risk of flooding.
By assessing both isolated and combined risks, the index provides a clear framework for **Keystone Heights** to prioritize and implement effective mitigation measures.

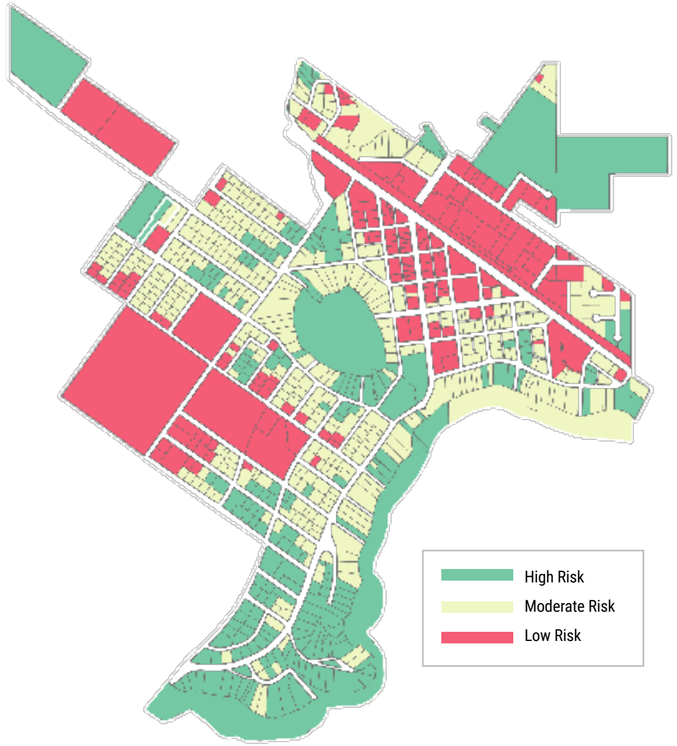


The **HEAT ISLAND** Effect

Heat islands occur when urban areas register higher temperatures than nearby rural areas, mainly because of human-made structures and surfaces. This increase in temperature can raise energy demands and costs.
As illustrated, Heat Islands develop when urban areas consistently experience higher temperatures than their surrounding rural areas.

This temperature difference is primarily due to increased pavement, buildings, and other surfaces in urban settings that absorb and retain heat. Conversely, areas with more tree canopy and vegetation remain cooler because they provide shade and release moisture, which cools the air. In essence, the more concrete and asphalt a place has and the fewer trees and green spaces, the hotter it becomes.





Addressing the Issue

To combat the urban heat island effect in conjunction with managing nuisance flooding, **Keystone Heights** can consider a combination of traditional and green infrastructure solutions. For instance:

- Tree planting initiatives can be introduced, especially in the commercial district, to provide shade and reduce ambient temperatures, while also aiding in the absorption of rainwater.
- Green roofs can be promoted across the city, particularly in commercial buildings, to absorb sunlight, reduce heat absorption, and manage stormwater.
- Rain gardens and bioswales can be integrated into urban landscapes. These not only absorb and filter stormwater but also introduce vegetation that can combat heat buildup.
- For properties near elevation sinks or at the bottom of slopes, vegetated swales can guide water away while also introducing cooling greenery.
- In commercial and paved areas, replacing traditional asphalt or concrete with permeable alternatives or lighter-colored materials can help reflect sunlight, reduce heat absorption, and manage stormwater simultaneously.

Urban **FLOOD RISK**

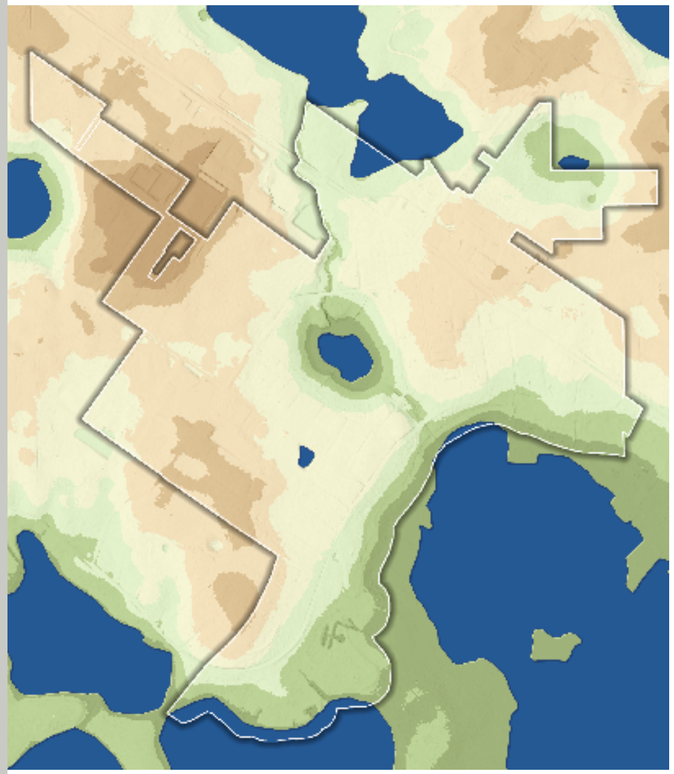
FEMA, the **Federal Emergency Management Agency**, maps flood risk using a process that incorporates hydrologic and hydraulic analyses. They produce **Flood Insurance Rate Maps (FIRMs)** that delineate areas with varying levels of flood risk, including the **100-year** and **500-year** floodplains.

These designations are based on the probability of a flood event occurring within a given time frame. For instance, areas within the **100-year floodplain** have a **1%** chance of flooding in any given year. To create these maps, **FEMA** uses a combination of historical flood data, river flow, storm tides, rainfall, and topographic surveys.

ELEVATION ABOVE SEA LEVEL (ft)

- 89 - 99
- 101 - 114
- 115 - 129
- 130 - 142
- 143 - 153
- 154 - 165
- 166 - 190

Data Source: NASA Earthdata Search



However, while **FEMA's** flood maps provide essential information, they are not always a complete representation of flood risk. Firstly, these maps can become outdated, as they may not always account for recent changes in land use, development, and changing weather patterns. Furthermore, the **100-year** flood designation might give a false sense of security, as it doesn't mean an area will flood only once every **100 years;** instead, it means there's a **1% chance** of flooding each year. Additionally, **FEMA** maps primarily focus on riverine and coastal flooding, often neglecting localized issues like flash floods or urban flooding from overwhelmed stormwater systems.

As a result, relying solely on **FIRMs** can lead to underestimating actual flood risk in a given area. In the case of **Keystone Heights**, **FEMA** identifies flood risk primarily adjoining **Keystone Lake** and **Geneva Lake**, which have been several feet below their natural water levels for decades and certainly do not exhibit the level of risk **FEMA** indicates.

On the other hand, and as mentioned above, **FEMA** maps miss the urban flood risk that so many communities face. Urban flooding in **Keystone Heights** can be attributed to several factors, including impervious surfaces, a lack of vegetation, and the area's elevation changes.

Impervious surfaces, like concrete and asphalt, prevent rainwater from being absorbed into the ground. Instead, the water runs off these surfaces quickly, leading to a higher volume of surface water than the natural drainage systems can handle.

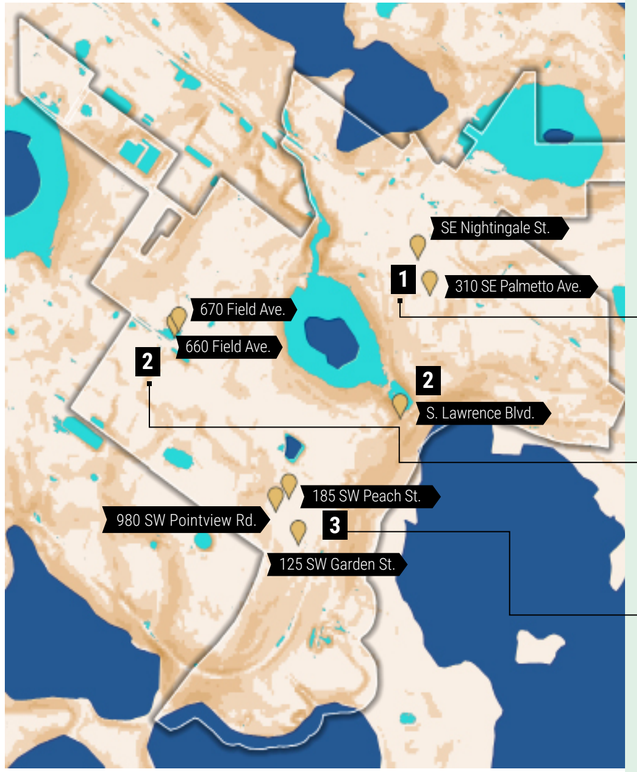
The absence of sufficient vegetation exacerbates the problem, as plants and trees not only absorb water but also slow its flow, reducing the risk of flooding. Additionally, elevation changes in **Keystone Heights** can direct water flow toward low-lying areas, pooling it in places ill-equipped for rapid drainage. Together, these factors can make certain locations within **Keystone Heights** susceptible to flooding, especially during heavy storms.

Examining static parameters, such as soil type, proximity to surface water, land use and land cover, tree canopy, and elevation, among others, provides a comprehensive overview of flood and heat risk in **Keystone Heights**. These parameters, when analyzed collectively, highlight areas that are more susceptible to these challenges. Nuisance flooding can lead to property damage, traffic disruptions, and increased maintenance costs.

Within **Keystone Heights**, certain properties are particularly susceptible to this nuisance, or urban, flooding.

Commercial District Properties: Two properties in the commercial district, as indicated in the northeast section of the provided figure, regularly experience urban flooding. This vulnerability can be attributed to several factors:

- **Impervious Surfaces:** The dominance of concrete and asphalt in commercial areas reduces the ground's ability to absorb water. When rainwater can't infiltrate the ground, it tends to accumulate on surfaces, leading to flooding.
- **Lack of Tree Canopy:** Trees play a pivotal role in intercepting rainwater, reducing runoff, and promoting infiltration. The commercial district's sparse tree canopy offers little help in managing stormwater runoff.
- **Inadequate Drainage:** The area's drainage system might not be equipped to handle large volumes of water in a short period, contributing to the flooding issue.



Elevation Sinks
Water Bodies

SLOPE

0 - 2 °
2 - 10
10 - 15 °

1 Commercial District
Highly paved surfaces, in combination with poor drainage, contribute to flooding.

2 Elevation Sinks
Areas where water accumulation is likely because these depressions have no outlet for water.

3 Flat Topography
Even though water was an outlet in this area, a change in slope increases the likelihood of flooding.

Data Source: NASA Earthdata

Properties with Elevation Sinks:

Three properties exhibit a unique topographical challenge: they are either located within or adjacent to elevation sinks. An elevation sink is essentially a depression in the ground where water accumulates because there's no clear path for it to drain. In these areas, water tends to pond, creating marshy conditions and potentially damaging properties over time.

Southernmost Properties:

The two properties at the southernmost end face flooding due to their geographical position. These properties are situated on a relatively flat terrain adjoining a sloping area to the west. When it rains, water flows down this slope, accumulating in the flat region adjacent to these properties. The flat topography means water can remain stagnant for extended periods, slowly discharging, and often leading to prolonged waterlogging.

Addressing the Issue

To combat nuisance flooding in these areas, **Keystone Heights** can consider a combination of traditional and green infrastructure solutions. For instance:

- Retention and detention basins can be strategically placed to temporarily hold and slowly release stormwater, preventing sudden overflows.
- Green roofs and rain gardens can be promoted in the commercial district to absorb rainwater and reduce runoff.
- For properties near elevation sinks or at the bottom of slopes, strategic regrading can help direct water away from vulnerable areas.
- In commercial areas, adding stormwater drainage and replacing traditional concrete with permeable alternatives can help manage stormwater.

Strategic Focus Areas

The **Core Objectives** summarized previously, as well as existing conditions in the City, set the foundation for our city improvement plan. From these objectives, we have identified key Strategic Focus Areas to direct our resources and actions. These areas are crucial, ensuring every initiative we take aligns with our main objectives.

Each focus area connects with the others for a comprehensive approach. The following sections break down each focus area, discussing its importance and the steps we'll take to address it within our City's overall transformation.

01 Focus Area

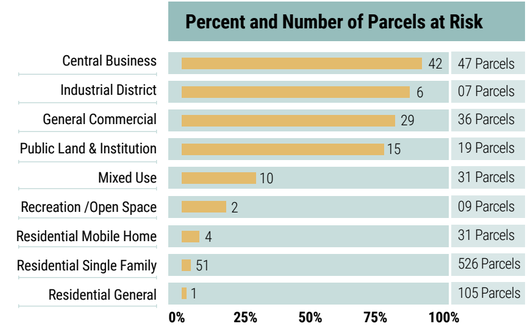
Establish a Zoning Code that Supports Resilient Growth

Establishing a zoning code that supports resilient growth is a cornerstone of fostering a thriving and adaptable community. Such a code not only shapes the physical landscape, but it also helps ensure that our community is prepared to navigate the challenges posed by an ever-changing environment.

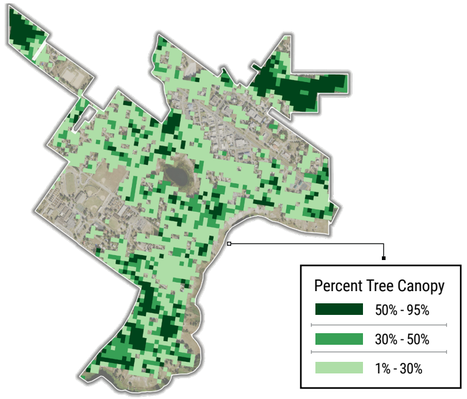
We compared the number of high-risk parcels to the City's zoning codes to better understand what factors contribute to or enhance the risk of flooding, water stress, and heat islands in **Keystone Heights**.

The commercial areas, including the Central Business District and General Commercial, exhibit the highest risk, and therefore the greatest opportunity to implement beneficial changes.

Zoning Type	Percent of parcels in "**All High**" category
Central Business	**89%**
Industrial District	**86%**
General Commercial	**81%**
Public Land & Institution	**79%**
Mixed Use	**32%**
Recreation/Open Space	**22%**
Residential Mobile Home	**13%**
Residential Single Family	**10%**
Residential General	**1%**



More traditional land use policies and practices have increased many communities' susceptibility to climate risks, including heat islands and flooding. For example, impervious surfaces—which can include roofs, driveways, roads, and parking lots—that cover more than 50% of land area significantly increase exposure to flooding because stormwater can no longer infiltrate. Additionally, these same surfaces absorb heat and create heat islands in urban and suburban areas, increasing daytime temperatures about 7°F higher than in outlying areas and nighttime temperatures about 5°F higher.



Data Source: National Land Cover Database

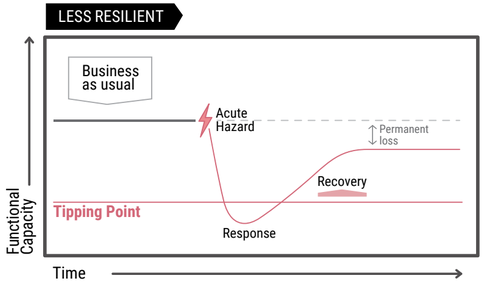


Image Source: U.S. Climate Resilience Toolkit

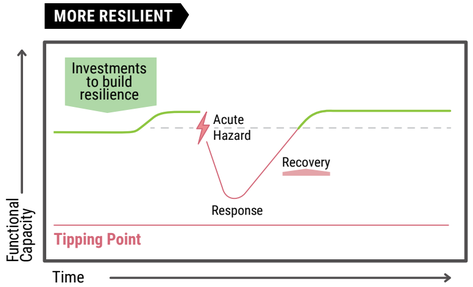


Image Source: U.S. Climate Resilience Toolkit

By integrating mixed-use zoning policies, as well as requirements for minimum tree canopy, greenspace with native plants, and nature-based solutions to manage heat, water usage, and stormwater runoff, the City of **Keystone Heights** will facilitate climate resilience, sustainable growth, and long-term stability and community health.

Challenges

Striking a balance between economic development and environmental preservation requires thoughtful consideration to ensure that the integration of new developments align with the character of existing neighborhoods, while also mitigating current risks associated with congestion and climate. Additionally, addressing potential resistance from residents and other stakeholders accustomed to a traditional zoning pattern can pose hurdles to adoption; however, building climate resilience into our community only enhances our ability both to resist and to bounce back from disasters.

Opportunities

Upgrading the zoning code presents a unique opportunity to reinvigorate the City of **Keystone Heights** by integrating sustainable design and infrastructure into development goals, mitigating climate risk, and creating a vibrant, active, and walkable community.

Additional opportunities include the following:

01 Reduced traffic congestion

02 Accessible amenities and services within easy reach

03 Reduced carbon emissions

04 Minimized vulnerability to extreme weather events

05 Higher property values

06 Greater economic stability

07 Enhanced quality of life for residents and visitors

08 Improved walkability

Goals & Outcomes

Focus Area 1 allows us to do the following:

01
Maximize land use and ecosystem services

02
Actively enhance walkability and accessibility

03
Anticipate future risks, such as pandemics or climate disasters

04
Promote sustainable infrastructure and design practices

05
Encourage mixed-used development

Enhanced Urban Design

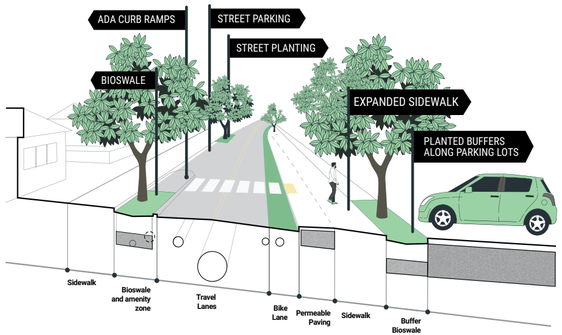
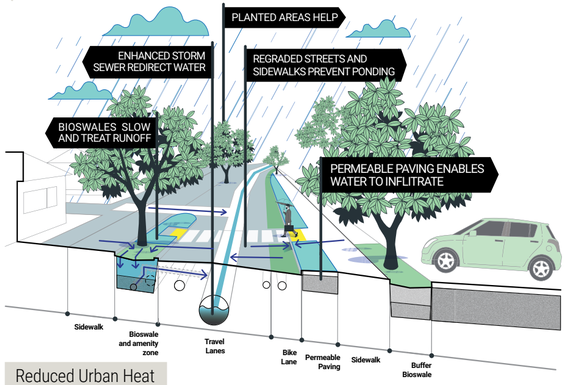
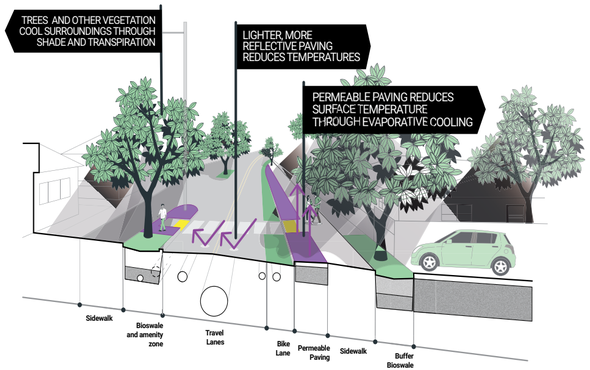


Image Source: Resilient Jacksonville 2023

Improved Stormwater Management



Reduced Urban Heat



Strategies

To establish zoning that supports resilient growth in **Keystone Heights**, the city will adopt a multi-faceted approach that utilizes innovative tools and partnerships to drive positive change.

Green Streets

1. Using the zoning, land use, and associated risk analyses provided as part of this Master Plan, reevaluate existing vs. alternative/resilient zoning approaches as they relate to land use and climate risk. **Appendix A** provides a series of recommendations to make the zoning code more conducive to walkability and climate resilience.

2. Require all ROWs to incorporate wider sidewalks and street trees 20 to 40 feet apart for continuous canopy. All streetscapes, including trees and stormwater swales, should be designed and planted according to industry best practices.

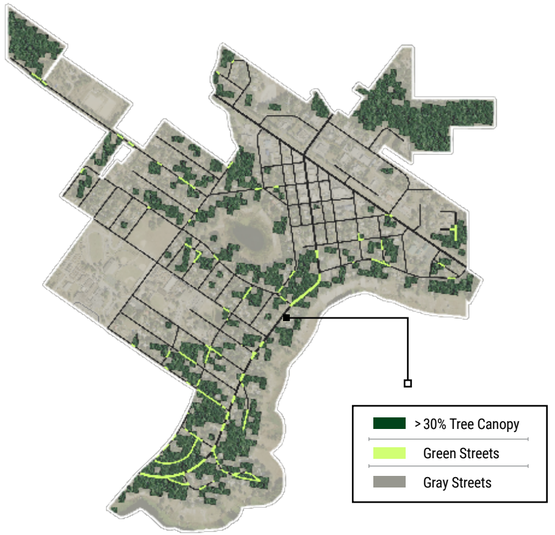
3. Utilize smart sensing/IoT technologies to monitor weather, flooding, and temperature in public ROWs to monitor pre- and post-improvement conditions.

Objectives Addressed

1 Institute Resilient Zoning & Land Use for Sustainable Growth

2 Strengthen Residential Neighborhoods

3 Mitigate Climate Risk within our Community



Data Source: National Land Cover Database

Implementation Timeframe

Immediate | Short-Term | **Medium-Term** | Long-Term

Relative Cost

$ 10,000s | **$ 100,000s** | $ 1,000,000s | > $10M

Resilient Development Showcase

1. Identify and incorporate best management practices and lessons learned when implementing similar zoning modifications in other communities across the United States, such as setback, pervious surface, and native landscaping requirements

2. Pilot a series of sustainable practices at the airport, the new government building, and in new developments by integrating updated zoning requirements and incorporating green infrastructure, energy efficient designs, water reuse, and flood/heat-resistant construction. The showcase(s) can be used to pilot new technologies and highlight effective techniques for resilient growth throughout **Keystone Heights** and Clay County.

3. Highlight and incentivize sustainable practices to mitigate impacts identified using insights from IoT and software solutions designed to monitor reductions in resource usage/generation (i.e., smart lighting/temperature solutions for building interiors, graywater irrigation, or reduced stormwater runoff through implementing a bioswale).

Objectives Addressed

1. Institute Resilient Zoning & Land Use for Sustainable Growth
2. Strengthen Residential Neighborhoods
3. Mitigate Climate Risk within our Community

Implementation Timeframe

Immediate | Short-Term | Medium-Term | **Long-Term**

Relative Cost

$ 10,000s | $ 100,000s | **$ 1,000,000s** | > $10M

Climate Adaptation Toolkit & Tracking

1. Using the zoning, land use, and associated risk analyses provided as part of this Master Plan, identify and prioritize locations across the city that are at a higher risk than others for flood and heat islands.

2. Identify nature-based solutions that are both effective and sustainable, and determine appropriate actions according to development density, land use, property value, and impervious surface:

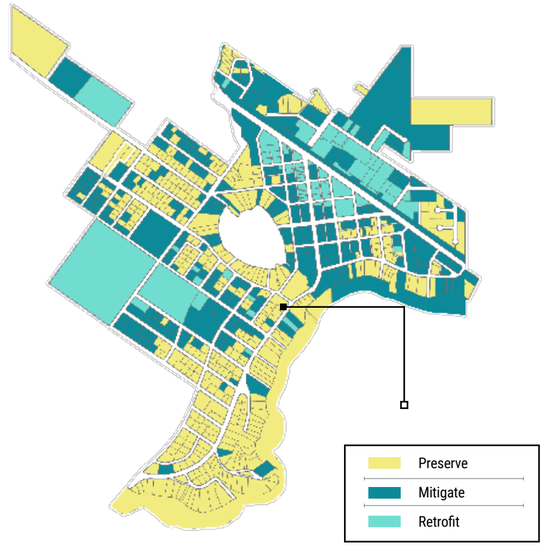
- **a. Preserve:** Recognize areas that are best left undisturbed, ensuring they continue to serve as natural buffers and habitats.
- **b. Mitigate:** Identify regions where interventions can reduce the adverse effects of climate risks.
- **c. Retrofit:** Pinpoint areas that can be enhanced or transformed to better withstand future climate challenges.

3. Utilize smart sensing/IoT technologies to monitor weather, flooding, and ambient temperature in public ROWs to monitor pre- and post-improvement conditions

4. Offer an accessible toolkit for property owners and local business owners that offers guidance on integrating climate-resilient features into their homes and businesses. Leverage partnerships with local organizations to provide expertise and resources. Utilize the information provided within the U.S. Climate Resilience Toolkit.

Objectives Addressed

1. Institute Resilient Zoning & Land Use for Sustainable Growth
2. Strengthen Residential Neighborhoods
3. Mitigate Climate Risk within our Community



Implementation Timeframe

Immediate | **Short-Term** | Medium-Term | Long-Term

Relative Cost

$ 10,000s | $ 100,000s | $ 1,000,000s | > $10M

02 Focus Area

Design Healthy, Vibrant, & Walkable Communities

In the design and planning of communities, a transition often occurs from natural settings to dense urban cores. **"Focus Area 2: Design Healthy, Vibrant, and Walkable Communities"** evaluates the importance of creating communities that both recognize this gradient and prioritize the health and well-being of their residents. By emphasizing walkability, these designs encourage physical activity, foster social interactions, and reduce dependence on vehicles. This section explores the principles and strategies to achieve such communities, ensuring that they are both vibrant and sustainable for generations to come.

Flexible zoning disrupts the usual progression from natural settings to dense urban cores. Instead of strictly designating areas for specific uses, flexible zoning allows for a mix of residential, commercial, and recreational spaces in proximity to one another. This fosters walkable communities by reducing the need for long commutes.

To achieve walkable communities, we can take steps like:

- Implementing mixed-use developments
- Prioritizing pedestrian pathways over car-centric designs
- Creating safe crosswalks and intersections
- Including green spaces within urban planning
- Ensuring public services and amenities are easily accessible on foot

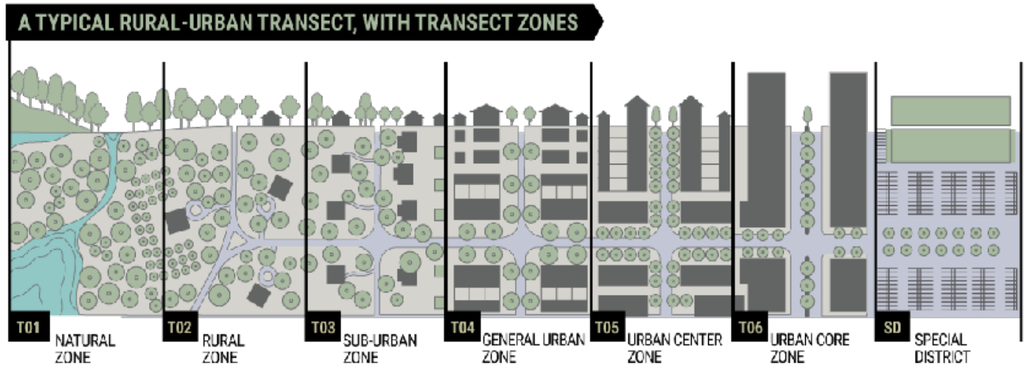


Image Source: Center for Applied Transect Studies

But simply making a community "walkable" doesn't necessarily mean people will walk. Creating an enjoyable experience facilitates the goal of walkability. Adequate lighting ensures safety during nighttime and reduces the risk of accidents. Tree canopies provide shade, reducing the heat and protecting pedestrians from direct sunlight, making walking more pleasant. Wide sidewalks cater to both pedestrians and those with mobility aids, and benches offer resting spots.

Simple amenities like trash bins and clear signages improve the overall walking experience. Public art can add joy and color to the neighborhood. Additionally, ensuring that there's a mix of residential, commercial, and recreational spaces within walking distances reduces the need for long commutes and makes the community more vibrant and functional.

Designing health and vibrant communities goes beyond walkability, however. It includes providing accessible parks that meet the needs of residents and visitors, ensuring healthy air and water quality, enhancing natural areas, and aligning below ground infrastructure upgrades, e.g., converting septic systems to sewers, while integrating pedestrian-friendly designs for the overlying infrastructure.

Challenges

Creating a walkable community in a community that was initially developed in 1925 has its challenges because we cannot start from scratch; we must integrate any changes within the existing properties and rights-of-way. A number of related challenges follow:

- **Infrastructure Limitations:** Much of **Keystone Heights** has narrow sidewalks, and some areas have no sidewalks at all. Retrofitting both above- and belowground infrastructure can be costly and disruptive. However, the City can collaborate with urban planners and engineers to design efficient retrofitting solutions and learn from prior successes (and failures). Temporary installations or "pop-ups" can be used to test out new designs before making permanent changes.

- **Land Ownership Issues**: Acquiring land or rights-of-way to expand or add pathways might face resistance from property owners. Potential solutions include offering incentives, such as tax breaks or public recognition, to those who support walkability projects. Easements can also allow public access without changing land ownership.

- **Existing Traffic Patterns:** Changing road configurations to prioritize pedestrians can impact vehicular traffic and might be met with opposition from drivers. Opposition can be countered by educating the public on the benefits of pedestrian-friendly zones, such as reduced traffic congestion and increased business for local shops.

Funding Constraints: Budget limitations can hinder the implementation of comprehensive walkability projects and sewer conversions. However, FDOT funding is available to install sidewalks, partnerships with the CCUA will be critical, additional grant programs may also be utilized, and alternative financing programs are also available.

Maintenance Concerns: Updated parks and new pedestrian areas require upkeep, and there might be concerns about who will manage and fund ongoing maintenance. However, community groups and local businesses could volunteer to maintain specific areas. The City could also consider creating a dedicated fund for the upkeep of parks and pedestrian areas, funded by a portion of local taxes or business fees.

Safety and Security: Introducing pedestrian areas and tree canopy might raise concerns about safety, requiring additional measures like improved lighting or increased police presence. Increasing lighting is a component of creating a positive walking experience and will be addressed as part of the overall plan, and park vegetation can be designed to enhance visibility.

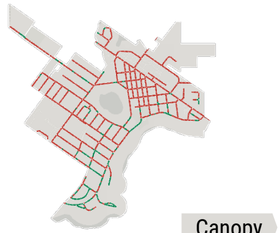
Opportunities

By creating a walkable community, **Keystone Heights** prioritizes local pedestrian access and safety over vehicular traffic, leading to a range of social, economic, and environmental benefits.

By emphasizing walkability, the City can create an environment that encourages social interactions, boosts the local economy, and promotes healthier lifestyles.

Additional opportunities include the following:

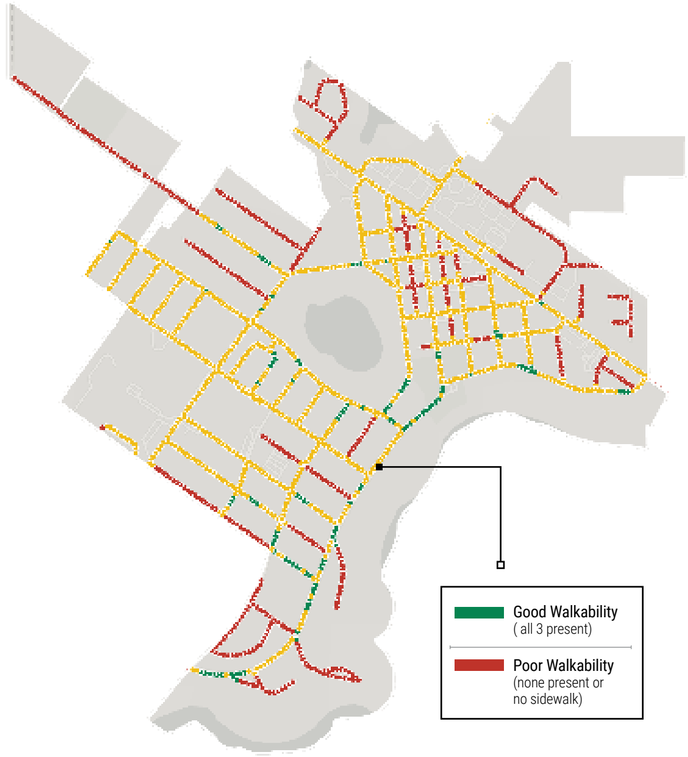
- Economic growth through increased foot traffic
- Improved health through increased walkability and improved air and water quality
- Environmental benefits via reduced emissions from cars and releases from septic systems
- Social connectivity among residents and local businesses
- Enhanced safety with reduced vehicular traffic
- Increased property values
- Reduced transportation costs
- Enhanced aesthetics



Canopy

Streetlights

Sidewalks



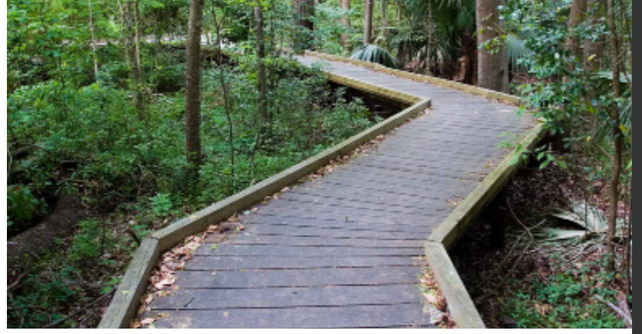
Goals & Outcomes

Focus Area 2 allows us to do the following:

- Promote physical activity and reduce health issues related to sedentary lifestyles.
- Strengthen the local economy by increasing foot traffic to local businesses, thereby generating higher revenue and attracting new enterprises.
- Reduced environmental impact by reducing the dependency on personal vehicles for short trips, thus reducing carbon emissions, pollution, traffic congestion, and accidents.
- Improved resilience by reducing the likelihood of septic system failures and associated impacts to the lakes and adjoining waterways and integrating sustainable technologies in parks and ROWs.
- Improved safety and security by prioritizing pedestrian safety and, as above, reducing the dependency on personal vehicles for short trips, thus reducing accidents.
- Enhanced community engagement by creating public spaces where residents and business owners can interact and engage, creating a greater sense of **Keystone** among residents.

Strategies

The following subsections discuss several strategies the city can adopt to design communities that are healthy, vibrant, and walkable.



Connected Corridors with Upgraded Street Lighting

- **1.** Assess and identify key corridors that lack sufficient lighting or have outdated fixtures. Install pedestrian-focused lighting in areas with foot traffic to enhance safety, and replace original lighting with energy-efficient LED streetlights at consistent intervals along all pedestrian corridors.
- **2.** Identify and bridge gaps in existing pedestrian and cycling infrastructure, ensuring continuous pathways between residents and parks and services. Gaps include barriers, no sidewalks, and, in some cases, narrow sidewalks, where residents and business owners can interact and engage, creating a greater sense of **Keystone** among residents.
- **3.** Prioritize and develop safe crossings at major intersections and similar pedestrian obstacles. Examples include (but are not limited to) pedestrian refuge islands and crosswalk visibility enhancements. These are examples of proven pedestrian safety countermeasures recommended by the Federal Highway Administration.
- **4.** Implement wayfinding signage and interactive kiosks to guide residents and visitors between key destinations.

Objectives Addresed

1. Institute Resilient Zoning & Land Use for Sustainable Growth
2. Strengthen Residential Neighborhoods
3. Mitigate Climate Risk within our Community

Implementation Timeframe

Immediate | Short-Term | **Medium-Term** | Long-Term

Relative Cost

$ 10,000s | $ 100,000s | **$ 1,000,000s** | > $10M

Unified Park System

- Create a Parks Master Plan that (1) maps and links existing parks and green spaces to create a continuous network for residents to navigate, and (2) standardizes park amenities and signage for a cohesive look and user experience across all parks. This Parks Master Plan is in progress.
- Implement a series of smart parks technologies, such as (1) lighting that adjusts based on time of day and activity level, (2) interactive kiosks that provide information about the park, local flora and fauna, and upcoming community events, and (3) solar panels to power park infrastructure during power outages.
- Incorporate nature-based stormwater management solutions to reduce flooding and filter pollutants, focusing on native plant species that can thrive in local weather conditions.
- Install shaded structures and water features, and plant tree canopies in strategic locations, to offer relief on hot days without limiting visibility.

Objectives Addressed

1. Institute Resilient Zoning & Land Use for Sustainable Growth
2. Strengthen Residential Neighborhoods
3. Mitigate Climate Risk within our Community

Implementation Timeframe

Immediate | Short-Term | **Medium-Term** | Long-Term

Relative Cost

$ 10,000s | **$ 100,000s** | $ 1,000,000s | > $10M

Septic-to-Sewer Conversion

- Conduct a comprehensive survey of the **496** homes with existing septic systems, pinpointing areas most in need of conversion based on age, vulnerability, and environmental risk.
- Work with key stakeholders to identify larger watershed or regional initiatives that promote water quality. This can amplify the benefits of the septic-to-sewer conversion by integrating it into a broader context of water management and environmental protection.
- Evaluate capacity at the sewer treatment plant. Expand the reach of the municipal sewer network to areas currently not served, ensuring accessibility for all properties. If possible or appropriate, combine belowground work and resurfacing with updates to streetscapes.
- Launch campaigns to educate residents on the benefits of septic-to-sewer conversion, including environmental advantages (especially as lake levels rise with the completion of the Black Creek project) and potential property value increases.

Objectives Addressed

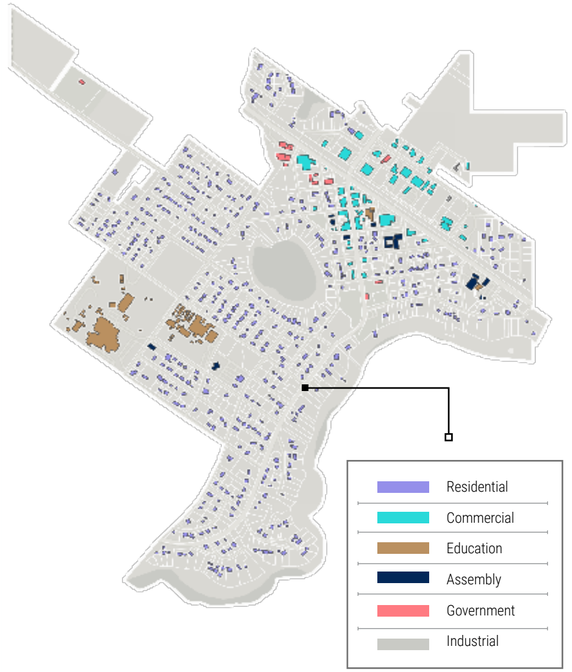
1. Institute Resilient Zoning & Land Use for Sustainable Growth
2. Strengthen Residential Neighborhoods
3. Mitigate Climate Risk within our Community

Implementation Timeframe

Immediate | Short-Term | Medium-Term | **Long-Term**

Relative Cost

$ 10,000s | $ 100,000s | $ 1,000,000s | **> $10M**



Data Source: FEMA Geospatial Resource Center: USA Structures

03 Focus Area

Integrate Innovative Technologies to Streamline Operations

Integrate innovative technologies to streamline operations, automate routine tasks, and optimize resource allocation, ensuring the city's efficient functioning. In other words, work smarter, not harder.

By streamlining operations, the city can accomplish tasks in a faster and more straightforward manner, reducing the time taken for processes and eliminating potential bottlenecks. Automation of routine tasks means that repetitive and time-consuming tasks can be handled by software solutions, which enables staff to focus on more complex issues while also reducing labor costs and avoiding potential human errors.

And perhaps most importantly, streamlined and efficient operations usually result in better service delivery to the citizens. Faster response times, improved communication channels, and more accurate services can significantly enhance a citizen's experience.

The phrase "work smarter, not harder" encapsulates the essence of these points. Instead of increasing manpower or hours to meet demands, **Keystone Heights** can leverage technology to achieve better results with the same or even fewer resources. This approach is not only cost-effective but also ensures that the City remains adaptable and responsive to its residents.

Challenges

Integrating innovative technologies to streamline operations presents a set of challenges that cannot be overlooked. Firstly, there's the initial financial burden; high-quality technologies often come with high costs, both for the technology itself and for training personnel to use it effectively. This training period can also lead to temporary drops in productivity as employees adjust to new systems. Furthermore, integrating new tech can sometimes result in compatibility issues with legacy systems, necessitating further investments in upgrades or bridging software.
There's also the risk of technology becoming quickly outdated in our rapidly advancing digital age, leaving organizations in a constant cycle of catch-up. Lastly, while technology can streamline operations, it also introduces vulnerabilities. Cybersecurity threats become a concern, requiring additional resources to protect sensitive information and ensure uninterrupted service. However, in the long run, the efficiencies gained, improved service quality, and resource optimization far outweigh the initial challenges, driving the City toward a sustainable and economically viable future.

Opportunities

Integrating innovative technologies into organizational operations offers a plethora of opportunities that can redefine the way the City operates by enhancing efficiency across departments.

Additional opportunities include the following:

- Enhanced resident experience
- Data-driven decision making
- Scalability
- Future-proofing

Goals & Outcomes

Focus Area 3 allows us to do the following:

- Enhanced service delivery by offering quicker, more reliable services to residents.
- Sustainable growth by managing resources more effectively.
- Informed decision-making based on accurate data captured across the community.
- Cost savings through routine task automation and optimized resource allocation.
- Improved communication within the City and between the City and its residents.
- Elevated reputation through the City's demonstration as a leader in technological adoption, thus attracting talent and partnerships.

Strategies

The following subsections discuss several strategies the City can deploy to integrate innovative technologies within its day-to-day operations.

Digital Twin

- 1. Gather detailed and comprehensive data on the city's physical assets, infrastructure, operations, and population dynamics. This could involve sensors, geospatial mapping, and other data-gathering tools and techniques.
- 2. Use the collected data to create a virtual model of the city in GIS. This model should represent all critical aspects of the City, including its buildings, roads, utilities, and natural features.
- 3. Establish a unified framework and standards for the digital twin. This ensures consistency in data representation, scalability for future expansions, and compatibility with potential external systems or platforms.
- 4. Once the digital twin model is established, validate its accuracy against the real-world City layout and operations. This involves cross-referencing the digital model with existing City records, on-ground surveys, and expert reviews to ensure it is a true and reliable representation of the city's physical state.

City of Keystone Heights - Asset Dashboard

07	Parks	**13.4**	Sidewalks (Miles)
83	Park Amenities	**10.9**	Markings (Miles)
05	Park Structures	**15**	Pavement (Miles)
45	Benches	**142**	Lights
03	Playground Equipment	**23**	Trashcans
1,000	Trees	**152**	ADA Ramps
21	Supports	**380**	Signs
06	Facilities		

Objectives Addresed

1. Institute Resilient Zoning & Land Use for Sustainable Growth
2. Strengthen Residential Neighborhoods
3. Mitigate Climate Risk within our Community

Implementation Timeframe

Immediate | Short-Term | Medium-Term | Long-Term

Relative Cost

$ 10,000s | $ 100,000s | $ 1,000,000s | > $10M

Automated Asset Management

- **1.** Integrate the City's digital twin with the asset management system, ensuring real-time visualization and understanding of asset conditions, locations, and interdependencies.
- **2.** Utilize the data from the digital twin to anticipate when assets might fail or require maintenance. Shift from reactive to proactive interventions, scheduling repairs before breakdowns occur.
- **3.** Use the digital twin to simulate the impacts of different asset management decisions, allowing City officials to make more informed, data-driven decisions.
- **4.** Automate the extraction of asset usage, maintenance, and performance data from the digital twin for annual reporting purposes. This streamlines the process of documenting the City's asset health, utilization rates, and maintenance activities, ensuring stakeholders are informed about infrastructure performance and areas of improvement.

Objectives Addresed

1. Institute Resilient Zoning & Land Use for Sustainable Growth
2. Strengthen Residential Neighborhoods
3. Mitigate Climate Risk within our Community

Implementation Timeframe

Immediate | Short-Term | Medium-Term | Long-Term

Relative Cost

$ 10,000s | $ 100,000s | $ 1,000,000s | > $10M

City-Wide Information Exchange

- **1.** Develop an online registration portal where residents can sign up to receive notifications via text or email. This platform will allow users to choose their preferred communication method and specify the types of non-emergency notifications they want to receive.
- **2.** Establish a separate system that sends out emergency alerts to all residents, irrespective of their opt-in status, ensuring that critical information reaches everyone in times of urgent need.
- **3.** Allow residents to select specific categories of interest (e.g., community events, road closures, City council meetings) so they receive only the information that's relevant to them.
- **4.** Incorporate a feedback loop within the notification system, allowing residents to provide input on the relevance and frequency of notifications, ensuring continuous improvement.
- **5.** Ensure the notification system adheres to privacy standards, keeping residents' contact information secure and using it solely for the purpose of disseminating City information.

Objectives Addresed

1. Institute Resilient Zoning & Land Use for Sustainable Growth
2. Strengthen Residential Neighborhoods
3. Mitigate Climate Risk within our Community

Implementation Timeframe

Immediate | Short-Term | Medium-Term | Long-Term

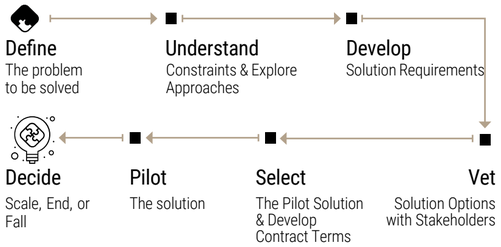
Relative Cost

$ 10,000s | $ 100,000s | $ 1,000,000s | > $10M

Innovation Pilot Program

- **1.** Draft a clear set of guidelines and criteria that determine which innovative projects qualify for the pilot program, ensuring alignment with the city's strategic goals and objectives.
- **2.** Allocate an annual budget specifically for the innovation pilot program, ensuring consistent financial support for testing new ideas.
- **3.** Partner with local universities, tech companies, and community organizations to brainstorm, develop, and test innovative solutions that cater to the city's unique challenges and opportunities.
- **4.** Regularly communicate and celebrate the successes of the pilot projects through city newsletters, local media, and community events, encouraging more innovative ideas and fostering a culture of continuous improvement.

Pilot Project Lifecycle



Objectives Addresed

1. Institute Resilient Zoning & Land Use for Sustainable Growth
2. Strengthen Residential Neighborhoods
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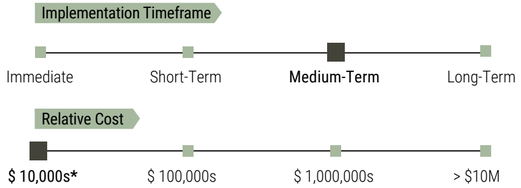

*Cost per pilot project. Total program costs will depend on scale of implementation.

QUANITITATIVE ROI ANALYSIS

Initiative 1: Establish a Zoning Code that Supports Resilient Growth

Project 01	Costs	Benefits	ROI Calculation
Green Streets	Infrastructure changes, green installations (like bioswales, permeable pavements), maintenance. Estimated $500,000 to $1 million for infrastructure modifications, green installations, and heat-reducing measures such as reflective surfaces and increased tree canopy.	Reduced flood risks, heat island mitigation, improved air quality, enhanced aesthetic appeal, increased property values. Subsequent benefits could be (1) reduction in urban temperatures leading to lower air conditioning costs for residents and businesses, (2) 20% reduction in flood damage costs annually, and (3) enhanced aesthetic appeal and environmental quality contribute to an estimated 5% increase in surrounding property values.	Higher property values and sustained energy savings over the years. Payback period estimated to be approximately 4 years.

Project 02	Costs	Benefits	ROI Calculation
Resilient Development Showcase	Development and maintenance of showcase sites, marketing, educational materials. Estimated $50,000 for development, marketing, and educational materials.	Increased awareness and adoption of resilient practices, potential for grants and funding, attraction of new businesses.	Growth in sustainable development, increased interest from investors or tourism, and potential for federal or state grants.

QUANITITATIVE ROI ANALYSIS

Initiative 1: Establish a Zoning Code that Supports Resilient Growth

Project 03	Costs	Benefits	ROI Calculation
Climate Adaptation Toolkit and Tracking	Development of toolkit, training for staff, marketing, and system for tracking and analysis at an estimated cost of $150,000.	Better preparedness for climate events, data-driven decision-making, potential cost savings in emergency responses. Annual savings in emergency response efficiency and water/electricity usage.	Savings from reduced emergency spending and improved efficiency in resource allocation. Payback period estimated to be approximately 3 years.

QUANITITATIVE ROI ANALYSIS

Initiative 2: Design Healthy, Vibrant, and Walkable Communities

Project 01	Costs	Benefits	ROI Calculation
Connected Corridors with Upgraded Street Lighting	Installation of new lighting and infrastructure, including installation of energy-efficient LED lighting and motion sensors at an estimated $500,000 to $1.5 million.	Improved public safety, extended hours for local businesses, increased community engagement. Estimated 5% increase in property value due to improved street appeal and safety. Transition to LED lights results in a 60% reduction in energy costs associated with street lighting. Enhanced lighting leads to a 25% reduction in nighttime crimes, reducing law enforcement and public safety costs. Improved visibility reduces traffic accidents by 20%, leading to an estimated reduction in municipal costs and insurance claims. Better lighting increases evening commercial activities by an estimated 15%.	Sustained energy savings, reduced public safety costs, and bolstered local economy. Payback period estimated to be approximately 4 years.

Project 02	Costs	Benefits	ROI Calculation
Unified Park System	Total Redevelopment Investment: Estimated $2 to $5 million for significant redevelopment of six parks, including the incorporation of sustainable and smart park technology.	Improved public health, increased community cohesion, potential increase in nearby property values. Redevelopment of parks can lead to a 10% increase in surrounding property values. Adoption of smart technology for park maintenance can reduce annual costs by upwards of 50%. Increased usage of parks for recreation is estimated to reduce local healthcare costs.	Sustained increase in property values, enhanced tourism, cost-efficient maintenance, and improved community health. Payback period estimated between 8 to 12 years.

QUANITITATIVE ROI ANALYSIS

Initiative 2: Design Healthy, Vibrant, and Walkable Communities

Project 03	Costs	Benefits	ROI Calculation
Septic to Sewer Conversion	Infrastructure overhaul, connection fees, ongoing maintenance. Estimating a total cost of $4 to $6 million for converting existing septic systems to a centralized sewer system across the community.	Improved water quality, reduced environmental risks, compliance with environmental regulations. The conversion is expected to raise property values by about 15%. A modern sewer system has a longer lifespan and lower maintenance costs compared to individual septic systems. Additionally, by addressing the entire community at once, **Keystone Heights** has more access to grants or subsidies to reduce per-house conversion costs.	Savings from avoided environmental penalties, health cost savings, and improved ecosystem services. Payback period estimated to be approximately 10 to 12 years.

QUANITITATIVE ROI ANALYSIS

Initiative 3: Integrate Innovative Technologies to Streamline Operations

Project 01	Costs	Benefits	ROI Calculation
Digital Twin	Software development, data collection, ongoing updates. Initial costs totaled $25,000. Annual maintenance can be conducted in-house or using external consultants.	Enhanced planning capabilities, reduced costs in project maintenance.	Streamlined urban planning, energy efficiency, and improved emergency preparedness. Payback period estimated to be approximately 2 years.

Project 02	Costs	Benefits	ROI Calculation
Automated Asset Management	System implementation, training, maintenance. Estimated costs for an initial setup and annual subscription of approximately $35,000/year.	Increased operational efficiency, reduced downtime, better resource allocation. Effective asset management could extend the lifespan of city infrastructure by 15%. Predictive maintenance facilitated by the system is projected to reduce city maintenance costs by 20%. Streamlining asset management processes is expected to improve operational efficiency.	Savings from improved asset lifespan, reduced maintenance costs, and increased productivity. Payback period estimated to be approximately 2 years.

QUANITITATIVE ROI ANALYSIS

Initiative 3: Integrate Innovative Technologies to Streamline Operations

Project 03	Costs	Benefits	ROI Calculation
City-Wide Information Exchange	IT infrastructure, data security, system maintenance. Estimated costs for an initial setup and annual subscription of approximately $30,000/year.	Improved communication, streamlined operations, citizen engagement. Enhanced information flow is expected to improve service delivery efficiency, leading to a 15% reduction in operational costs. Improved public access to information increases community engagement and satisfaction, indirectly benefiting local businesses and tourism.	Reduced operational delays, improved citizen satisfaction, and cost savings from streamlined processes. Payback period estimated to be approximately 3 years.

Project 04	Costs	Benefits	ROI Calculation
Innovation Pilot Program	Pilot project implementation, research and development, community outreach. Estimated at $5,000 to $500,000 for the creation and initial execution of various innovative pilot projects, including technology acquisitions, research and development, and initial implementation.	Cutting-edge solutions to urban challenges, potential for scalability, attracting innovation grants. Pilot programs aimed at improving city services (like waste management, energy efficiency, etc.) could lead to an estimated 10% reduction in related operational costs. Successful pilots can attract additional funding from government grants and private investors. Innovative projects increase community involvement and can lead to volunteer participation. If successful, pilots can be scaled into city-wide programs.	Pilot success rates, scalability potential, and amount of grant funding or external investments attracted. Payback period estimated to be between 2 to 5 years, with variability based on the number and types of pilot programs implemented.

Title:	Banana Plantation
Place:	Keystone Heights, Florida

Strategic Focus Area Execution

ESTABLISH A ZONING CODE THAT SUPPORTS RESILIENT GROWTH
GREEN STREETS

Projects	Milestones *	Responsible Parties	KPIs
Re-Evaluate Zoning Code	**Target:** 9 months **Activity:** Finalize the reevaluation of existing zoning versus alternative/resilient approaches based on the Smart City Master Plan's analyses; research and identify best practices in zoning modifications from other U.S. communities.	Planning Board	Completion of reevaluation report. Adoption of new zoning recommendations.
Implement Sidewalk & Tree Planting Standards	**Target:** 1 year **Activity:** Implement standards for wider sidewalks and street trees.	Public Works Department	Number of miles of sidewalks widened. Number of trees planted. Percentage of streets meeting new standards.
Deploy Smart Sensing /IoT Technologies	**Target:** 1.5 years **Activity:** Install smart sensing/IoT technologies to monitor environmental conditions, e.g., temperature, weather, soil moisture.	City Manager in conjunction with Public Works Department.	Number of sensors deployed. Frequency and reliability of data collection. Integration with digital twin. Improvements in environmental monitoring pre- and post-implementation.

***** Milestone target timelines may be dependent on completing prior projects

ESTABLISH A ZONING CODE THAT SUPPORTS RESILIENT GROWTH
RESILIENT DEVELOPMENT SHOWCASE

Projects	Milestones *	Responsible Parties	KPIs
Pilot Sustainable Practices	**Target:** 6 months **Activity:** Assess key corridors for lighting needs and upgrade to LED streetlights. (complete)	Public Works Department, in collaboration with real estate developers and property managers/owners	Number of pilot projects initiated. Compliance with updated zoning requirements. Integration of green infrastructure.
Incentivize Sustainable Practices	**Target:** 9 months **Activity:** Identify and plan to bridge gaps in pedestrian and cycling infrastructure. (complete)	City Manager	Number of participants in incentive programs. Measurable impact on sustainable practices adoption.

***** Milestone target timelines may be dependent on completing prior projects

ESTABLISH A ZONING CODE THAT SUPPORTS RESILIENT GROWTH
CLIMATE ADAPTATION TOOLKIT & TRACKING

Projects	Milestones *	Responsible Parties	KPIs
Identify/Prioritize Climate-Related Risk	**Target:** 6 months **Activity:** Analyze and prioritize areas for flood/water stress and heat island risks. *(complete)*	Planning Board	▸ Completion of risk analysis. ▸ Number of high-risk areas identified.
Identify Nature-Based Solutions	**Target:** 9 months **Activity:** Identify and plan nature-based solutions. *(preserve, mitigate, retrofit)*	Planning Board	▸ Number of solutions identified. ▸ Alignment with development density and land use. ▸ Number of solutions implemented.
Deploy Smart Sensing /IoT Technologies	**Target:** 1.5 years **Activity:** Install and operationalize smart sensing/IoT technologies.	Public Works Department	▸ Number of sensors installed. ▸ Accuracy and frequency of data collection.
Develop & Distribute Climate Resilient Toolkit	**Target:** 1 year **Activity:** Develop and distribute a toolkit for property and business owners.	Planning Board	▸ Number of toolkits distributed ▸ Engagement metrics with property and business owners ▸ Feedback on toolkit effectiveness

***** Milestone target timelines may be dependent on completing prior projects

DESIGN HEALTHY, VIBRANT, & WALKABLE COMMUNITIES
CONNECTED CORRIDORS WITH UPGRADED STREET LIGHTING

Projects	Milestones *	Responsible Parties	KPIs
Assess and Upgrade Street Lighting	**Target:** 6 months **Activity:** Assess key corridors for lighting needs and upgrade to LED streetlights. *(complete)*	Public Works Department	▸ Number of corridors assessed and upgraded. ▸ Reduction in energy consumption identified.
Conduct Pedestrian and Cycling Infrastructure Gap Analysis	**Target:** 6 months **Activity:** Identify and plan to bridge gaps in pedestrian and cycling infrastructure. *(complete)*	Planning Board	▸ Identification of gaps. ▸ Percentage of gaps addressed.
Develop Safe Street Crossings	**Target:** 1 year **Activity:** Prioritize and construct safe crossings at major intersections.	Department of Transportation, in collaboration with civil engineering firms	▸ Number of safe crossings constructed. ▸ Improvement in pedestrian safety metrics
Implement Wayfinding Signage and Kiosks	**Target:** 2 years **Activity:** Design and install wayfinding signage and interactive kiosks.	Planning Board	▸ Number of signage and kiosks installed ▸ User engagement and satisfaction rates

***** Milestone target timelines may be dependent on completing prior projects

DESIGN HEALTHY, VIBRANT, & WALKABLE COMMUNITIES
UNIFIED PARK SYSTEM

Projects	Milestones *	Responsible Parties	KPIs
Complete Parks Master Plan	**Target:** 6 months **Activity:** Finalize the Parks Master Plan, linking parks and standardizing amenities. *(in progress)*	City Manager, in conjunction with an urban planning consultant	➧ Completion of the masterplan. ➧ Number of parks and green spaces interconnected.
Implement Smart Parks Technologies	**Target:** 2 years **Activity:** Install smart lighting, interactive kiosks, and solar panels in parks.	Public Works Department	➧ Number of parks with smart technologies. ➧ User engagement with interactive kiosks. ➧ Energy savings from solar panels.
Implement Nature-Based Stormwater Management Solutions	**Target:** 1.5 years **Activity:** Integrate stormwater management solutions using native plants.	City Manager	➧ Reduction in flooding incidents. ➧ Improvements in water quality
Install Shaded Structures and Water Features	**Target:** 2 years **Activity:** Install shaded areas and water features for heat relief.	City Manager	➧ Number of shaded structures and water features installed. ➧ Visitor satisfaction and usage rates.

***** Milestone target timelines may be dependent on completing prior projects

DESIGN HEALTHY, VIBRANT, & WALKABLE COMMUNITIES
SEPTIC-TO-SEWER CONVERSION

Projects	Milestones *	Responsible Parties	KPIs
Conduct Comprehensive Septic System Survey	**Target:** 6 months **Activity:** Survey 496 homes with septic systems to identify priority areas for conversion.	Public Works Department in collaboration with CCUA	➧ Completion of the survey. ➧ Number of properties identified for priority conversion
Collaborate with Stakeholders for Watershed Initiatives	**Target:** 1 year **Activity:** Engage with stakeholders to integrate the project into broader water management initiatives.	Planning Board in partnership with SJRWMD and CCUA	➧ Number of collaborative initiatives formed ➧ Integration of conversion project into regional plan
Expand Municipal Sewer Network	**Target:** 5 years **Activity:** Extend sewer network to unserved areas, combining with streetscape updates where feasible.	Public Works Department in collaboration with CCUA	➧ Miles of sewer network expanded. ➧ Number of properties connected.
Implement Resident Education Campaigns	**Target:** 2.5 years **Activity:** Launch educational campaigns about the benefits of septic-to-sewer conversion.	City Manager in collaboration with SJRWMD and CCUA	➧ Reach and engagement of the campaigns. ➧ Increase in resident awareness and participation rates

***** Milestone target timelines may be dependent on completing prior projects

INTEGRATE INNOVATIVE TECHNOLOGIES TO STREAMLINE OPERATIONS
DIGITAL TWIN

Projects	Milestones *	Responsible Parties	KPIs
Collect and Aggregate Data	**Target:** 3 months **Activity:** Gather comprehensive data on city assets, infrastructure, and demographics using advanced tools. *(complete)*	Public Works Department, in collaboration with Geographic Information Systems (GIS) consultant	➧ Volume and quality of data collected ➧ Coverage of city assets and demographics
Build GIS-Based Virtual City Model	**Target:** 6 months **Activity:** Develop a detailed virtual model of the city in GIS, representing all critical aspects. *(complete)*	City Manager in partnership with GIS consultant	➧ Completion of the virtual model ➧ Detail and comprehensiveness of the representation
Establish Digital Twin Framework and Standards	**Target:** 6 months **Activity:** Define and implement a unified framework and standards for the digital twin.	City Manager in partnership with GIS consultant	➧ Establishment of unified standards ➧ Compatibility with external systems
Validate Digital Twin Model	**Target:** 9 months **Activity:** Validate the digital twin's accuracy against real-world data and expert reviews.	City Manager, in partnership with Public Works Department	➧ Accuracy of the digital twin compared to real-world data. ➧ Expert validation feedback.

***** Milestone target timelines may be dependent on completing prior projects

INTEGRATE INNOVATIVE TECHNOLOGIES TO STREAMLINE OPERATIONS
AUTOMATED ASSET MANAGEMENT

Projects	Milestones *	Responsible Parties	KPIs
Integrate Digital Twin and Asset Management System	**Target:** 6 months **Activity:** Integrate the digital twin with the city's asset management system for real-time asset visualization.	GIS Consultant	➧ Successful integration of systems ➧ Real-time accuracy of asset visualization
Implement Proactive Maintenance Scheduling	**Target:** 1year **Activity:** Utilize digital twin data for predictive maintenance and asset management.	Public Works Department	➧ Reduction in asset failures ➧ Efficiency in maintenance scheduling
Simulate Decision Impact via Digital Twin	**Target:** 1.5 Years **Activity:** Use the digital twin to simulate and analyze the impacts of asset management decisions.	City Manager	➧ Number of scenarios simulated ➧ Improvements in decision-making accuracy
Automate Data Extraction for Reporting	**Target:** 2 Years **Activity:** Automate the extraction of asset data from the digital twin for annual reporting.	City Manager, in partnership with GIS Consultant	➧ Efficiency in annual reporting process. ➧ Accuracy and comprehensiveness of extracted data

***** Milestone target timelines may be dependent on completing prior projects

INTEGRATE INNOVATIVE TECHNOLOGIES TO STREAMLINE OPERATIONS
CITY-WIDE INFORMATION EXCHANGE

Projects	Milestones *	Responsible Parties	KPIs
Develop Online Registration Portal	**Target:** 3 months **Activity:** Create a portal for residents to sign up for non-emergency notifications.	**IT** Department in collaboration with communications consultant	➧ Number of residents registered ➧ User-friendliness of the portal
Establish Emergency Alert System	**Target:** 6 months **Activity:** Develop a detailed virtual model of the city in GIS, representing all critical aspects. *(complete)*	City Manager in partnership with GIS consultant	➧ Coverage and reach of the emergency alert system ➧ Speed of message dissemination
Setup Customizable Notification Preferences	**Target:** 1 year **Activity:** Enable residents to select specific categories for personalized updates.	Community Relations Office and communications consultant	➧ User customization rates ➧ Relevance of notifications to residents
Integrate Feedback Loop	**Target:** 1.5 years **Activity:** Incorporate a mechanism for residents to provide feedback on notifications.	City Manager in partnership with GIS consultant	➧ Volume and quality of feedback received ➧ Improvements made based on feedback
Comply with Privacy Standards	**Target:** 6 months **Activity:** Incorporate a mechanism for residents to provide feedback on notifications critical aspects.	Legal Department, with support from communications consultant	➧ Compliance with data privacy standards ➧ Absence of data breaches or misuse

***** Milestone target timelines may be dependent on completing prior projects

INTEGRATE INNOVATIVE TECHNOLOGIES TO STREAMLINE OPERATIONS
INNOVATION PILOT PROGRAM

Projects	Milestones *	Responsible Parties	KPIs
Develop Guidelines and Criteria	**Target:** 3 months **Activity:** Establish a framework for selecting innovative projects aligned with city goals.	City Manager	➧ Completion of a comprehensive guideline document ➧ Alignment with strategic city goals
Allocate Budget for Pilot Program	**Target:** 1year **Activity:** Secure and allocate a dedicated annual budget for the program.	Finance Department and City Council	➧ Successful allocation of funds ➧ Number of projects funded
Formalize Partnerships with Local Entities	**Target:** 1.5 Years **Activity:** Collaborate with universities, tech companies, and community groups for project development.	City Manager	➧ Number and quality of partnerships formed. ➧ Diversity of projects initiated
Communicate and Celebrate Success	**Target:** Ongoing **Activity:** Regularly highlight and promote the achievements of pilot projects.	Communications Team	➧ Reach and impact of communication efforts ➧ Community engagement and feedback

***** Milestone target timelines may be dependent on completing prior projects

Program Tracking

Given the emphasis on walkability and climate resilience, the three most impactful modifications the city can make to its zoning code are to incorporate:

Data Collection & Compilation: Every year, we will gather data from various sources including city planning department records, building permit applications, incident reports, insurance claims, and code revisions. Our advanced digital twin and asset tracking software will be key tools in this data collection and compilation process.

Regular Reporting: The collected data will be used to generate an annual report or dashboard that tracks our Key Performance Indicators (KPIs). This report will detail our progress, showcasing trends, pinpointing successes, identifying areas needing improvement, and offering a comparative view on a year-over-year basis.

Data Analysis: With the aid of specialized data analytics tools, we'll dive deeper into our metrics to discover and evaluate patterns, correlations, and insights. This invaluable information will guide any necessary strategic adjustments to our initiatives.

Funding Sources

Securing reliable funding is crucial for the success of **Keystone Heights' City Improvement Plan**. The initiatives identified herein require a mix of funding sources, from federal grants to state subsidies, private sector partnerships, and community investments. This approach helps the **City** start and sustain projects, while also being prepared for any economic changes.

The following is a list of general sources of funding for the strategies and initiatives discussed in this Plan.

- Federal and State Environmental and Recreational Grants
- Federal and State Emergency Management Funds
- Federal and State Infrastructure Funds
- Federal and State Water Management Funds
- Federal and State Technology Grants
- Collaborative Funding from University Partnerships
- Community Development Funds
- Grants and Sponsorships from Tech and Business Sectors
- Public-Private Partnerships
- Smart City Development Grants
- Transportation and Urban Development Grants
- Existing City Budget

Next Steps

The City Improvement Plan outlines a series of strategic initiatives and associated projects, each designed to address specific challenges and opportunities within the City. From enhancing green spaces and upgrading infrastructure to embracing digital innovation and fostering a culture of continuous improvement, the plan is a roadmap to a more efficient, and more livable **Keystone Heights**. The success of this plan hinges not just on the strategies outlined herein, but on the collective effort of every member of the community. The following is an outline of next steps in the process of prioritizing, implementing, and managing these initiatives.

1. Prioritize Initiatives

- Engage the public through workshops & surveys. Host interactive workshops and distribute surveys to gather comprehensive input from residents, ensuring their voices guide the initiative prioritization.

- Develop a clear roadmap with timelines, integrating community preferences. Create a detailed plan that outlines the implementation phases of prioritized initiatives, ensuring it reflects the needs and wants of the community.

2. Align Budget & Funding with Public Insight

- Match budget allocations with community priorities. Allocate financial resources in a way that directly supports the projects

- Identify/secure diverse funding sources. Explore and secure a variety of funding opportunities, including grants, public-private partnerships, and community fundraising, to support the envisioned smart city projects.

3. Select and Procure Relevant Technology

- Choose technologies considering public usability and feedback. Select user-friendly and accessible technologies that align with the community's feedback and technological comfort levels.

- Streamline procurement to meet project timelines & community expectations. Ensure the procurement process is efficient and transparent, meeting the project timelines and aligning with community expectations for timely project completion.

4. Review and Update Relevant Policies

- Update policies to support smart initiatives, backed by community consensus. Revise existing policies or introduce new ones to create a supportive framework for smart initiatives, ensuring these changes reflect community agreement and understanding.

- Involve residents in understanding regulatory impacts and advocating for changes. Educate and engage residents in the policy-making process, empowering them to understand and advocate for beneficial regulatory changes.

5. Form Collaborative Teams & Partnerships

- Form project teams and partnerships, leveraging local insights and expertise. Build teams and partnerships that include local stakeholders, experts, and community members to ensure projects benefit from diverse perspectives and local knowledge.

- Target community-inclusive collaborations for broader support. Foster collaborations that actively include community groups and organizations, ensuring broader support and integration of local needs.

6. Pilot Projects with Community Involvement

- Launch pilot projects, incorporating real-time feedback from residents. Initiate small-scale pilot projects that can be adjusted based on immediate feedback from the community, enhancing the project's relevance and effectiveness.

- Use community input to refine and adjust project approaches. Continuously incorporate community feedback to refine and adapt the approach of the pilot projects, ensuring they effectively meet the community's needs.

7. Ongoing Monitoring, Evaluation, & Engagement

- Continuously monitor projects, inviting community feedback for improvements. Regularly assess the progress of initiatives and invite ongoing community feedback to identify areas for improvement.

- Regularly assess progress against KPIs, adjusting based on public input. Evaluate the performance of smart city initiatives against KPIs and adjust strategies and actions based on community input to ensure alignment with goals and resident satisfaction.

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Appendix A

Zoning Code Recommendations for Improving Walkability & Climate Resilience

Given the emphasis on walkability and climate resilience, the three most impactful modifications the city can make to its zoning code are to incorporate:

- **Native Plants & Permeable Surfaces:** Prioritizing native species and materials that harmonize with the environment helps in managing stormwater, enhancing walkability, and maintaining the city's aesthetic. The promotion of tree planting using species native to Keystone Heights not only offers shade and walkability but also preserves the city's rural feel.

- **Focus on Pedestrians, Not Cars:** Adding sidewalks and enhancing pedestrian (and bicycle) access significantly improves urban mobility, making cities more walkable and reducing reliance on vehicles. This leads to better public health through increased physical activity and reduced air pollution. Furthermore, improved pedestrian infrastructure fosters greater community interaction and accessibility, enhancing the overall quality of urban life.

- **Green Streets**: Adding tree canopy offers significant environmental benefits, such as improved walkability, air quality, and climate regulation, while also enhancing urban biodiversity. They contribute to energy savings and water management, reducing urban heat islands and mitigating flood risks. Additionally, tree canopies provide psychological and social benefits, improving mental health and community well-being, and increasing property values due to their aesthetic appeal.

Additional details and alternatives are outlined below.

WALKABILITY

Given Keystone Heights' emphasis on its unique rural vibe combined with a preference for walkable services, the walkability recommendations can be tailored as follows:

Design & Development Considerations

Mobile Home Parks Ensure designs resonate with the town's character while emphasizing pedestrian-friendly layouts.

Fencing Adapt fence height and opacity restrictions to harmonize with the City's aesthetics without compromising safety and walkability.

Resilient Architectural Choices Promote architectural choices, like green or living walls and green roofs, that align with the City's aesthetic while being sustainable.

Sidewalks Require 5-foot sidewalks along both sides of all streets, not just along arterials and collector roads. All new developments must incorporate these requirements, and additional sidewalk installations and upgrades can be planned and coordinated based on budget and complementary projects.

Exemptions Revisit exemptions for small developments, ensuring they uphold the City's character while maintaining adequate open spaces.

Parking Lots Eliminate or minimize surface parking lots between building edges and sidewalks or all new developments. Additional upgrades can be planned and coordinated with property owners.

Public Art Encourage the integration of public art, including sculptures and murals, on commercial and public properties to enrich the cultural landscape, foster community identity and pride, and boost the economy through increased tourism and by supporting local artists.

Community Engagement & Planning

Inclusive Planning Engage with local stakeholders, artisans, and cultural representatives to maintain **Keystone Heights'** identity in urban planning efforts.

Public Participation Foster a close-knit community spirit by involving residents in decisions, especially those influencing the walkability and service accessibility of **Keystone Heights**.

Reviews & Updates

Regularly consult with the local community to ensure codes and guidelines continue to reflect the evolving needs of the **City** while upholding its character.

Periodically revisit the **City's** unique identity and ensure that any changes made to the infrastructure or services remain in harmony with this identity.

Landscaping & Green Spaces

Shade & Walkability Promote tree planting that uses species native to Keystone Heights or those that enhance its character.

Improvements Encourage the integration of rural aesthetics in landscaping upgrades for existing structures, blending the City's charm with modern enhancements.

Native Plants Prioritize native species that resonate with the local landscape and might already be a part of **Keystone Heights'** natural ecosystem.

Permeable Surfaces Use materials that harmonize with the natural environment to manage stormwater and enhance walkability.

Water & Irrigation

Advocate for natural-looking water management solutions that address the urban heat island effect, blending with **Keystone Heights'** rural aesthetics.

Promote irrigation practices that not only conserve water but also maintain the verdant and natural look of the **City.**

Regulatory Shifts & Clarity

Flexible Timelines Extend approval periods to accommodate innovative projects that resonate with the **City's** unique character and also ensure service accessibility.

Proactive Requirements Be specific in the zoning code to limit "*wiggle room.*" Embrace strategies that not only uphold the City's charm but also push beyond the minimum in terms of safety and resilience.

CLIMATE RESILIENCE
Green Infrastructure & Landscaping

Green Spaces Promote the integration of green spaces and parks that reflect the rural character of **Keystone Heights,** ensuring they are easily accessible by foot.

Heat Mitigation Promote tree planting that uses species native to Keystone Heights or those that enhance its character. Target **30%** tree canopy along sidewalks and within parks to mitigate heat island effects, reduce flooding, and improve air quality.

Landscaping & Vegetation Boost efforts to encourage native and drought-tolerant vegetation that resonate with the City's aesthetic. Prioritize tree planting near pedestrian pathways for shade, walkability, and ambiance.

Alternative Materials Advocate for sustainable or permeable materials that harmonize with the **City's** character, aiding in climate resilience.

Green Architectural Choices Encourage the inclusion of green or living walls, green roofs, and other resilient architectural choices that reflect the character of the **City.**

Stormwater & Flood Control

Stormwater Management Integrate green streets and green infrastructure like permeable pavements, rain gardens, and bioswales that fit naturally within the rural environment. Emphasize sustainable drainage while minimizing urban flood damage.

Flood Resilience Prioritize natural solutions, such as landscape preservation or restoration, to serve as flood buffers.

Data & Design Standards Regularly review design storm standards and rainfall data parameters, ensuring they remain relevant.

Flood Risk Recognize and mitigate flood risk that exists beyond the bounds of **FEMA's** designations, often as a result of impervious surfaces and slope.

Community Engagement & Urban Planning

Public Participation Foster community involvement in decisions, especially those related to climate resilience, to ensure solutions reflect local needs and the City's identity.

Guidelines & Codes Provide clear guidelines emphasizing **Keystone Heights'** rural theme in climate resilience measures for development projects.

Water Conservation & Management

Irrigation Practices Emphasize sustainable water use in irrigation. Limit irrigation during rain events and during extended dry periods.

Use of Nonpotable Water Promote the use of nonpotable water sources for irrigation to conserve potable water.

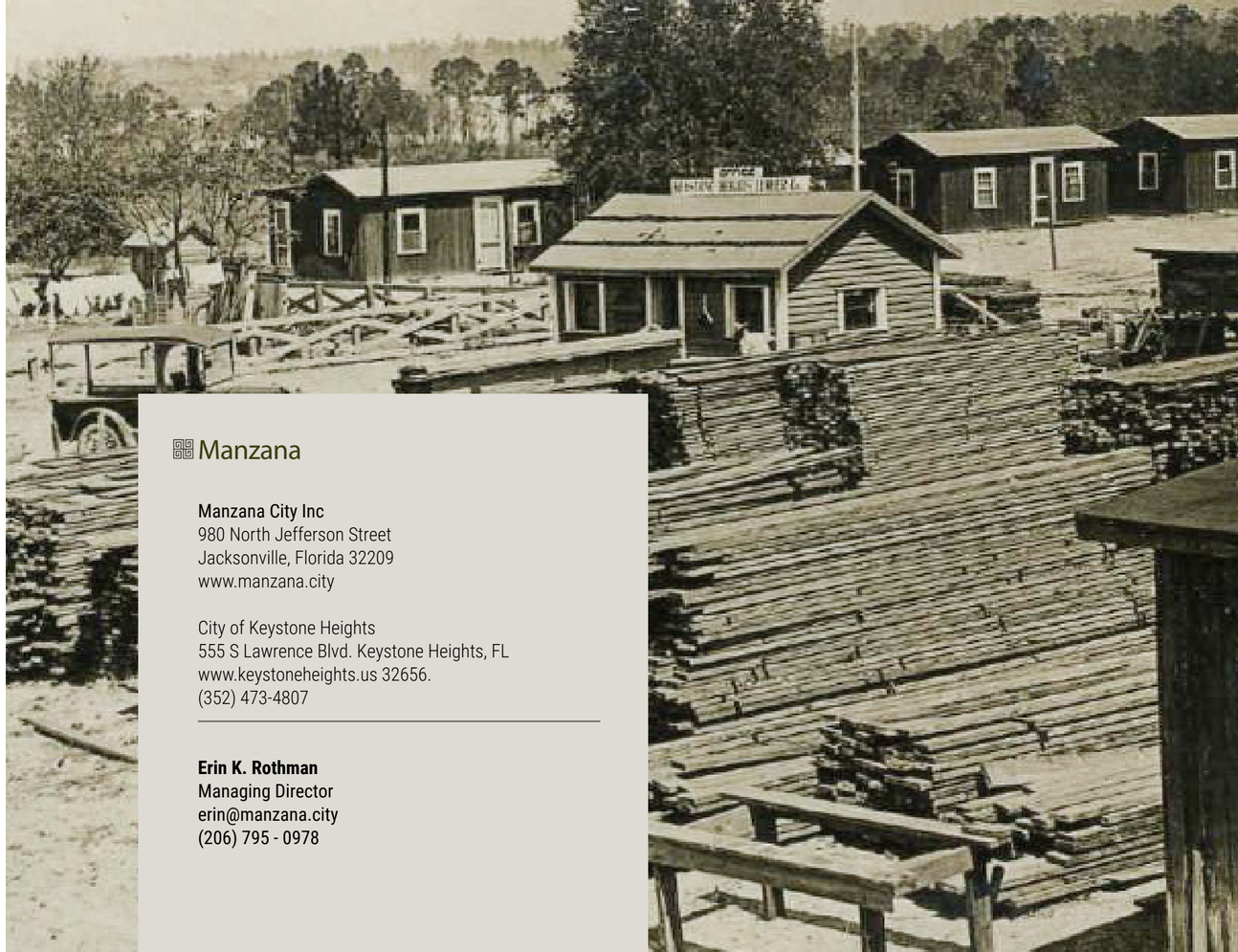
Water Application Rates Revise guidelines to be water-efficient yet maintain a healthy native landscape.

Future Preparedness & Regulatory Updates

Future Climate Challenges Adapt codes to anticipate risks like high heat and precipitation extremes.

Proactive Measures Encourage specific, proactive measures *(e.g., % tree canopy, graywater irrigation, etc.)* that not only uphold safety but also resonate with the City's character.

Periodic Updates Regularly revisit and update resilience measures, ensuring they align with both the changing climate and the evolving needs of **Keystone Heights**.



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