

Houston-Galveston Sustainability Consortium Peer Information Exchange

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Lori Feild Schwarz, AICP

Assistant Director of Planning and Special Projects

Historic Preservation Officer

City of Galveston, Texas

Galveston, Texas



Galveston, Texas



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City of Galveston, Texas
 Building Design and Planning
 Department Plan
 September 16, 2010

Galveston Neighborhoods
 According to Galveston Architecture Guidebook

Wilder & Company
 2000 West Dock Street
 Clear Lake, CA 94565
 916.433.8888
 www.wilderandcompany.com

Historic Galveston



Historic Galveston



What is Sustainability?

- **Sustainability is** development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

United Nations Department of Economic and Social Affairs Division for Sustainable Development

- **Sustainable:** Use of community resources that meets the needs of the present citizens without compromising the ability of future generations to meet their needs. In order to achieve sustainability, the planning, design, and management of the community must utilize a holistic approach to balance environmental protection, economic development and social equity through review of long-term impacts of policy decisions.

This is not a new concept...

“Then I say the earth belongs to each generation during its own course, fully and in its own right, but no generation can contract debts greater than can be paid during the course of its own existence.”

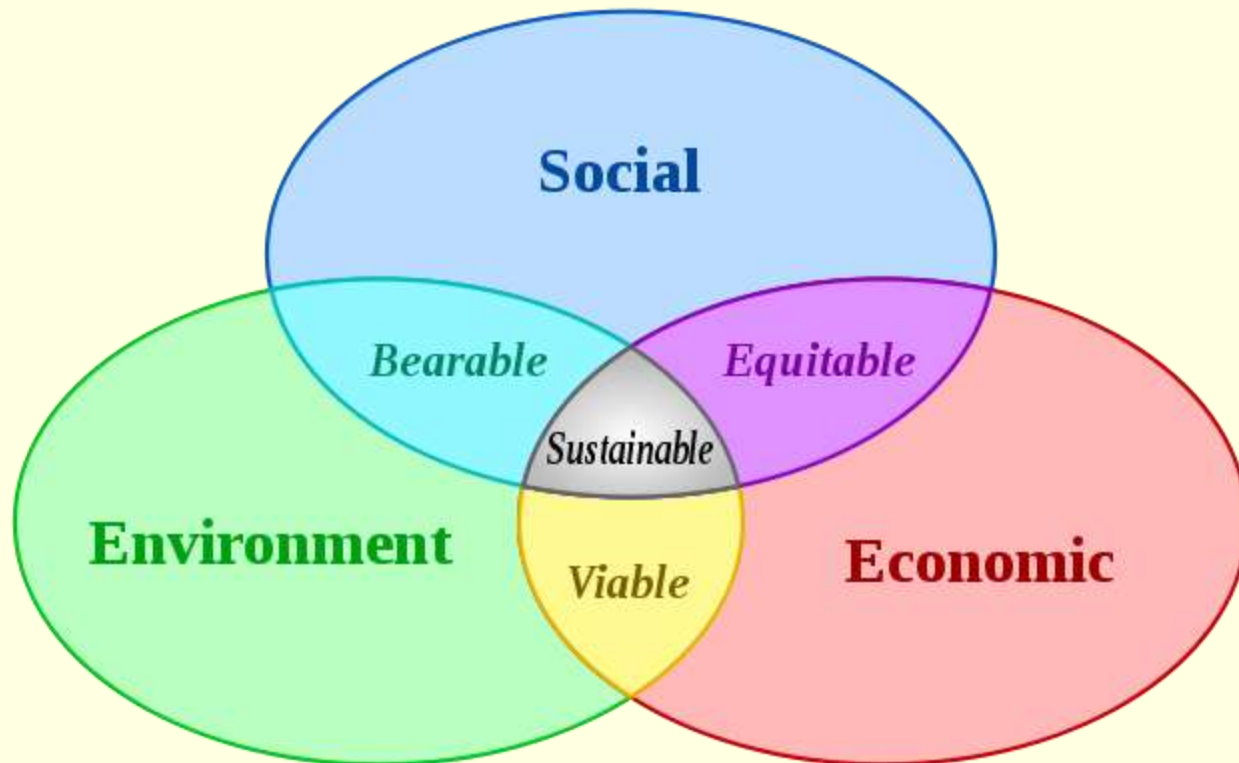
Thomas Jefferson

Three “pillars” of Sustainability



- Environmental:
 - Atmosphere
 - Water
 - Land use
 - Energy
- Social:
 - Health
 - Equity
 - Safety
 - Food Security
- Economic:
 - Resources
 - Businesses
 - Financial Markets

Sustainable Development



Height & Density Development Design Guidelines

- Includes principles for site design, particularly adjacent to Galveston's historic neighborhoods.



Height & Density Development Design Guidelines

City of Galveston, TX



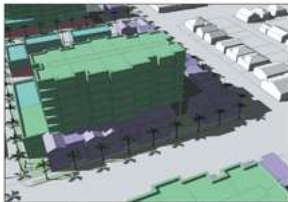
15.0 Green Design in Building Massing

Building masses play a crucial role in how a project relates to the environment, and how well a building functions.

Orientation of building massing should take advantage of solar access for both passive and active strategies of daylighting and solar energy collection. A building mass also should be designed to facilitate natural ventilation through a site and its buildings.



Appropriate: Building massing and orientation maintain solar access for adjoining spaces.



Appropriate: Building height causes partial shading of adjoining properties, but this is minimized through orientation of the building mass.

15.1 Design building massing to support passive solar design.

- Orient roofs to support solar collectors and/or natural daylighting strategies.
- The depth of building mass should be sized to allow natural daylighting to reach the maximum amount of actively used, interior spaces feasible.

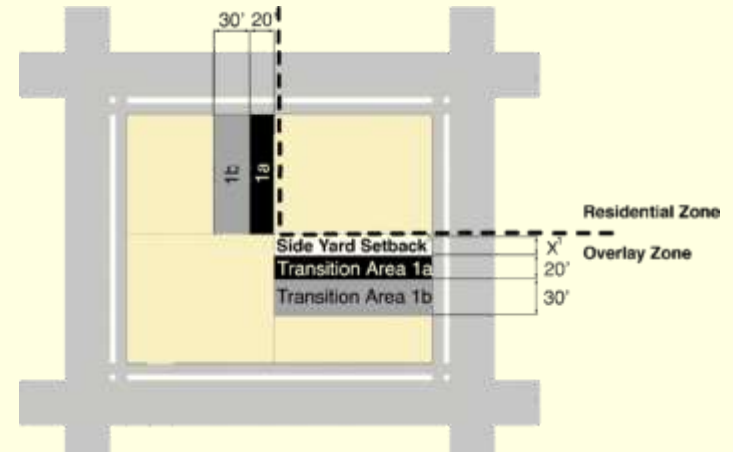
15.2 Design building massing to support green building principles for both itself and adjoining areas.

- Arrange building masses to facilitate air circulation through a site and its buildings.
- Articulate walls to serve as shading for their own surfaces or other surfaces.
- Use high ceilings to allow hot air to raise above the habitable space.
- Design windows and their placement to maximize interior daylighting of a building. Maximum light penetration to interior spaces is encouraged.

15.3 Arrange building masses to provide weather protection.

- Articulate massing to help protect pedestrian areas from adverse weather effects.

- Building massing designed to reduce impact to adjacent historic neighborhoods.



Height & Density Development Design Guidelines

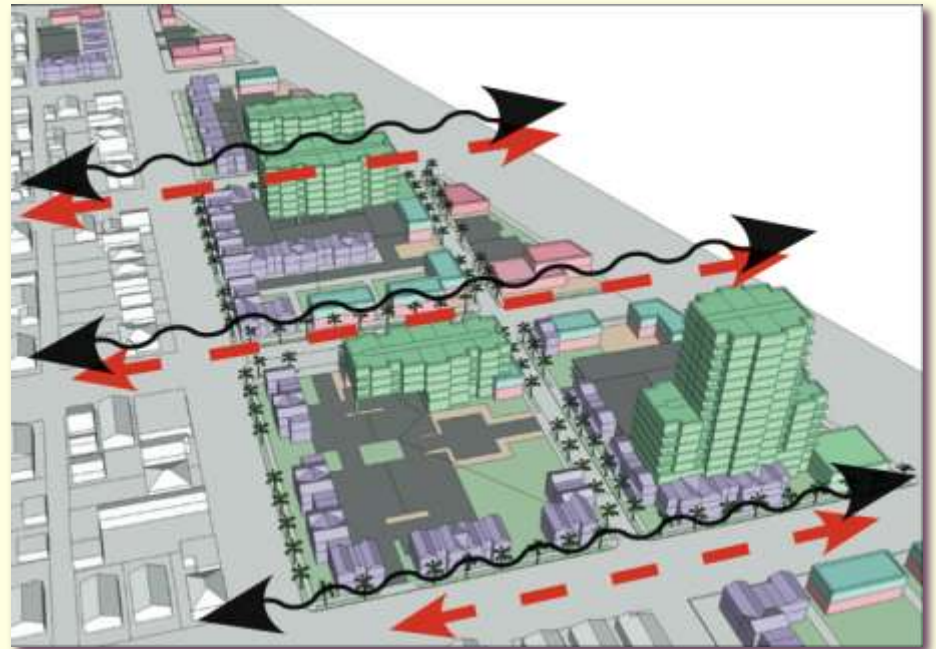


May not cast more than 4 hours of shadow on adjacent historic neighborhood on Dec. 21

Height & Density Development Design Guidelines



Maintains view corridors and ventilation areas, such as alleys and historic grid pattern.



Height & Density Development Design Guidelines

- Green or cool roofs
- Use of balconies and porches
- Sustainable materials
- Operable windows



Use appropriate exterior or facade integrated (seasonal) sun shading devices at fenestration with direct solar exposures.

20.0 Green Design in Building Elements

The elements that make up a building can have a large impact on the environment and have a significant role in how well a building performs. Individual building elements and materials play an integral role in the systems (environmental and otherwise) of the building as a whole and of the building with its site.

Building elements should be arranged to maximize the efficiency of the building's performance. Materials should be chosen based on their environmental impacts and their performance as both individual building elements and with the building systems as a whole.

20.1 Use sustainable materials to the maximum extent feasible.

- Use materials which have long life spans and require minimal maintenance.
- Use regional, recycled, recyclable and rapidly renewable materials.
- Avoid toxic or otherwise hazardous materials.
- Avoid large exterior surfaces of dark materials to reduce high thermal absorption and expansion, especially on east and west exposures.

20.2 Applications of materials should support sustainable building systems and functionality.

- Use materials and components with high thermal mass and insulation values.
- Use low-e or triple pane insulating glass.
- Use high efficiency lamps and fixtures.
- Use lighting fixtures with minimal light pollution to night skies and adjacent sites.
- Avoid thermal bridges at joints and structural components.

20.3 Use building elements which maximize internal environmental control.

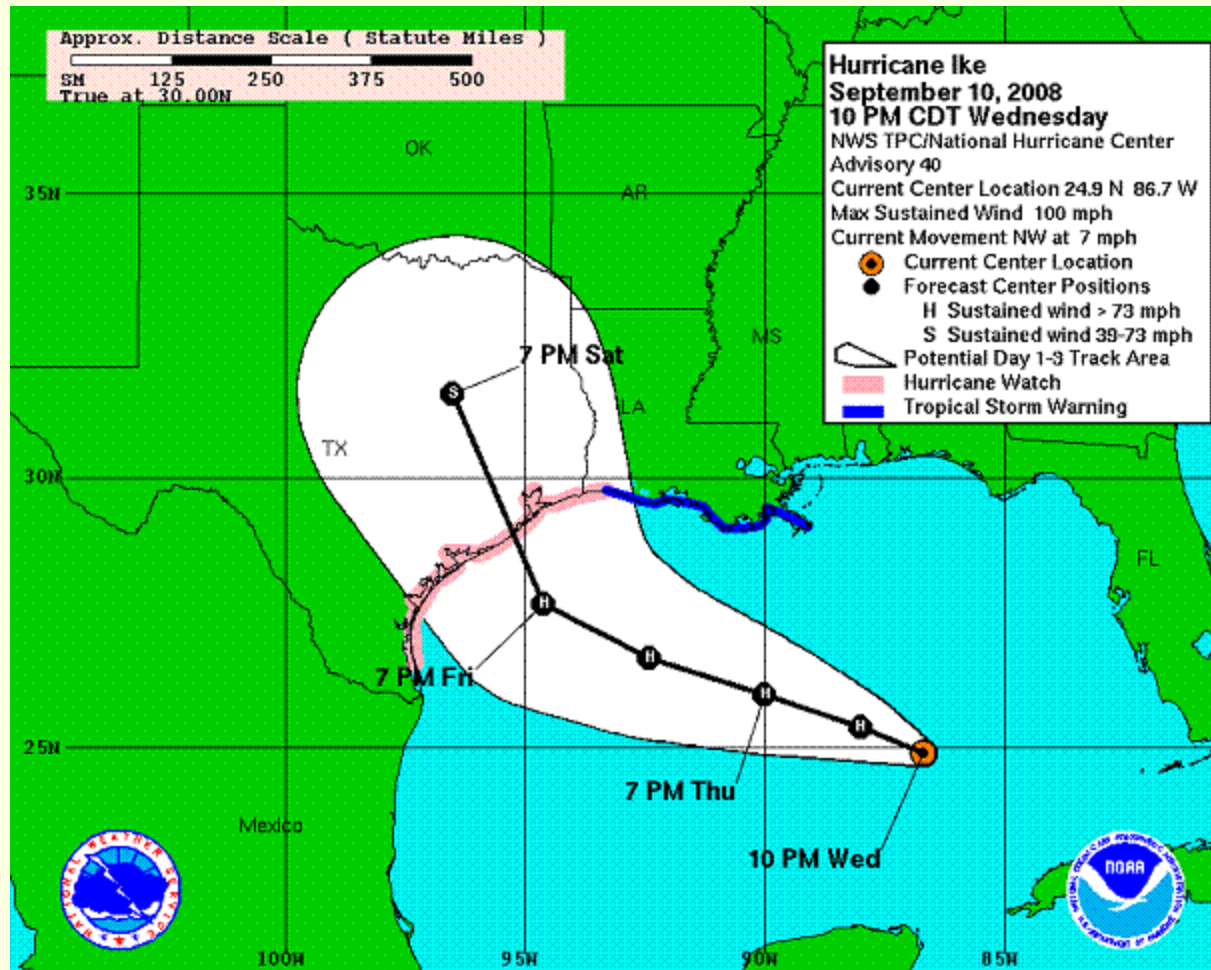
- Use operable windows for natural ventilation.
- Use low infiltration fenestration products.
- Use appropriate exterior or facade integrated (seasonal) sun shading devices at fenestration with direct solar exposures.
- Provide building elements which help to circulate air through the building.

Height & Density Development Design Guidelines

- Use of water conserving, native or indigenous species for landscaping areas.
- Minimize impervious cover for stormwater management and increased landscaping.
- Capture of rainwater for irrigation



Hurricane Ike info...



Hurricane Ike

- September 12-13, 2008
- Category 2 winds, with Category 4 storm surge
- 75% of all buildings in Galveston were damaged
- Third costliest natural disaster in US History
- Still in recovery

SUSTAIN-ability

- 1. to support, hold, or bear up from below; bear the weight of, as a structure.
- 2. to bear (a burden, charge, etc.).
- 3. to undergo, experience, or suffer (injury, loss, etc.); endure without giving way or yielding.
- 4. to keep (a person, the mind, the spirits, etc.) from giving way, as under trial or affliction.
- 5. to keep up or keep going, as an action or process: to sustain a conversation.
- 6. to supply with food, drink, and other necessities of life.
- 7. to provide for (an institution or the like) by furnishing means or funds.
- 8. to support (a cause or the like) by aid or approval.
- 9. to uphold as valid, just, or correct, as a claim or the person making it: The judge sustained the lawyer's objection.
- 10. to confirm or corroborate, as a statement: Further investigation sustained my suspicions.

At the heart of Sustainability is:



- An occurrence of rebounding or springing back
- A movement back from an impact

Resiliency and Sustainability

- Resiliency leads to sustainable actions that mitigate potential loss to historic properties and the communities they are located within.
- Resiliency is the “seat” that ensures that the three pillars of sustainability continue following an unexpected event.
- Our challenge is to develop resilient sustainability standards without compromising the integrity of the buildings or character of the community.

Resilient and Sustainable Actions

- Structural reinforcement
- Interior storm/insulating windows
- Flood venting
- Limited impervious cover (stormwater)
- Proactive maintenance
- Use of historic solar heating, ventilation and landscape shading design, implemented by new technology
- Protection of historic/mature trees

Challenges encountered:

- Work with other City personnel, such as:
 - Building Official
 - Planning and Zoning Department
 - Mechanical/Energy code inspectors
 - Public Works Department
 - Fire Marshal/Fire Chief
 - City Attorney's Office

to ensure that sustainable options for historic properties are not prohibited by code.

Gulf Coast Example

- Historic buildings were built to breathe
- Insulation of exterior walls: depending on the choice of materials, can do more harm than good.
- Vapor barrier – if installed, often requires the removal of historic siding.
- Must use moisture impermeable insulation if no vapor barrier
- Mechanical systems should not “overcool”

Challenges encountered:

- May be difficult to site new infill correctly for maximum sustainability standards with existing streetscape
- Porch design/awnings in appropriate locations.
- Protection of solar access for surrounding properties
- Floodplain regulations

Challenges encountered:

- Green roofs in commercial buildings



Challenges encountered:

- Cisterns
- Windmills/Turbines
- Mechanical systems



Actions for a Community

- Create an environment for change
- Remove obstacles through existing zoning and design standards.
- Initiate incentives for homeowners to pursue adaptive sustainability standards
- Develop standards for historic properties as well as city-wide. (Can include historic tree protection)
- Work with partners

Galveston's Next Steps

- Partnering:
Galveston Historical
Foundation's Green
Revival House

Participation in the
Houston-Galveston
Area Sustainability
Consortium



Galveston's Next Steps

- Leading by example



Galveston's Next Steps

- Development Code
 - Comprehensive Plan Update
 - Vision Statement
 - Human Element
 - Coordinated Zoning Regulations
 - Development Standards for Infrastructure
 - Sustainability Plan
 - Climate Adaptation
 - Subdivision Regulations
 - Wetland and conservation protection

Galveston's Next Steps

- Development Code
 - Design Standards for Historic Properties, including Sustainability Guidelines
 - Updated Preservation Plan

www.ProgressGalveston.com