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Mitigating Coastal Risks to Improve Resiliency – Lee County's Experience

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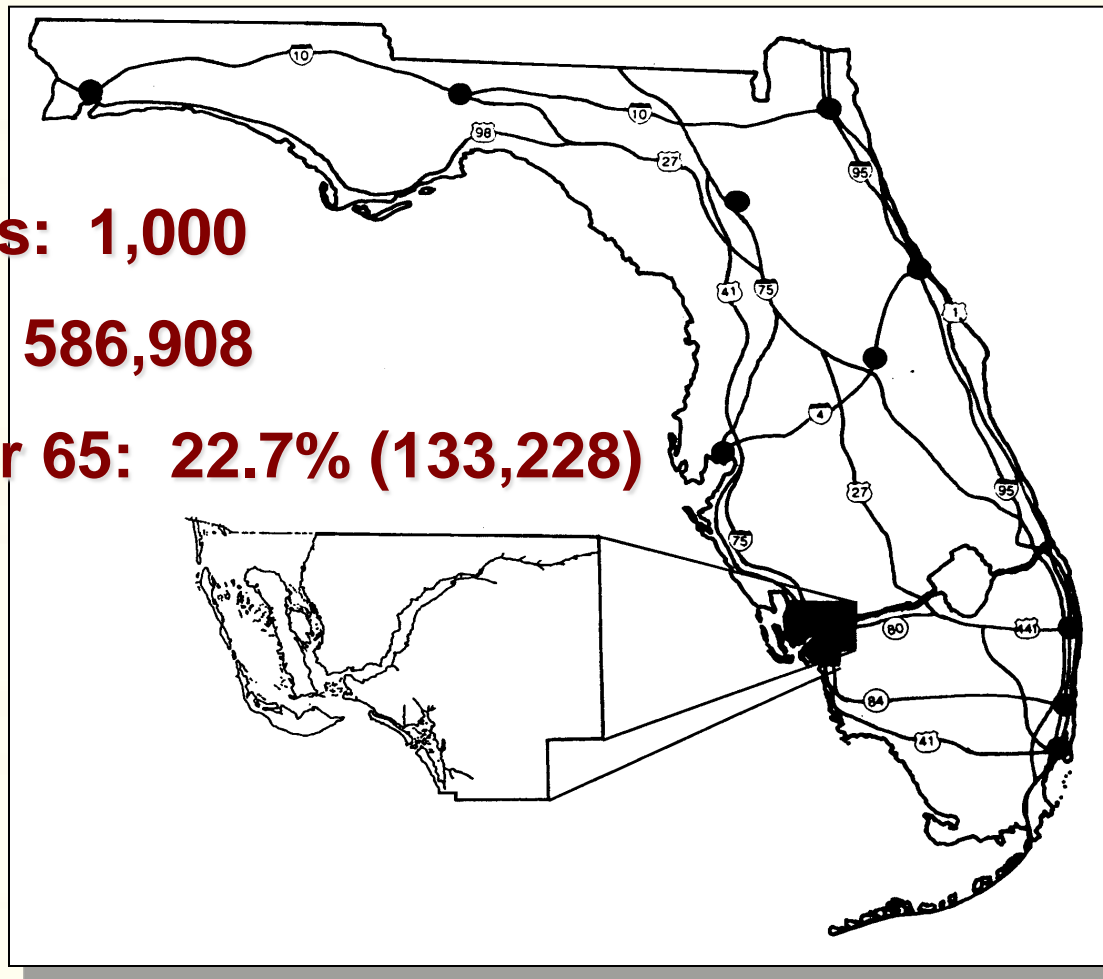
Mitigating Coastal Risks to Improve Resiliency – Lee County's Experience



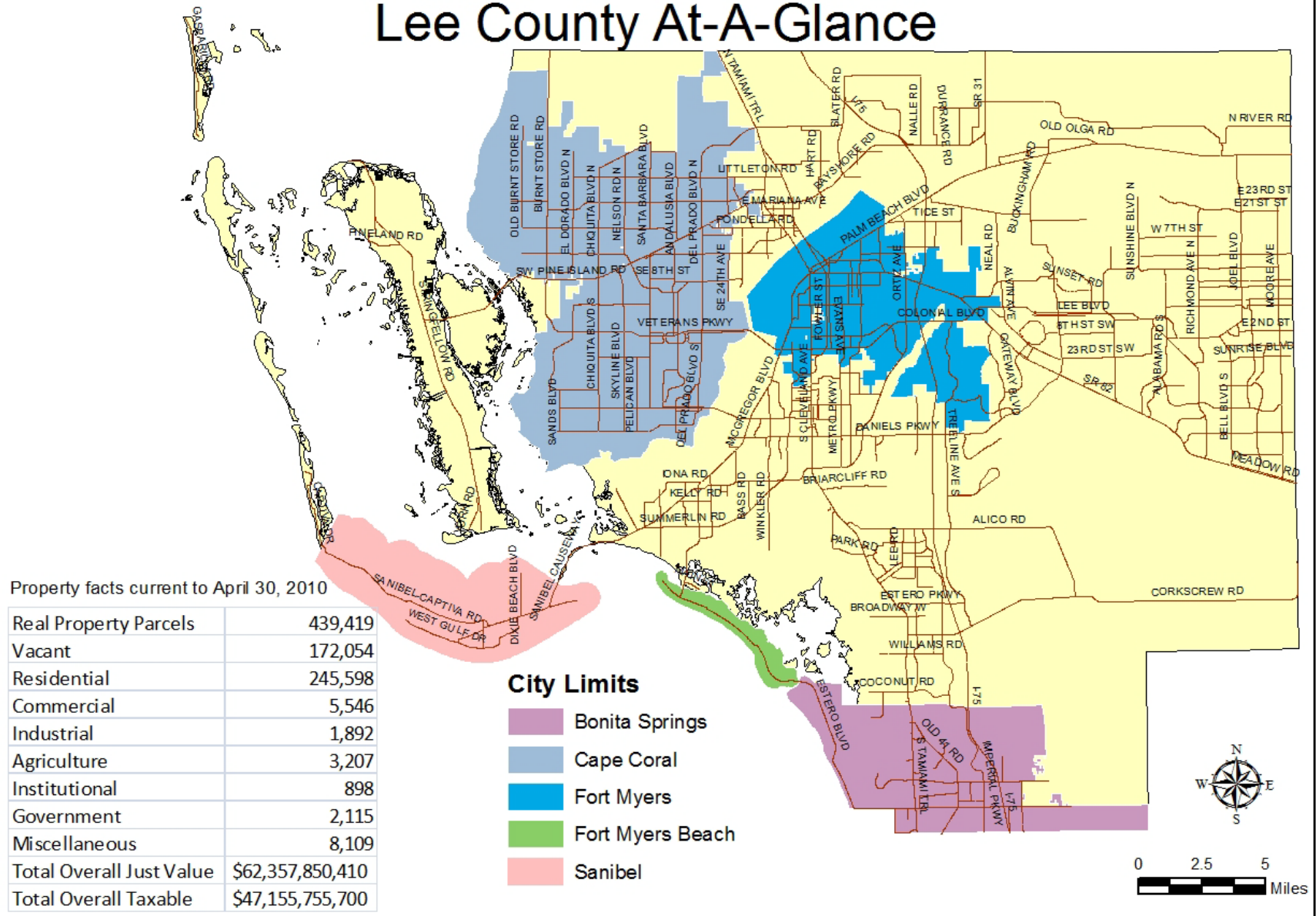


Demographics

- **Square Miles: 1,000**
- **Population: 586,908**
- **Percent over 65: 22.7% (133,228)**



Lee County At-A-Glance



FLOOD INSURANCE RATE MAP



SPECIAL FLOOD HAZARD AREAS

FLOOD ZONE

- VE
- AE
- A
- FLOOD PRONE AREAS IN 20 X AE

OTHER FLOOD AREAS

- 20 X EX (Areas of 0.2% annual chance flood)

OTHER AREAS

- 20 X EX (Areas outside the 0.2% annual chance floodplain)
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
- OTHER UNDESIGNATED PROTECTED AREA (UPA)
- FEW Panel

FIRM COMMUNITY

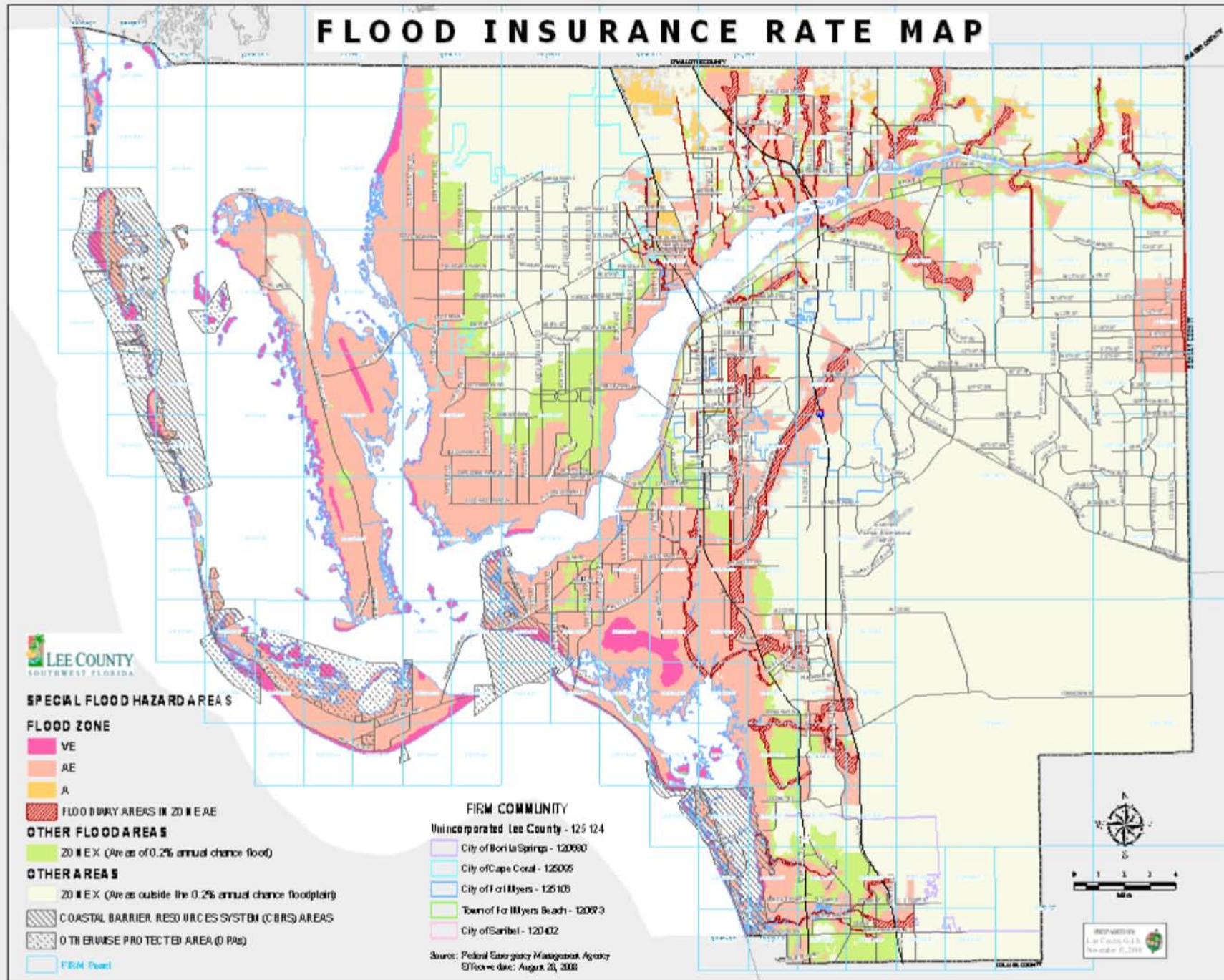
Unincorporated Lee County - 125 124

- City of Bonita Springs - 120980
- City of Cape Coral - 125005
- City of Fort Myers - 125105
- Town of Fort Myers Beach - 120973
- City of Sanibel - 120402

Source: Federal Emergency Management Agency
Effective date: August 26, 2008



Prepared by:
Lee County GIS
November 17, 2009



LEE COUNTY CRITICAL FACILITIES



100-year
Floodplain

City Limits

CRITICAL FACILITIES

Hazardous Materials

- Hazardous material site (30)

Health Care Facilities

- Hospital (2)
- Assisted Living Facility (12)
- Skilled Nursing Facility (6)
- Ambulatory Surgery Center (8)

Emergency Operations

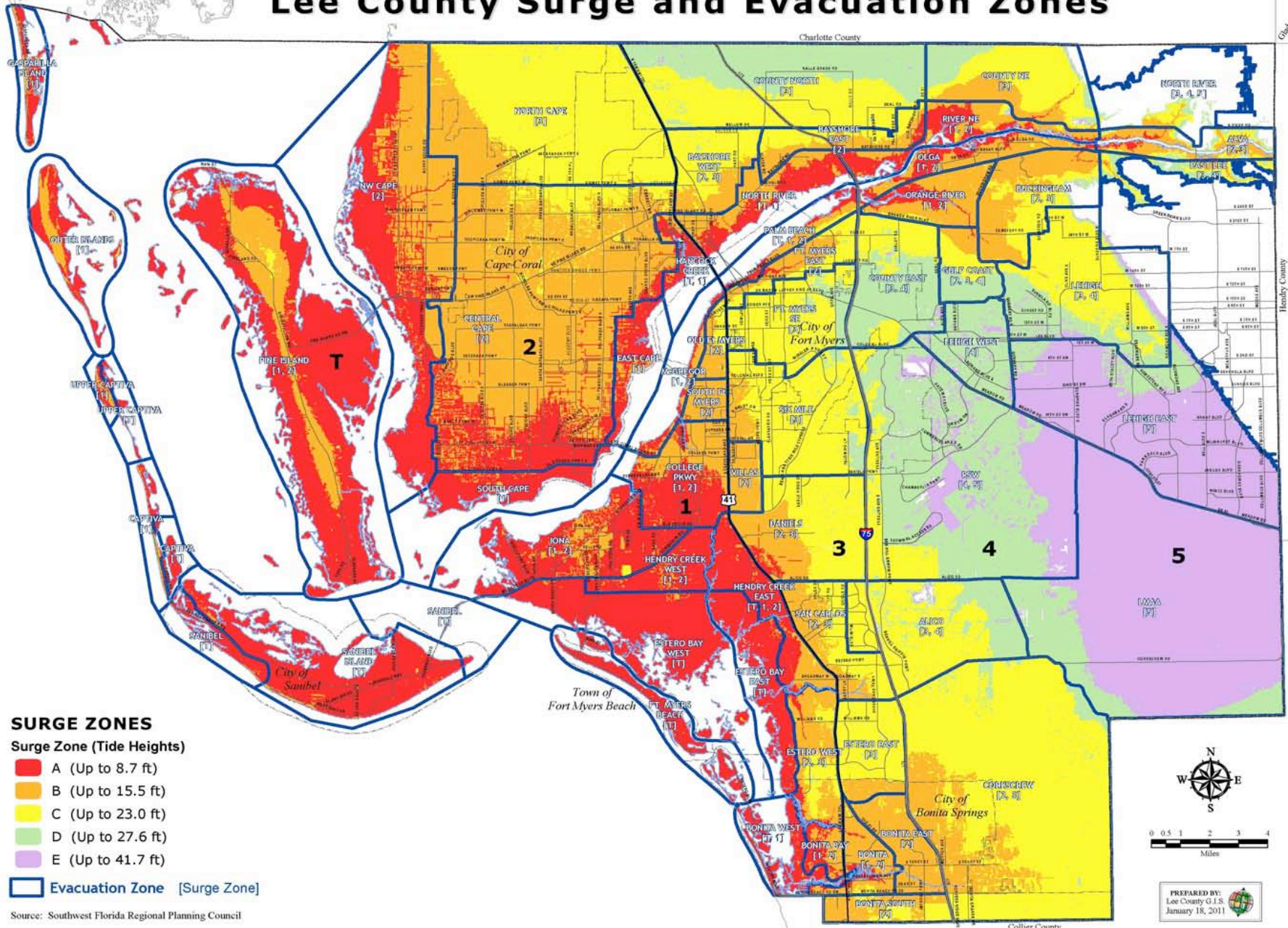
- Law Enforcement (4)
- Fire Station (27)
- EMS Station (18)
- Government Building (32)
- Emergency Shelter (4)

Public and Private Utilities

- Electric Facility (14)
- Water Treatment Plant (17)
- Domestic WWTP (44)



Lee County Surge and Evacuation Zones





Global Issues Affecting Florida's Growth & Impact on Resiliency/Mitigation Policy

- ***INTERNATIONAL TRADING MEGA-REGION***
- ***NATIONAL AND INTERNATIONAL DEBT***
- ***GLOBAL CLIMATE CHANGE***
- ***CHANGING ENERGY PICTURE***
- ***BABY BOOMER BUBBLE***

International Trading Region

- *“Florida” markets the multi-city region of central and south Florida as a tourism, retirement, education, and health services destination to those seeking a warm climate, stable governance, and affordable living.*
- *Ecologically and Economically “brittle” as a low lying peninsula.*

National and International Debt

- *Florida's Income depends in large part on discretionary income of other area's residents. Personal debt (and low home purchasing power) works against vacationing and retirement.*
- *Florida's public and private infrastructure dollars depends upon access to capital markets.*
- *Florida State and Local governments depend upon the Federal government "doing its share" and keeping social insurance programs "whole".*

Global Climate Change

- *Rising Sea Level dictates a program of “retreat” off the near-low lying shoreline. In coastal areas, that would be the areas indicated as “subject to tropical storm inundation” on the hurricane surge maps.*
- *World wide, climatic conditions seem to move more towards frequency of extremes—for us, hurricanes and drought, for “up north” shorter but more intense “killing” cold periods.*
- *As a side note, the water table will rise with the sea level, which affects water supplies.*

Changing Energy Picture

- *High quality energy (Oil, Natural Gas) will become much more expensive due to diminished resources, with its escalating impact on cost of goods and services.*
- *Nothing replaces the versatility of Oil and Natural Gas.*
- *Areas with best energy efficiencies become much more competitive*
- *Places with uncomfortable climates become more attractive over areas with fatal climates for populations with discretion to relocate.*

Baby Boomers

- *Biggest INTERNATIONAL demographic with discretionary income for moving, and ability to afford the chosen lifestyle*
- *Community “services” needs change with age*
- *But are dependent upon a competent service workforce and social service network*
- *And have an expectation of quality in their investments, and a “new home” is the biggest investment most are likely to make.*
- *Boomers will be less than half of the increase but generate the jobs for most of the rest.*



Using Risk Reduction to Address Coastal Resiliency

- ***Open Space Preservation***
- ***Zoning (low density)***
- ***All Hazards Municipal Service Taxing Unit (MSTU)***
- ***Land Development Code Regulations***
- ***Post Disaster Redevelopment Policies***

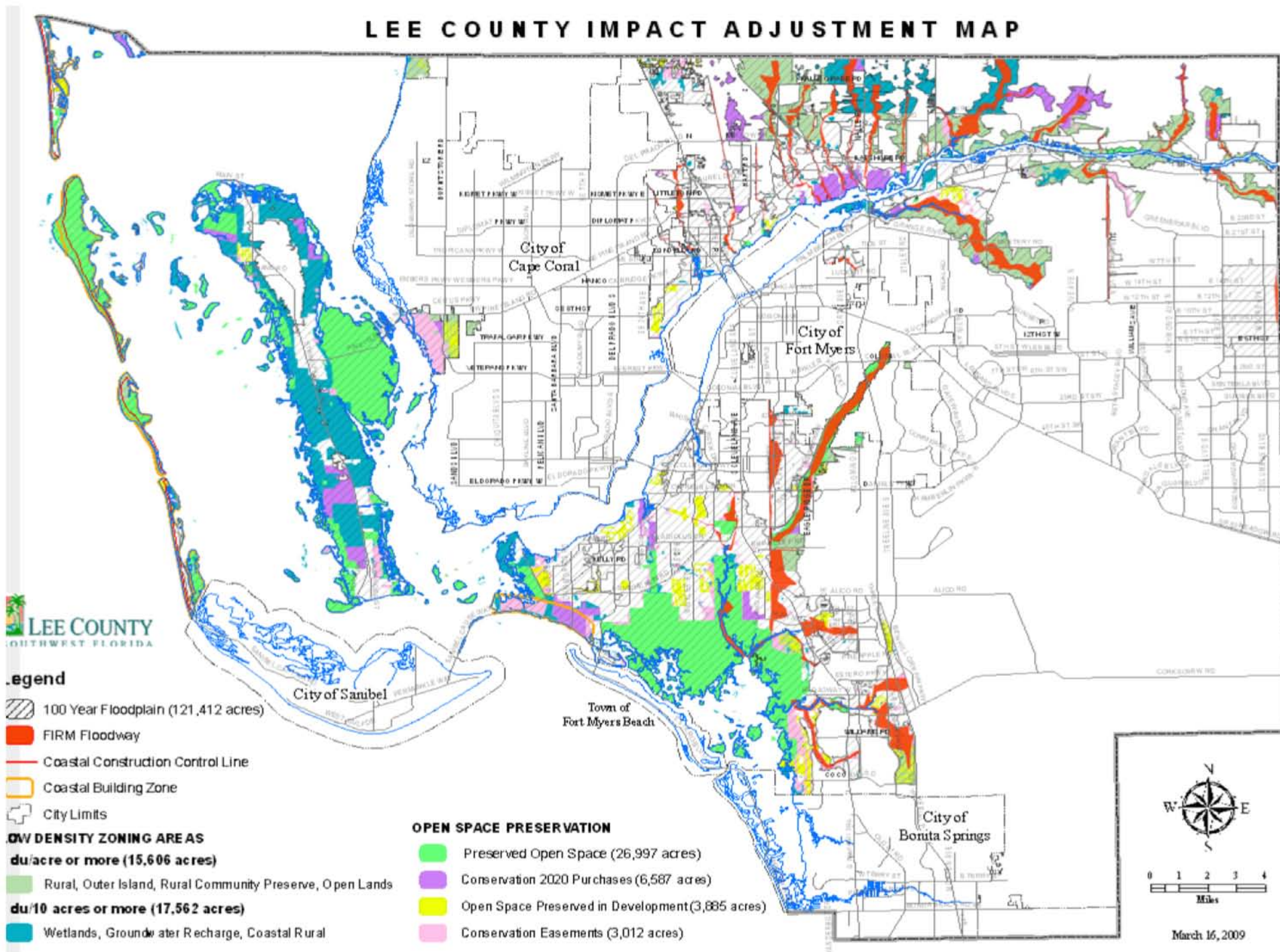


Open Space And Zoning

- Open Space Program– Public owned, conservation purchase, set aside in developments
- Low Density Zoning In CHHA– One unit/acre or less
- Goal to increase Green Space.

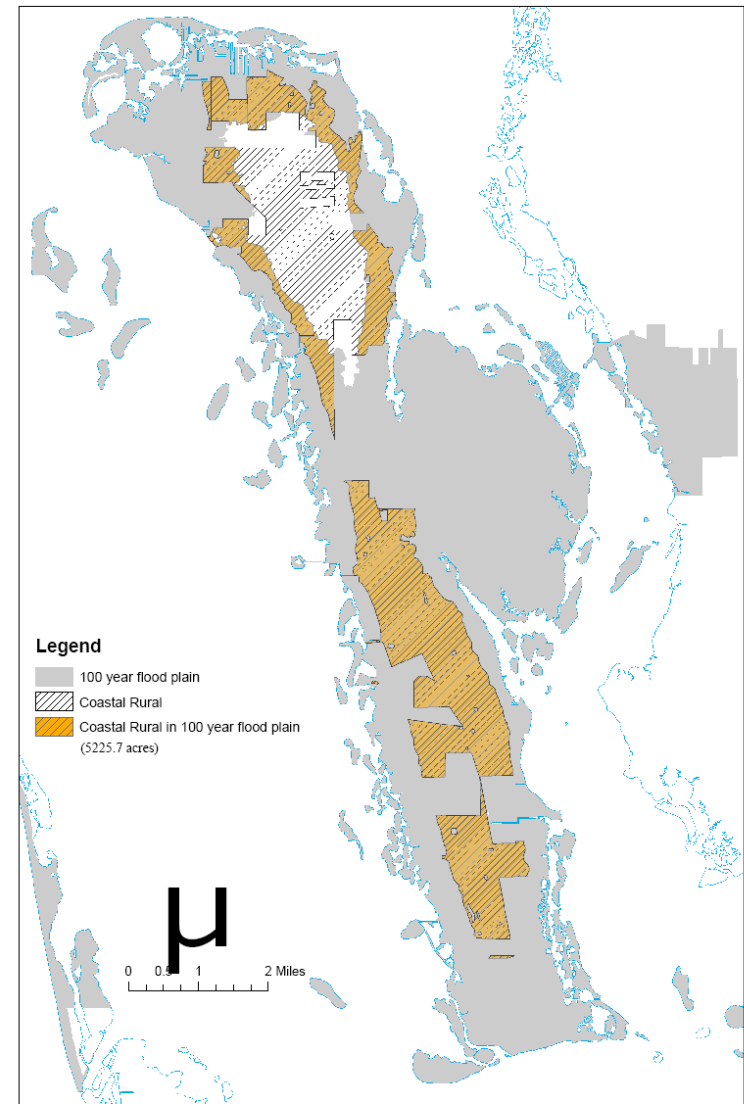


LEE COUNTY IMPACT ADJUSTMENT MAP



Coastal Rural LU Category

<u>Percentage of the on-site uplands that are preserved or restored native habitats</u>	<u>Adjusted I</u>		
	<u>If < 910 trips in Matlacha:</u>	<u>If</u>	
		<u>Alternative A:</u>	<u>Alte</u>
<u>0% to 4.99%</u>	<u>1 DU/10 acres</u>	<u>1 DU/ 30 acres</u>	<u>1 D</u>
<u>5% to 9.99%</u>	<u>1 DU/ 9 acres</u>	<u>1 DU/ 27 acres</u>	<u>1 D</u>
<u>10% to 14.99%</u>	<u>1 DU/ 8 acres</u>	<u>1 DU/ 24 acres</u>	<u>1 D</u>
<u>15% to 19.99%</u>	<u>1 DU/ 7 acres</u>	<u>1 DU/ 21 acres</u>	<u>1 D</u>
<u>20% to 29.99%</u>	<u>1 DU/ 6 acres</u>	<u>1 DU/ 18 acres</u>	<u>1 D</u>
<u>30% to 39.99%</u>	<u>1 DU/ 5 acres</u>	<u>1 DU/ 15 acres</u>	<u>1 D</u>
<u>40% to 49.99%</u>	<u>1 DU/ 4 acres</u>	<u>1 DU/ 12 acres</u>	<u>1 D</u>
<u>50% to 59.99%</u>	<u>1 DU/ 3 acres</u>	<u>1 DU/ 9 acres</u>	<u>1 D</u>
<u>60% to 69.99%</u>	<u>1 DU/ 2 acres</u>	<u>1 DU/ 6 acres</u>	<u>1 D</u>
<u>70% or more</u>	<u>1 DU/ 1 acre</u>	<u>1 DU/ 3 acres</u>	<u>1 D</u>



Hurricane Evacuation/Shelter Level of Service

- ***Assess impact of new development on projected roadway network and projected evacuation clearance times***
- ***Establish level of service for evacuation times***
 - ***Category 3***
- ***Establish level of service for shelter space to provide to those realistically expecting to use them***



All Hazards Protection District

- **Comprehensive Plan Requirement**
- **Resolution Passed in Public Hearing**
- **Adopted In 1990 After Hurricane Hugo**
- **Assigned Millage Rate in 1993 After Hurricane Andrew**
- **Unincorporated Areas, Cape Coral**



Authorized Expenses

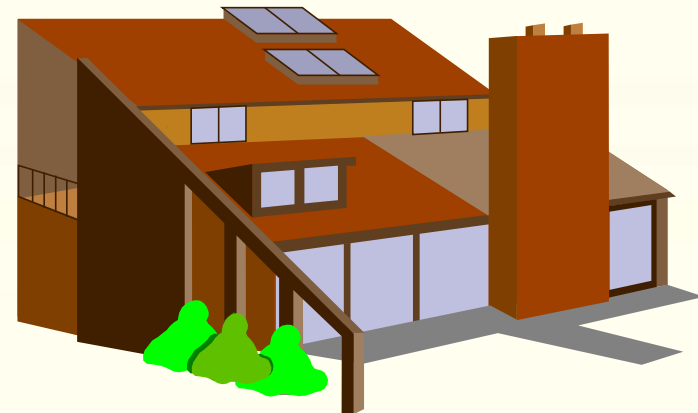
- **Hazardous Materials Response**
 - Team
 - Training
- **Emergency Preparedness**
 - Hurricane Shelter Development
 - Public Information
 - Emergency Transportation
 - Public Safety Infrastructure
- **Emergency Contingency Fund**
- **Property Acquisition Fund**



Cost to Property Taxpayer

- **Current Millage Rate - .0733 mills**
- **Cost to Person Owning:***
 - \$100,000 Home: \$ 7.33
 - \$200,000 Home: \$14.66
 - \$300,000 Home: \$21.99
- **Millage Cap - .5 mill**

* After homestead exemption



Coastal Risk Infrastructure Requirements

- New/substantially improved critical facilities built to 1 in 500 year flood elevation
 - Police, Fire, EMS Stations
 - Public/Private utilities vital to health and safety
 - Hazardous material sites
 - Hospitals, nursing homes
- Hospitals, Nursing Homes, Assisted Living Facilities in Coastal High Hazard Area (Category 1)
 - Built to Category 5 wind and storm surge threat levels

Coastal Risk Land Development Regulations

- **Address evacuation timing and shelter deficit impacts created by new development**
- **Applies to large & small developments**
- **Consistent application of impact**
- **Development in Category 1, 2, & 3 areas**

Who Complies?

- **Residential development requiring development order**
- **New and existing DRIs**
- **Mobile home/RV developments**
- **Includes assisted living facilities, hotels & motels, health care & social service facilities**



Menu of Shelter Mitigation Options

- **Land Donation**
- **Donate Use of Private Shelter**
- **On site Shelter**
- **Fee in lieu of land donation or use of private structure**



Menu of Evacuation Mitigation Options

- **Roadway elevation or improvements**
 - Build roads in development to same elevation as nearest segment of designated evacuation route
 - Construct main road access in development to design storm event appropriate for area
 - Improve offsite road used by development for evacuation purposes
- **Evacuation efficiency improvements**
 - Communication equipment (radio stations)
 - Information systems along major evacuation routes (cameras, variable message signs)



Community Recovery Vision

- Product - What & When
 - Redevelopment Policy
 - *Lee County Comprehensive E. M. Plan*
- Process - How
 - Post - Disaster Recovery Task Force
 - *Post Disaster Ordinance (07-20)*

How Did This Happen?

- Wasn't Overnight...
- Key internal/external leadership support
- Fair & consistent application
- Community's recognition of value of investing in environment and coastal storm protection
- Oftentimes luck + timing is better than being good (but be ready to take advantage)
- Incredible lack of awareness of danger

Final Thought.....

If you don't eat your meat, you can't have any pudding!

How can you have any pudding if you don't eat your meat!*

*** Pink Floyd: The Wall**

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