

WILDFIRE

LESSONS LEARNED IN PLANNING & DESIGN IN HORRY COUNTY

OCTOBER 22, 2015
BACKYARDS & BEYOND CONFERENCE



Wildfire in South Carolina



**Average number of
wildfires per year**

3,000

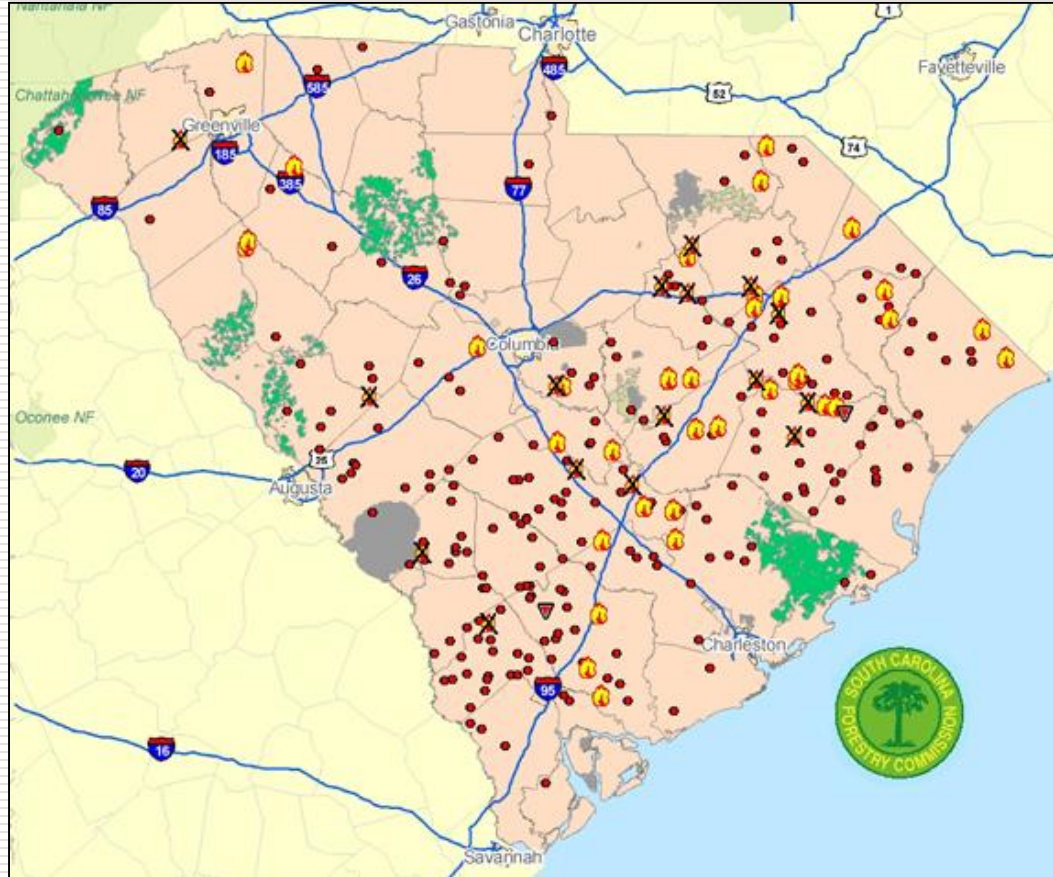
**Average acres per
year**

20,000

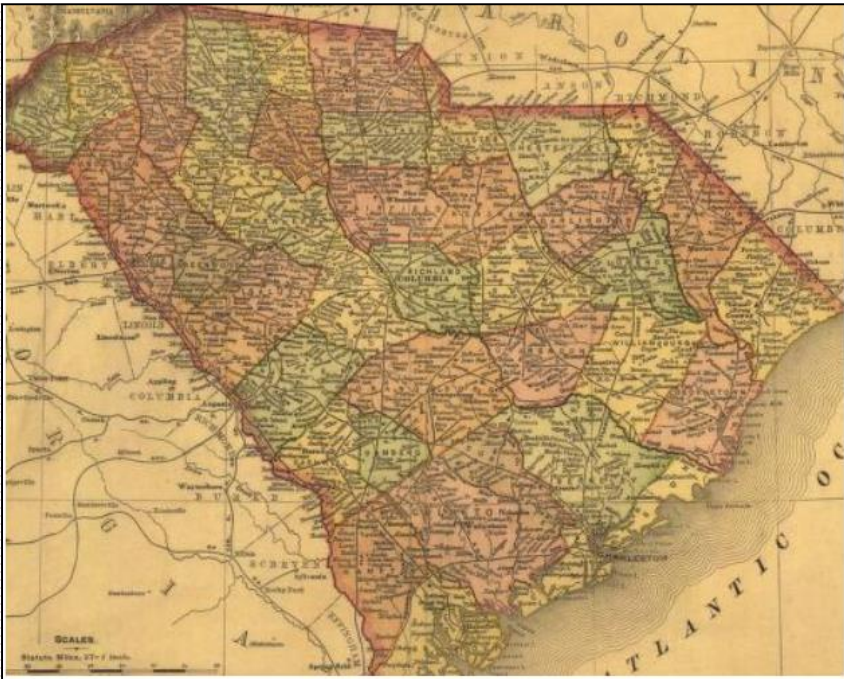
Average acres per fire

6.7

Wildfires happen almost every day across SC!



February, 1898



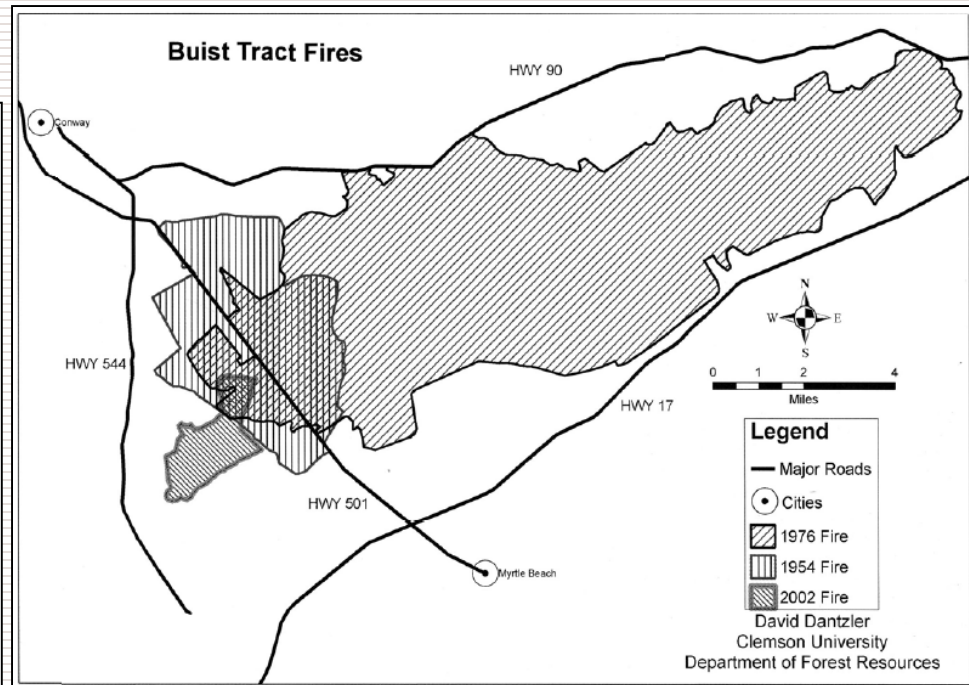
- 1898 wildfire burned from Aiken to Marlboro County, and kept going into NC (over 3 million acres)
- It's likely there were several fires at once
- 14 lives lost, 20 sawmills, numerous homes, livestock, forests
- In today's dollars, losses were approximately \$164 Million

Horry County Examples

1954 Bombing Range Fire	10,162
1966 Rambli Raceway Fire	625
1967 Longs Crossroads Fire	1,200
1967 Socastee Plantation Fire	6,005
1976 Clear Pond Fire	30,000
1981 Cotton Patch Bay Fire	2,500
1996 Forestbrook Fire	844
2001 Long Bay Fire	1,911
2002 Legends Fire	1,658

*No homes were lost in the above wildfires

2009 Hwy 31/Barefoot Fire	19,130
2013 Windsor Green Fire	24



Map Courtesy *The Independent Republic Quarterly*, Volume 40, No. 1-4, 2006

It DOES happen here...



Smoke billows over the Grande Dunes resort in Horry County, where high winds have whipped a wildfire that has destroyed homes and scorched the landscape. JANET BLACKMON MORGAN/THE MYRTLE BEACH SUN NEWS

BLAZE CONSUMES 79 HOMES

Horry County, April 2009

- 19,130 acres burned
- 76 homes lost
- 97 homes damaged
- >\$20 million in home losses

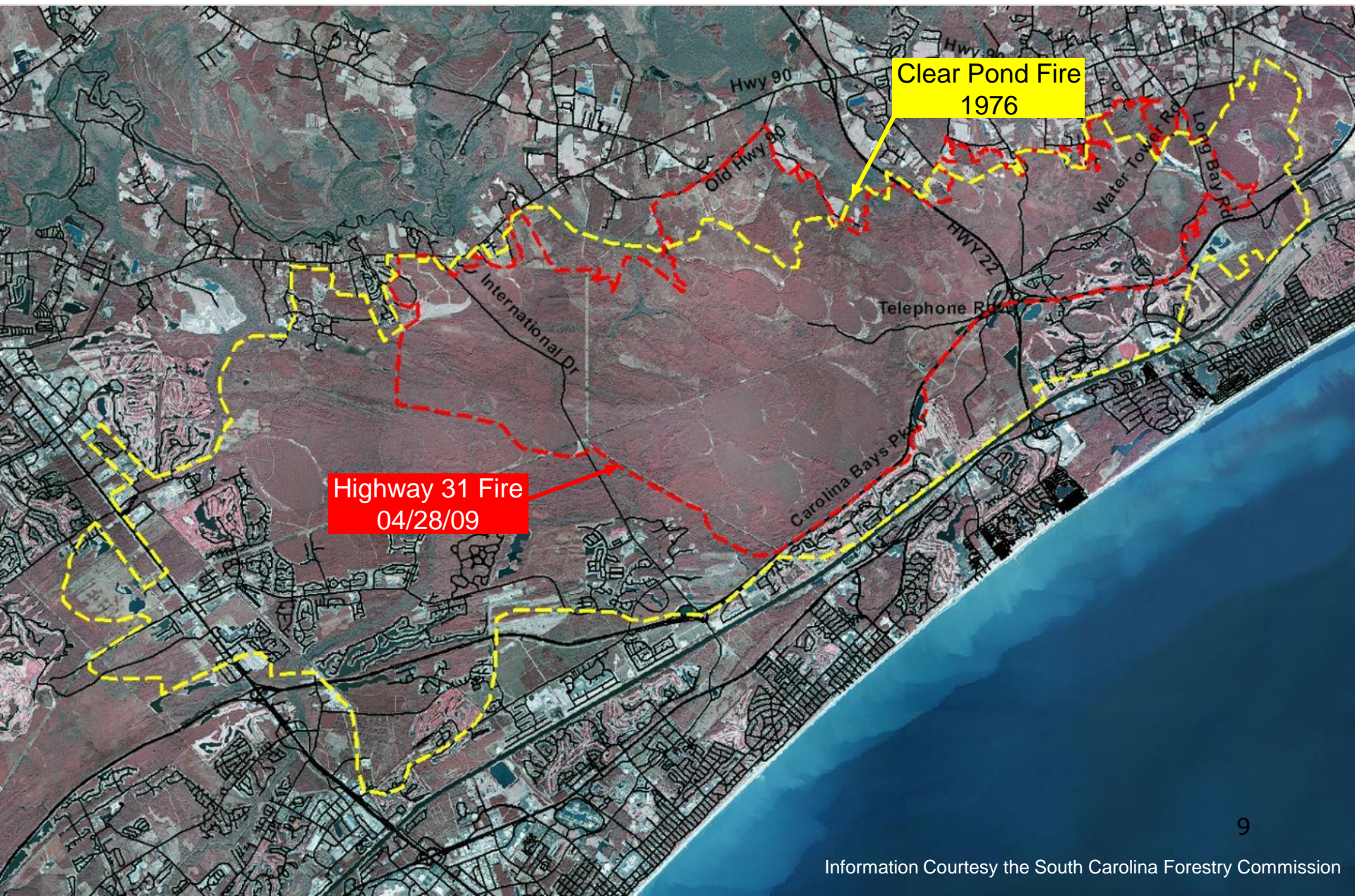


Horry County, March 2013

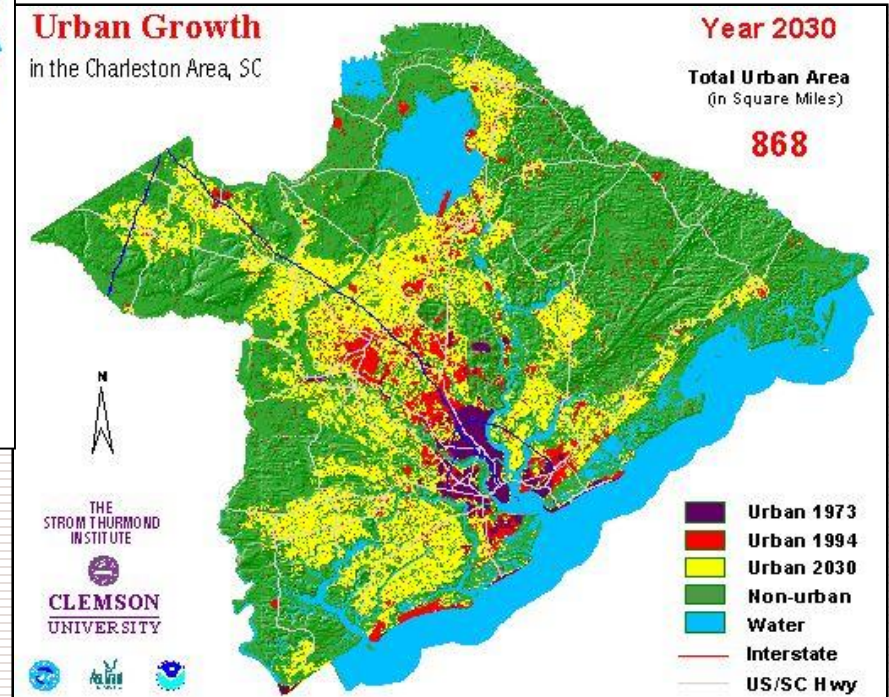
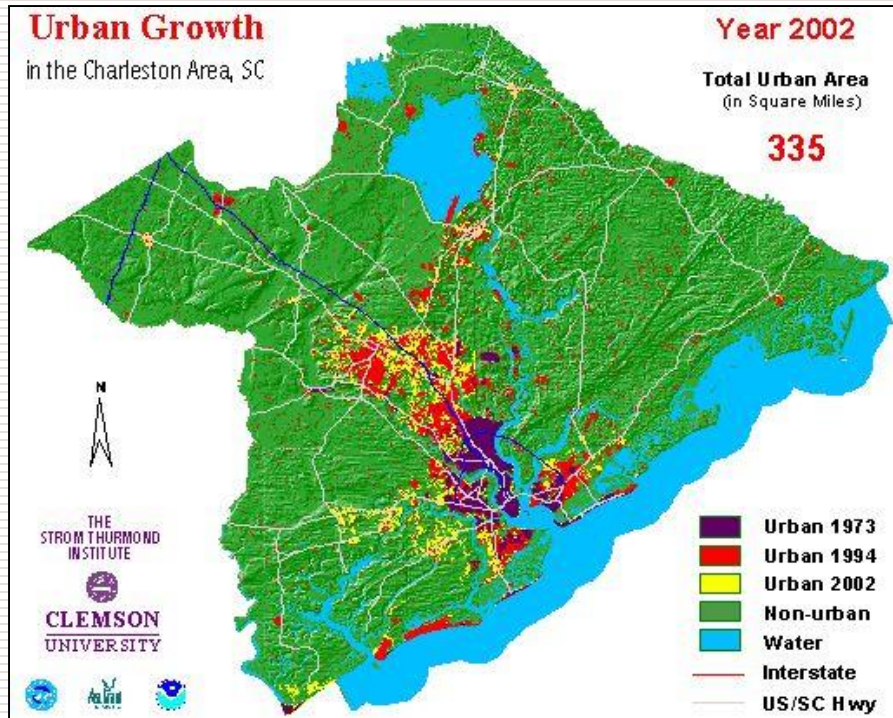


- **Windsor Green Fire burned 24 acres and destroyed 108 condominiums in Horry County in approximately 30 minutes**

Two Fires, Two Dramatically Different Outcomes



Growth Trend is Not Unique



Wildfires are not just...

a west-coast issue

a Federal issue

a State issue

ALL Wildfires

Begin as a local problem!

Planning to Reduce Vulnerability

- Survey of emergency managers ranked land use planning along with building codes as most effective for reducing hazards vulnerability over long term
- 20+ years of research shows losses are minimized in communities where local plans have considered potential impacts of various natural hazards



Role of the Planner

- Protect the health, safety, and welfare of the community and people
- Public Involvement
- Community Education
- Persistence
- Innovation

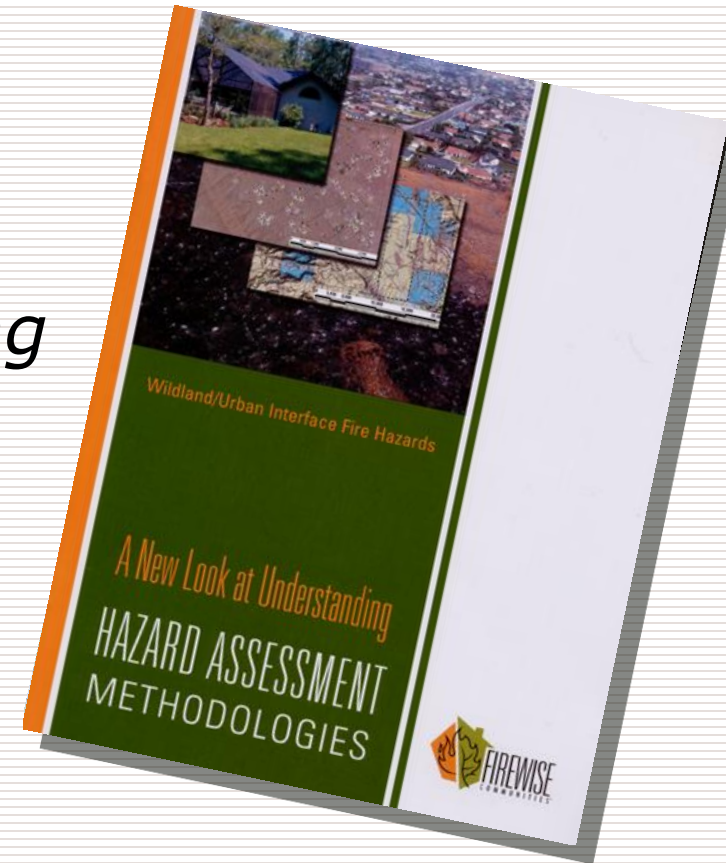
Planning Tools

Are we more vulnerable because where we build or how we build?

- ☐ Zoning
- ☐ Land Development Regulations
- ☐ Comprehensive Plans
- ☐ Hazard Mitigation Plans

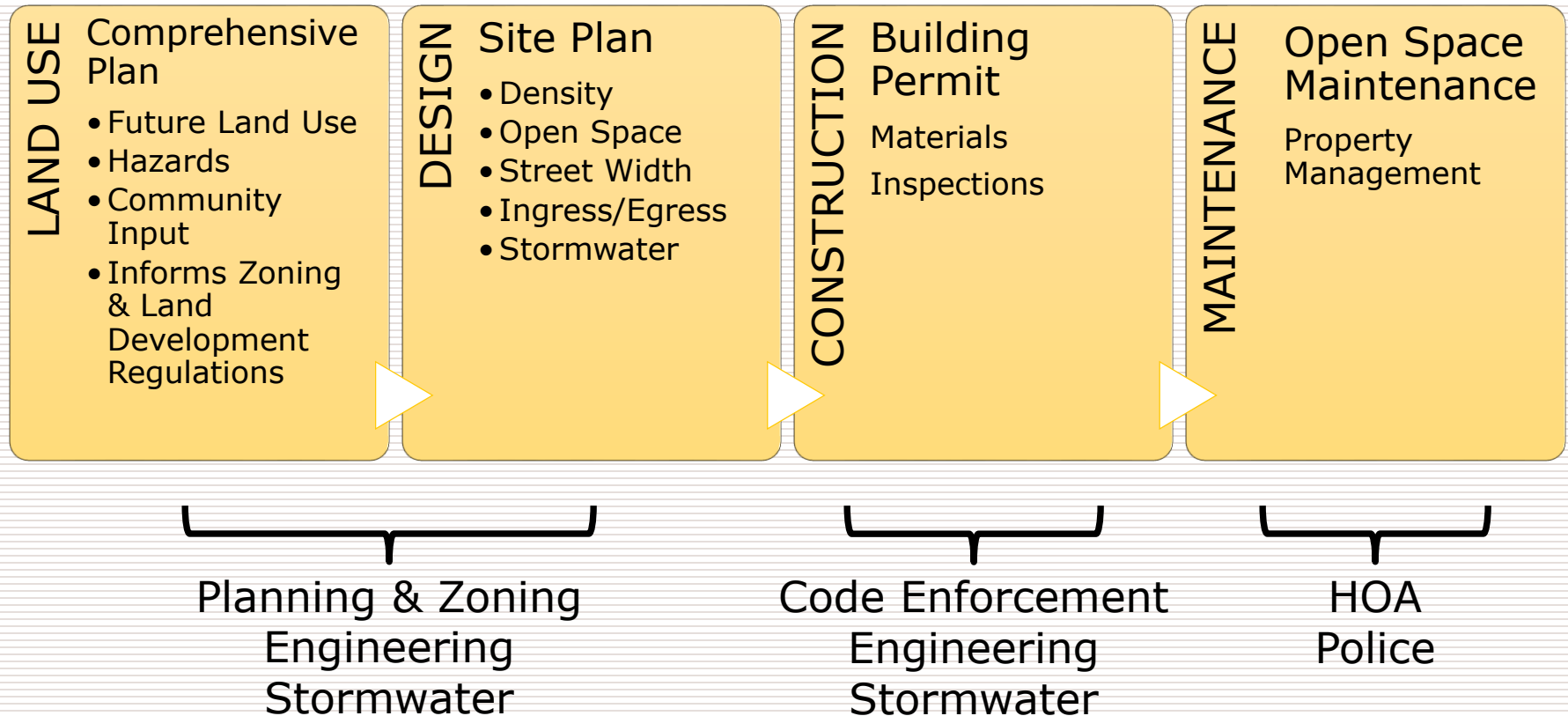
Planning Guidance

- *Community Wildfire Safety Through Regulation*
- *A New Look at Understanding Hazard Assessment Methodologies*



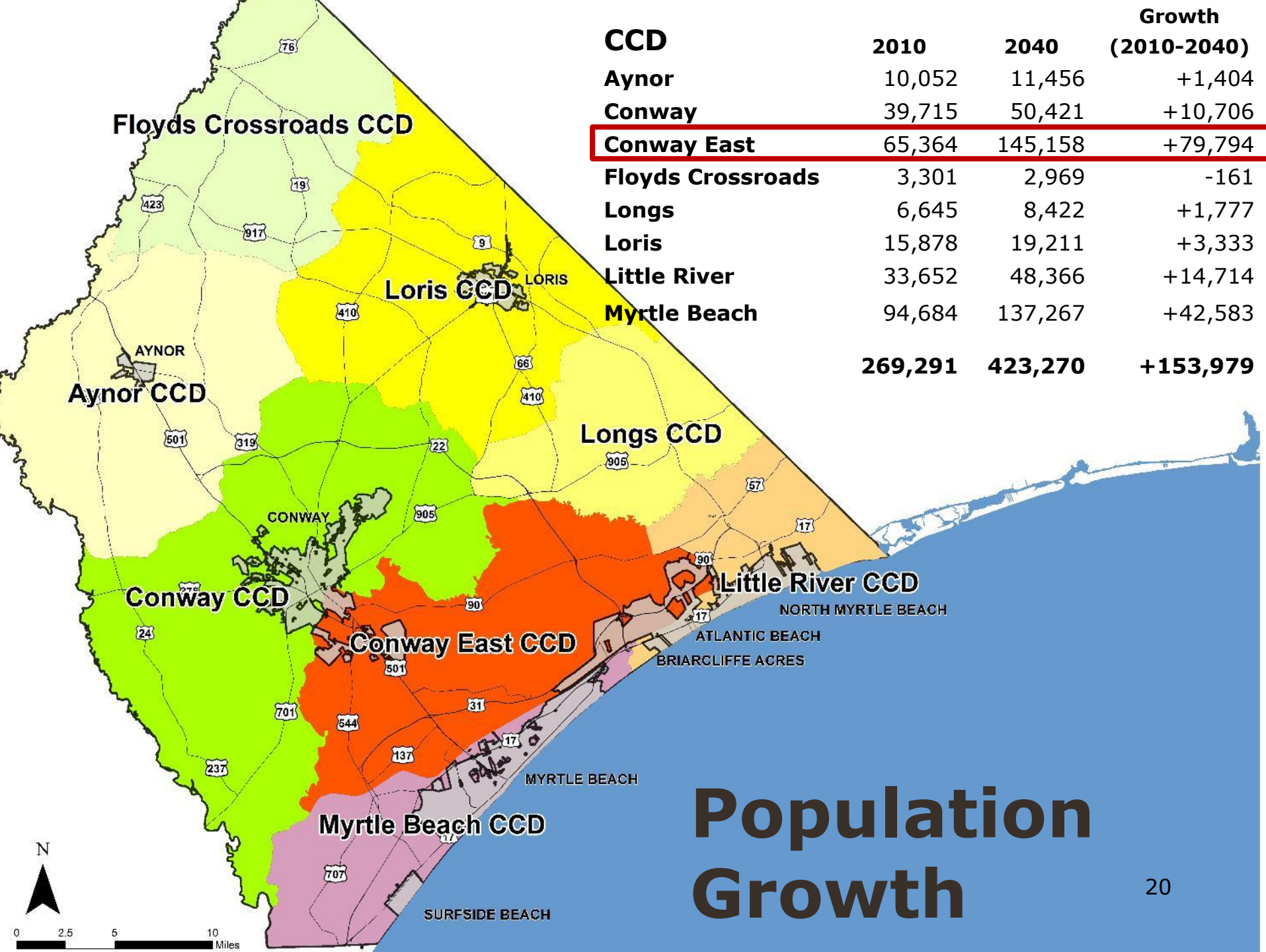
Building & Code	BUILDING CODE		
	Roof must be Class A, B, or C fire-resistant		
	Windows must be double-paned		
	Chimneys must have spark-arresters		
	Soffits and decks must be enclosed		
	Sprinklers are required in larger structures		
P&Z P&Z, E, SW B&C HOA P&Z HOA	FIRE CODE		
	Multiple accesses required for subdivisions or projects of certain size		
	Access roads must be of certain width and gradient		
	Emergency firefighting water supply required		
	Flammable materials (wood piles) must be located 30 feet or more from the principal structure		
	Proper addressing and signage required to guide wildfire and emergency service providers		
	Clearance of flammable vegetation (defensible space) required around structures		
	LAND USE CODE		
	Overlay map of high fire-hazard areas	★	EM
	Clearance of flammable vegetation (defensible space) required around structures		HOA
	Site plans must use natural features (lakes) or artificial features (golf courses) as fire breaks	★	
	Wildfire breaks around perimeter of development must be provided for larger and more complex projects	★	
	Maximum development density reduced in high-hazard areas	★	
	Clustering of new development away from high wildfire risk areas required or encouraged	★	
	Maintenance requirements for defensible space		HOA
	SUBDIVISION CODE		
	Clustering of new development away from high wildfire risk areas required or encouraged		
	Multiple accesses required for subdivisions or projects of certain size		P&Z
	Requirement that homeowners' association be responsible to fund and maintain defensible space		HOA ¹⁷

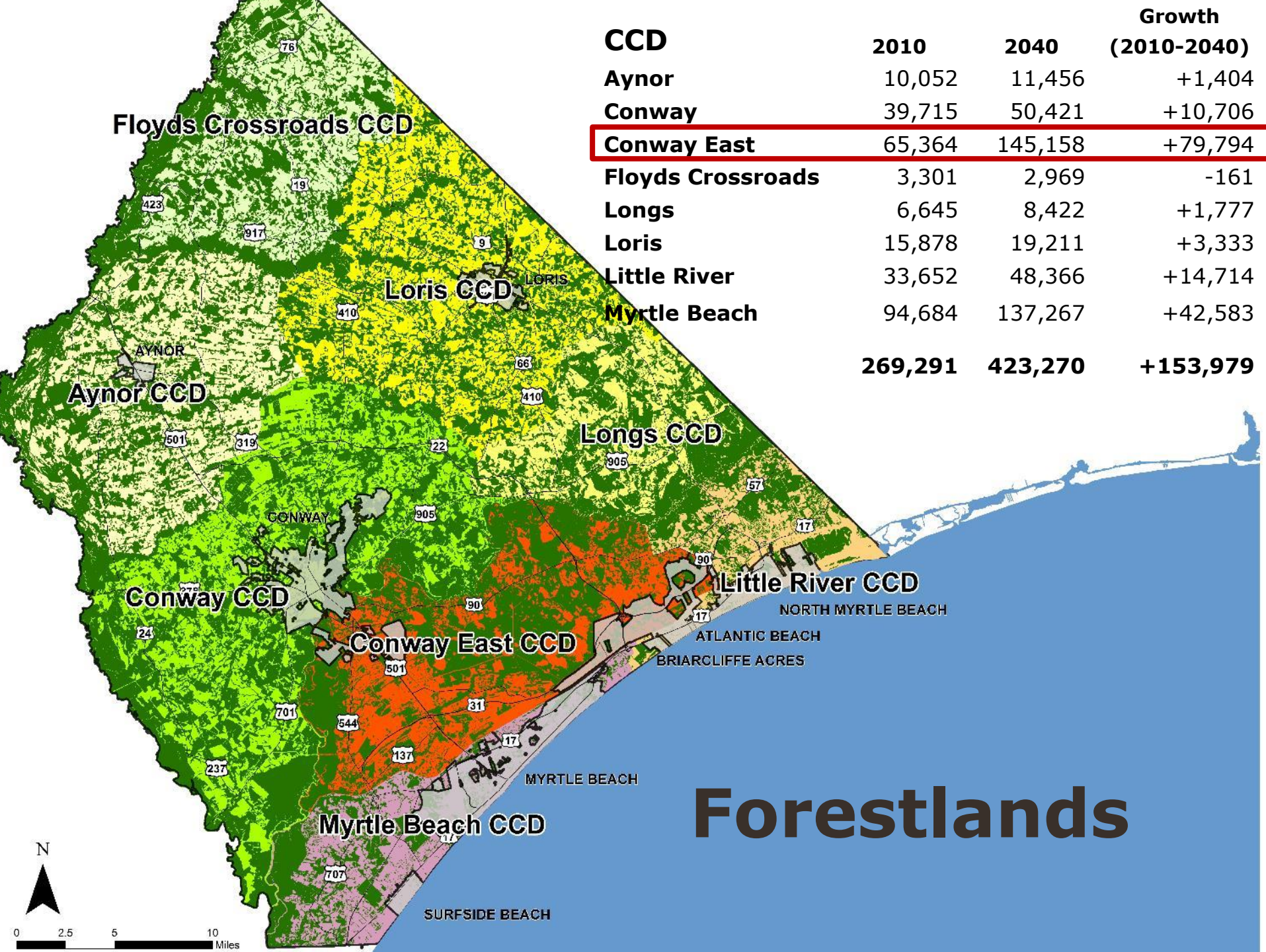
General Responsibilities

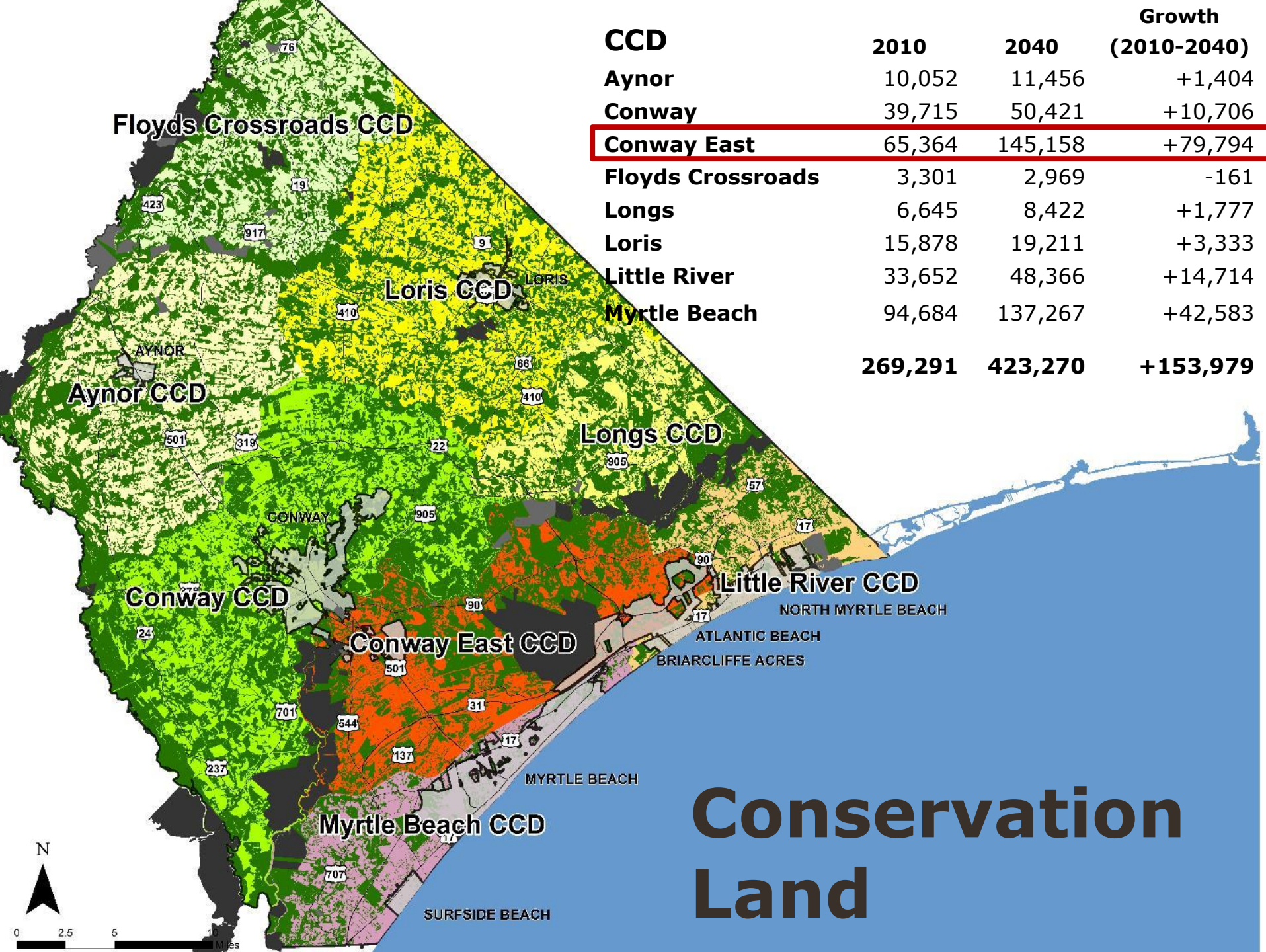


Population Growth

	Decennial Census Data					Growth Projections				
CCD	1970	1980	1990	2000	2010	2020	2030	2040	Growth (2010- 2040)	% Growth (2010- 2040)
Aynor	5,634	7,190	6,844	8,908	10,052	10,475	11,067	11,456	+1,404	14.0
Conway	18,665	23,868	26,881	33,575	39,715	42,905	46,631	50,421	+10,706	27.0
Conway East	3,419	8,546	17,552	31,639	65,364	92,715	119,113	145,158	+79,794	122.1
Floyds Crossroads	3,420	3,771	2,964	3,195	3,301	3,130	3,006	2,969	-161	-4.8
Longs	2,788	3,299	3,371	5,625	6,645	7,171	7,789	8,422	+1,777	26.7
Loris	9,895	11,137	11,290	13,785	15,878	16,815	17,994	19,211	+3,333	21.0
Little River	4,960	8,781	17,988	26,315	33,652	38,352	43,340	48,366	+14,714	43.7
Myrtle Beach	21,211	34,827	58,410	73,587	94,684	108,333	122,757	137,267	+42,583	44.9
Totals	69,992	101,419	145,300	196,629	269,291	319,896	371,697	423,270	+153,979	57.2







Carolina Forest 2001-2014



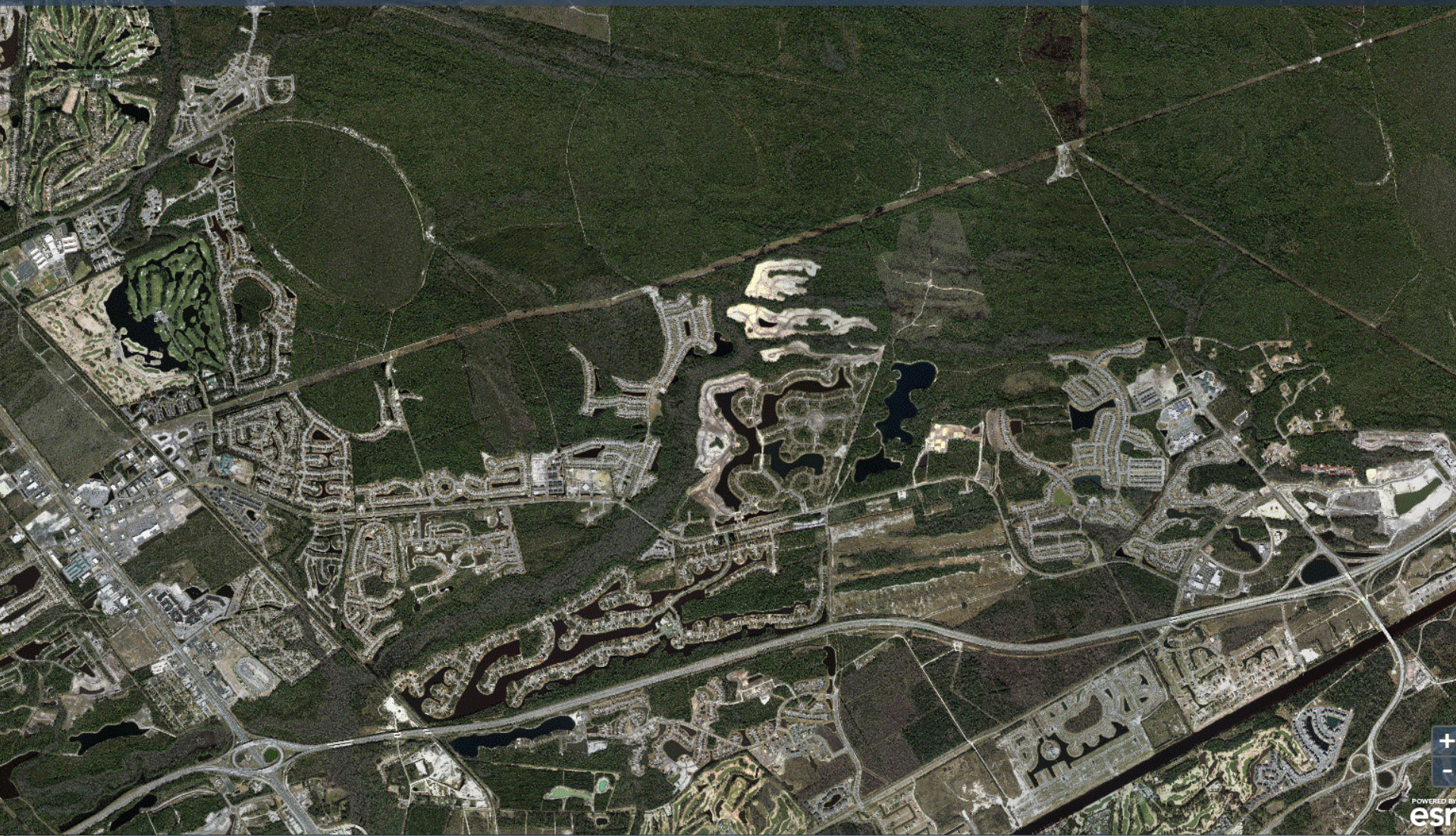
Carolina Forest 2001-2014



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Carolina Forest 2001-2014



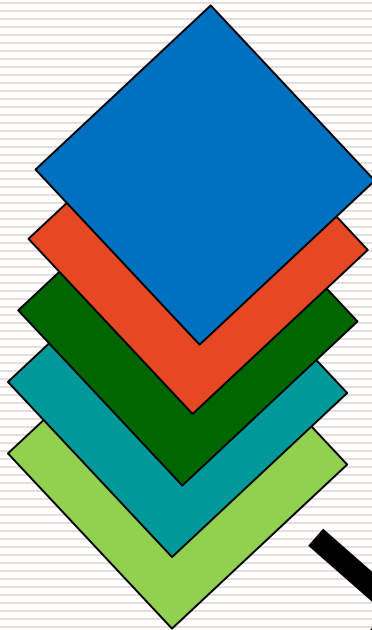
Comprehensive Planning



Land Suitability Analysis

Constraint Model

Floodplain
Fire prone
Critical Habitat
Wetland
Protected Land



Development Model

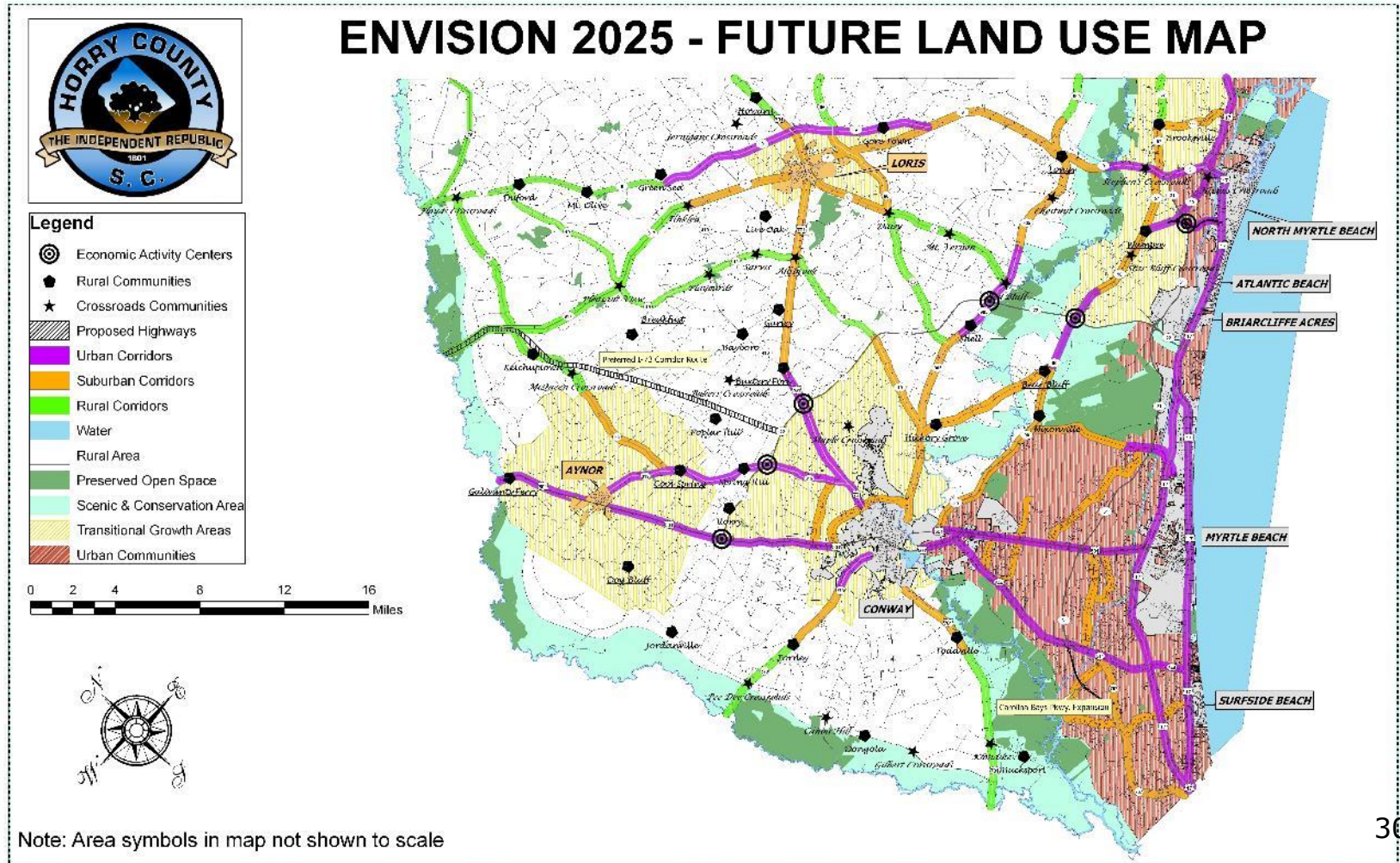
Proximity to
Major Roadways
Major Destinations
Existing Utilities
Existing Development
Major Employers



Conflict Model

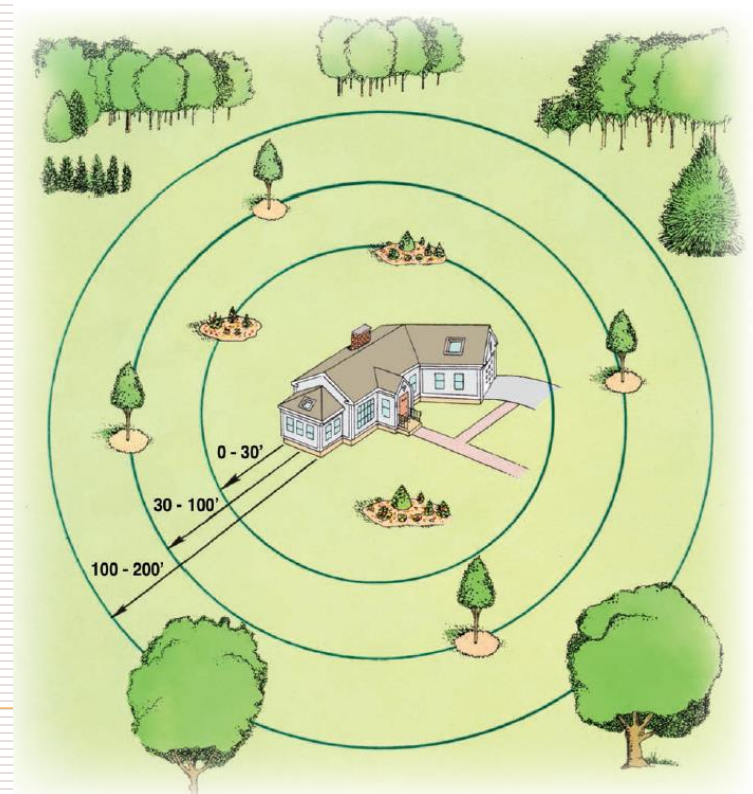
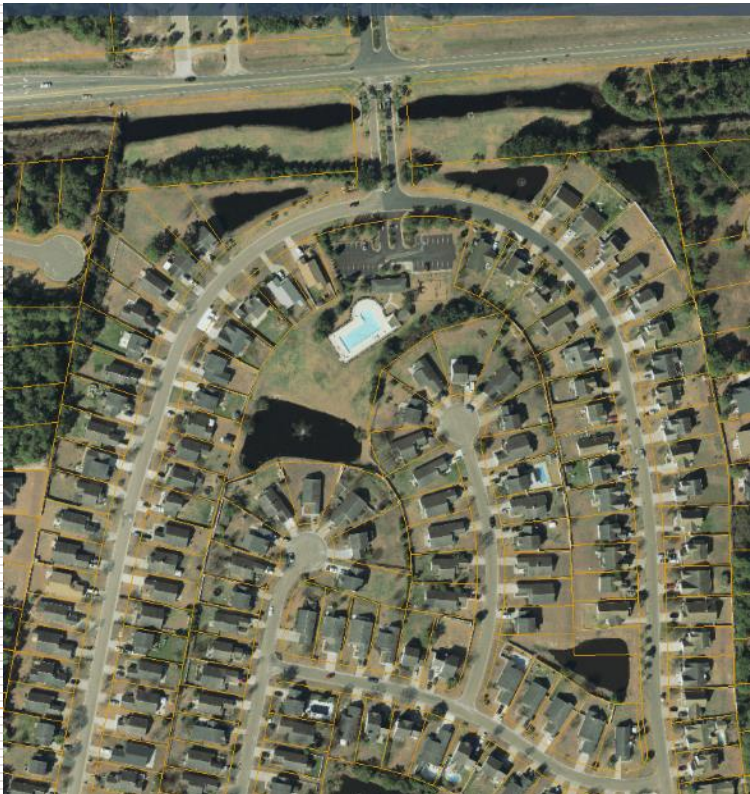
Future Land Use

Future Land Use



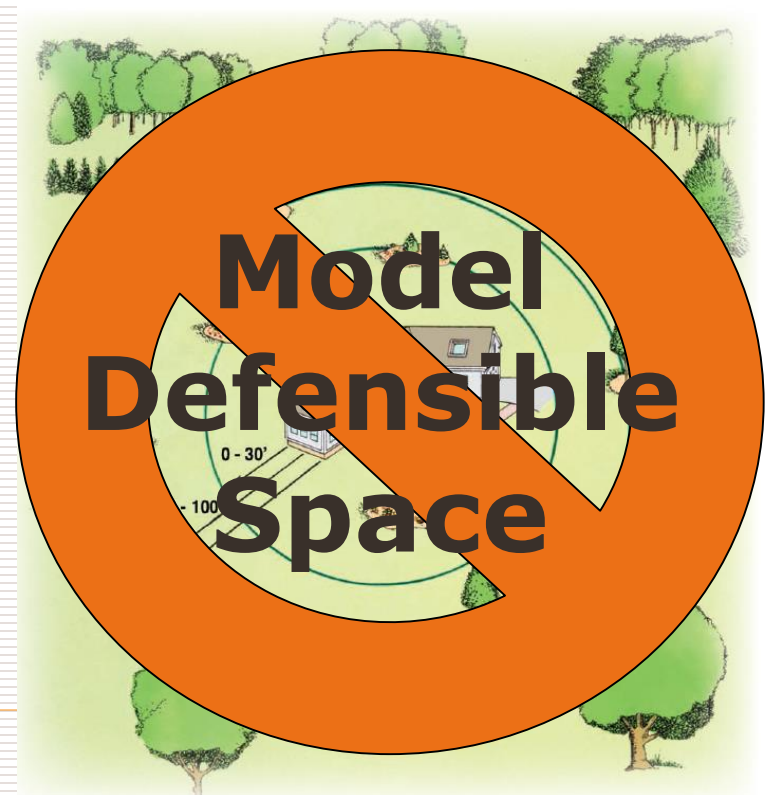
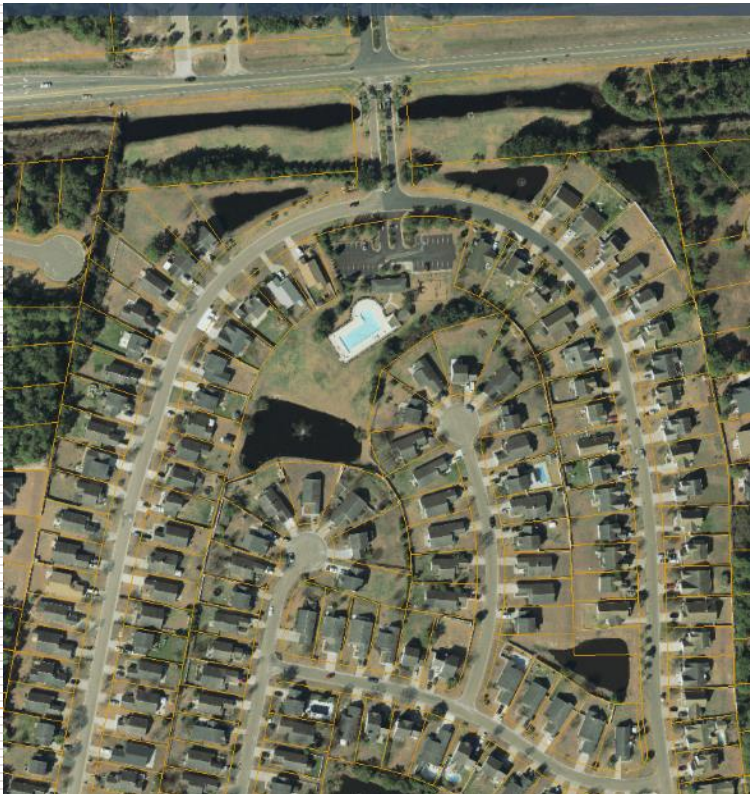
Zoning

- Density
- Setbacks



Zoning

- Density
- Setbacks



Land Development Regulations

Access

- ❑ Residents and firefighters using same roads
- ❑ Ingress and Egress
- ❑ Cul-de-sacs and dead ends
- ❑ Narrow and winding roads

Land Development Regulations

Access

- <50 lots/units shall supply a minimum of **one (1)** paved point of access to every lot/unit within the development.
- 51 to 100 lots/units shall provide a minimum of **one (1)** paved point of access to each lot/unit within the development - The roadway shall be no less than 66 feet in width. If topographical constraints, the Planning Commission may permit installation of an emergency access.
- >100 lots/units shall provide a minimum of **two (2)** paved points of access.

Land Development Regulations

Access

Figure 1 – Development Access

Subdivision with less than 50 Lots

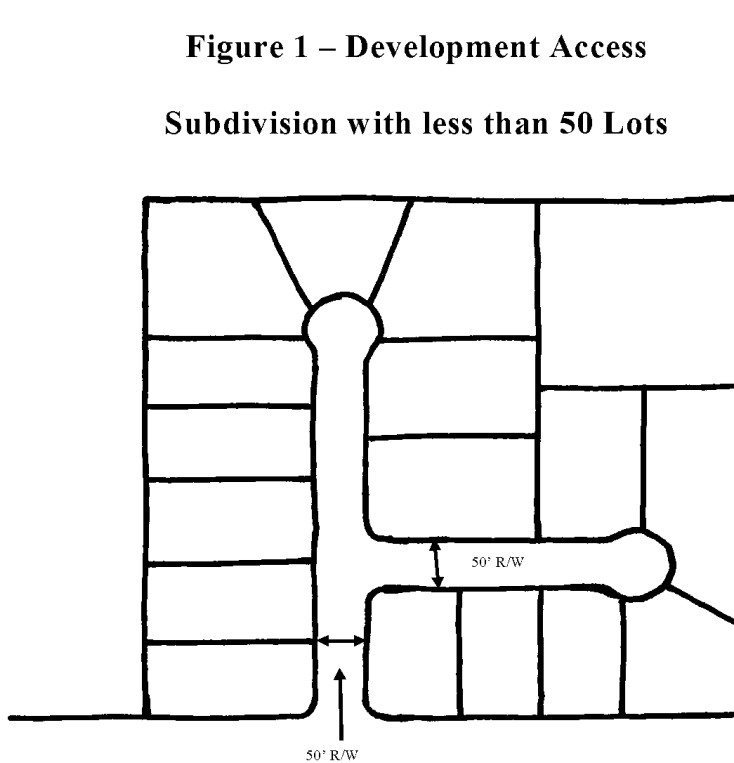


Figure 1 illustrates **external and internal** access to a development of less than 50 lots. One point of **external** access is provided to the development. One point of **internal** access is provided to each lot within the development also.

Figure 2 – Development Access

Subdivision with 51 to 100 Lots

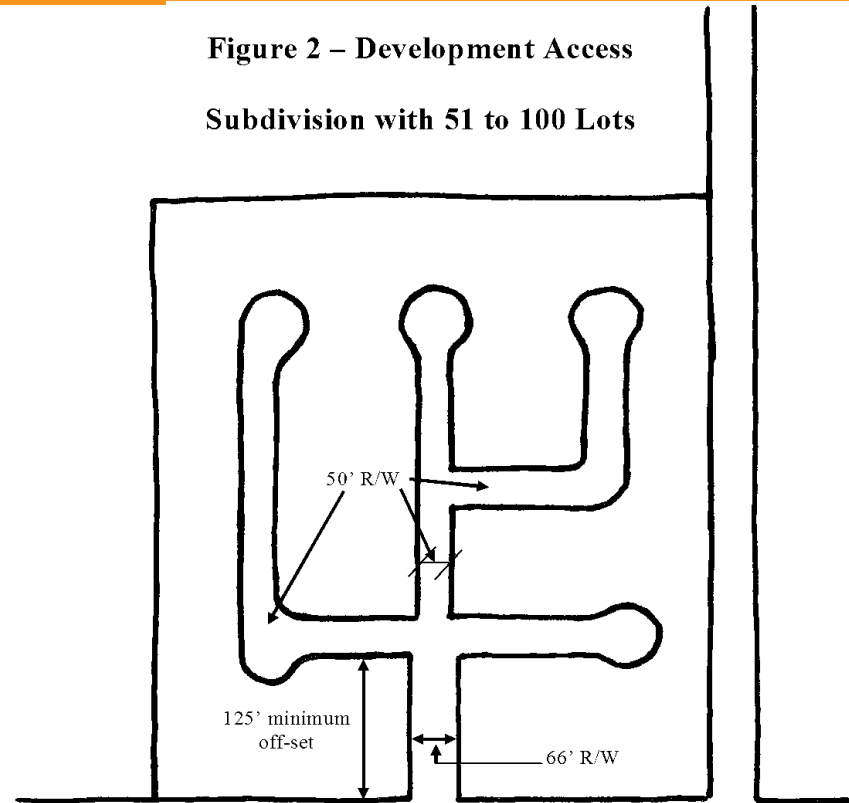


Figure 2 illustrates **external and internal** access to a development containing 51 to 100 lots. One enlarged **external** access is provided. One **internal** access is provided to each lot within the development also.

Land Development Regulations

Access

Figure 4- Development Access
Multi-Phase Subdivision Over 100 Lots
(Access To Each Phase As Indicated)

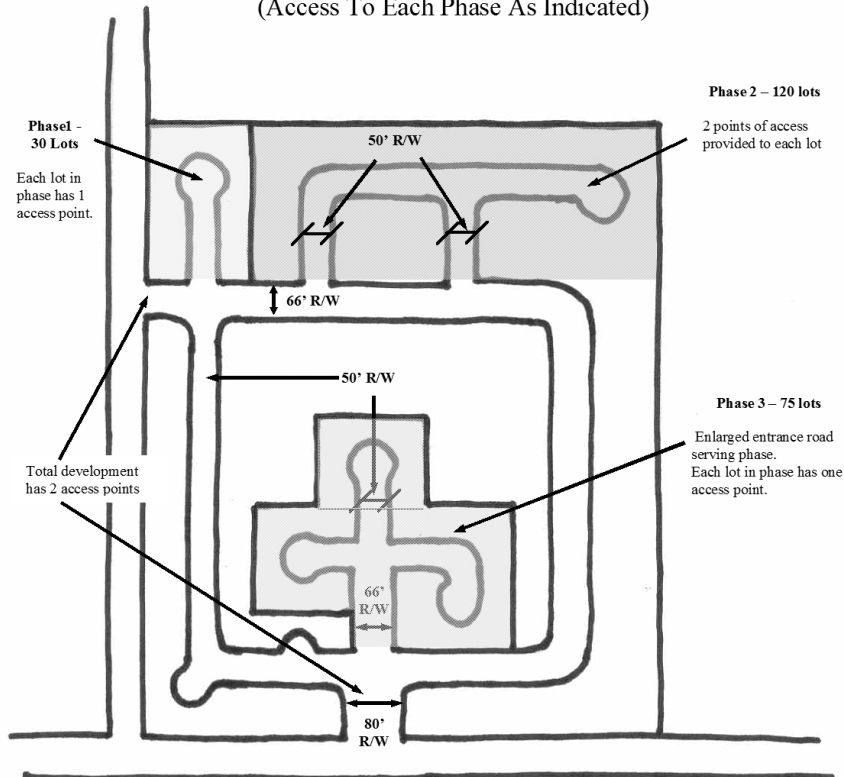


Figure 4 illustrates how a development of over 100 lots that has multiple phases would need to provide access.

- 1) The total development would be required to have two paved accesses.
- 2) Each phase within the development would need to provide access as described in Article 4, Section 2-1.1(B).

Figure 5 – Development Access
Multi-Phase Subdivision Over 100 Lots
With One Access

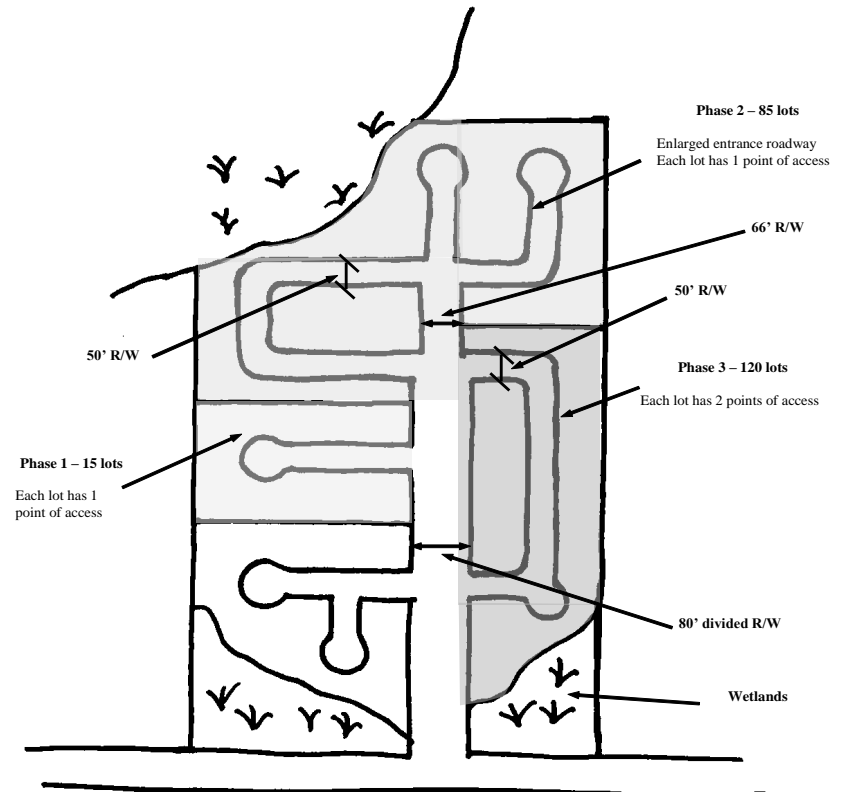
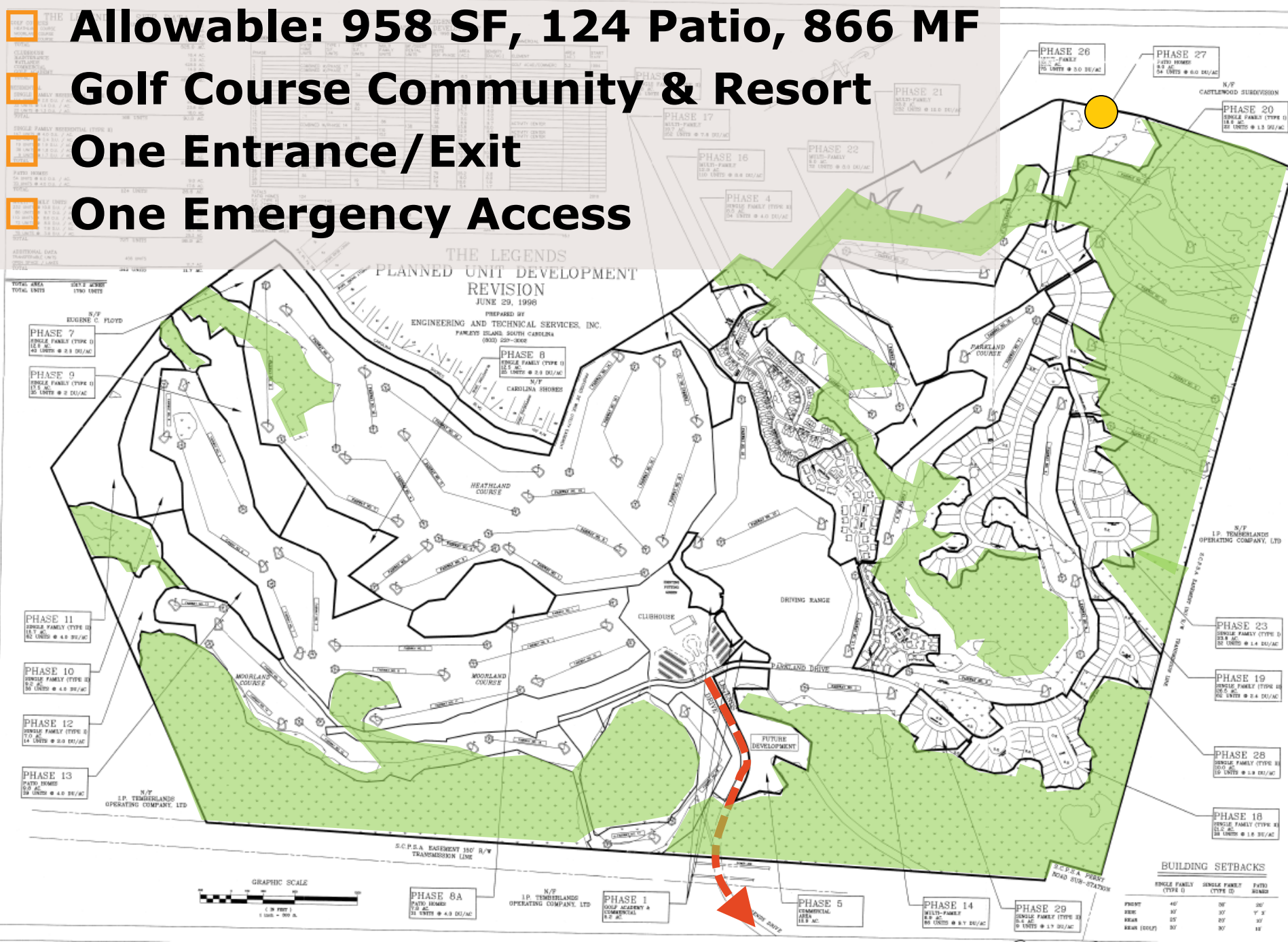


Figure 5 illustrates how access would be provided to a parcel that has limited access to the main road due to wetland impacts. To achieve access a main boulevard entrance roadway would be created and the phases of the development would feed into that boulevard. Each phase would provide access as required by Article 4, Section 2-1.1(B)

One Emergency Access



Land Development Regulations

Road Width

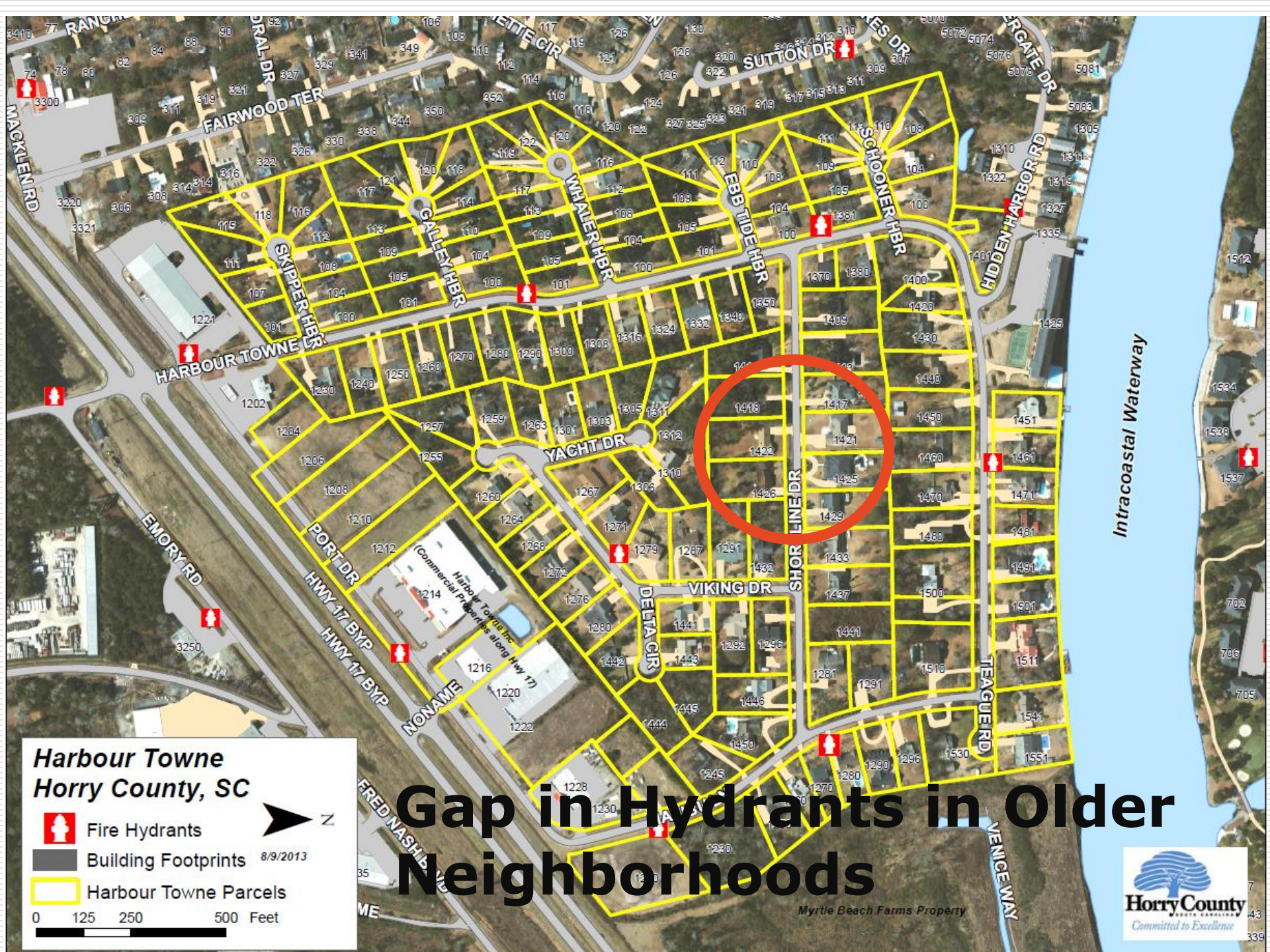


Width Increases with # of Lots

Land Development Regulations

Gates – Opportunity for Improvement

- Entrance Gates
- Emergency Access
 - Must be platted
 - Must access another paved roadway
 - Minimum 6" GABC



**Harbour Towne
Horry County, SC**

8/9/2013

-  Fire Hydrants
-  Building Footprints
-  Harbour Towne Parcels

0 125 250 500 Feet

ME

**Gap in Hydrants in Older
Neighborhoods**

Land Development Regulations

Common Open Space

- ❑ **Open Space Requirements**
 - SF - 500 sq. ft. per unit
 - MF - 20% of Development
- ❑ **Recorded in Master Plan and Deed.**
- ❑ **To be maintained by HOA.**



Land Development Regulations

Common Open Space

- Orientation
- Maintenance
- Competing interests – recreation, stormwater, and defensible space

Carolina Bay

Golf Course

Waterford Plantation at Carolina Forest Horry County, SC Overview Map



Fire Hydrants



Building Footprints



Waterford Parcels

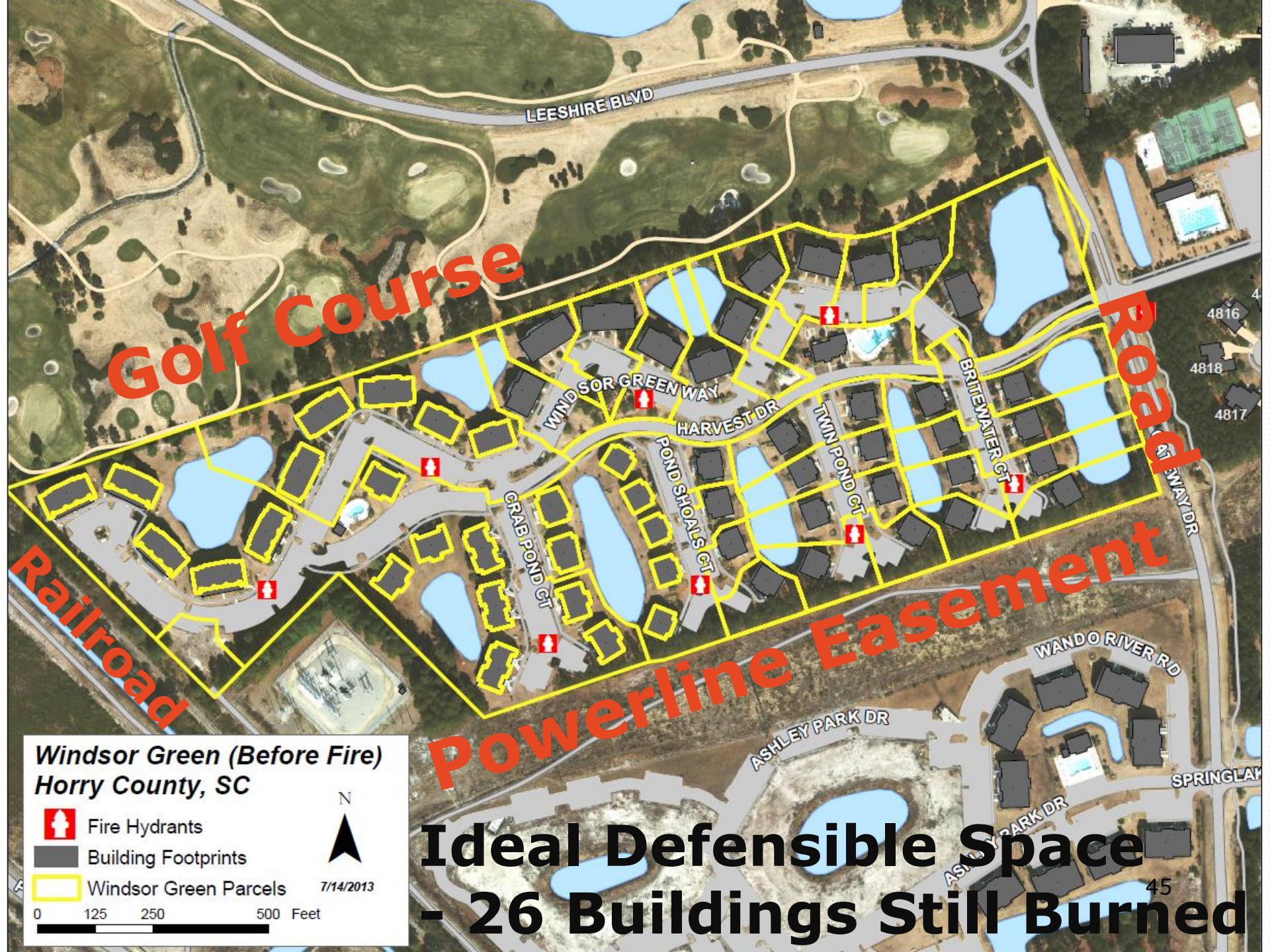
0 500 1,000 2,000 Feet

N





4/29/2013


Powerline Easement




Windsor Green (Before Fire)
Horry County, SC

 Fire Hydrants

 Building Footprints

 Windsor Green Parcels



7/14/2013

0 125 250 500 Feet

Ideal Defensible Space
- 26 Buildings Still Burned

Create Defensible Space

- **30 foot minimum from structure to wildland fuels**
- **Remove dense understory vegetation up to 60 feet**



Land Development Regulations

Common Open Space – Proposed Change

Wildfire defensible space buffer along the perimeter of the subdivision to minimize the potential threat of wildfire damage from undeveloped, wildland areas. The buffer shall be a minimum of thirty (30) feet wide and shall be maintained free of wildfire prone plants, underbrush and debris. A fifteen (15) foot wide cleared pathway shall be maintained within this area to provide access for Horry County Fire and Rescue and South Carolina Forestry Commission vehicles. This area may dually serve as a recreational path for the community.

Land Development Regulations

Common Open Space – Proposed Change



30' wide buffer
with 15' wide path

Option for Developers

Create Defensible Space

- **Important to have defensible space from the wildland fuels and from neighboring homes.**



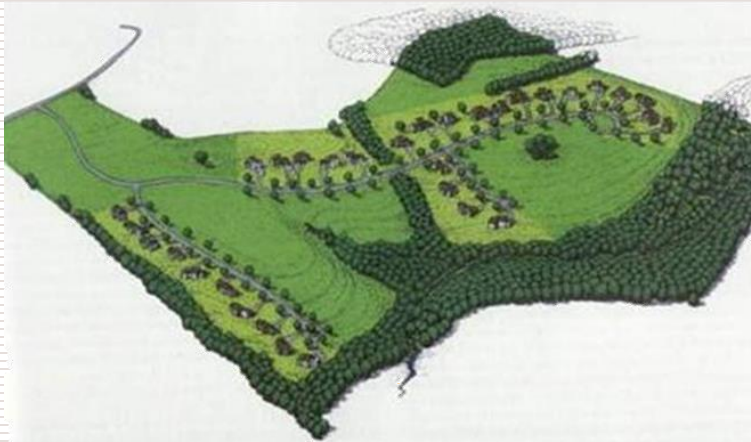
Growth Management

Conservation Subdivision

Conventional Subdivision



Conservation Subdivision



□ Positive

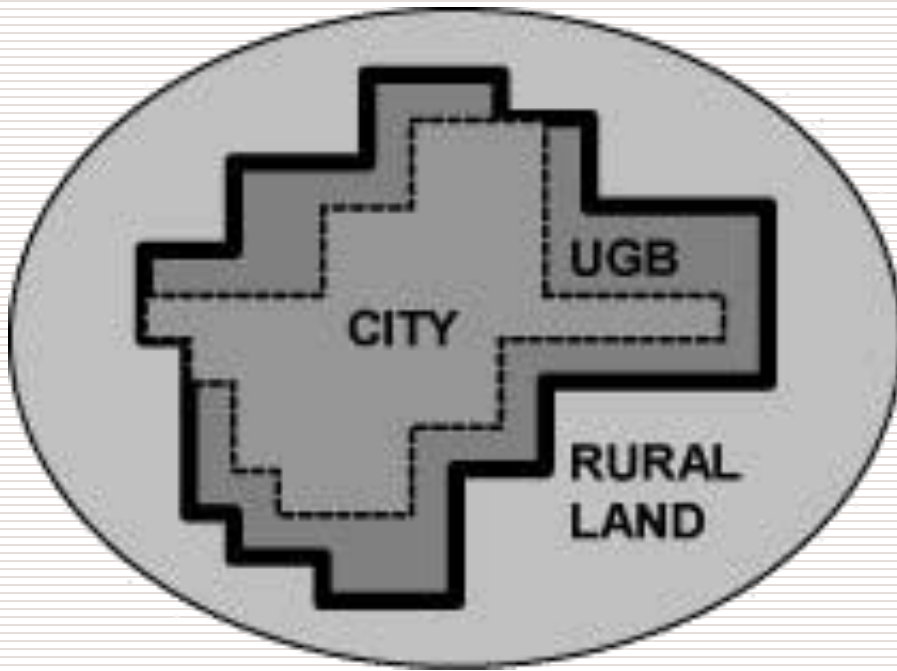
- Protects sensitive lands
- Provides recreation/open space
- Separation from woodlands
- Housing easier to defend

□ Negative

- Proximity of Homes to Each Other

Growth Management

Urban Growth Boundary



- Greenbelt
- Protect Rural or Sensitive Lands
- Used to Minimize Infrastructure Costs (Roads, Water/Sewer, Stormwater)

Growth Management

Transfer of Development Rights

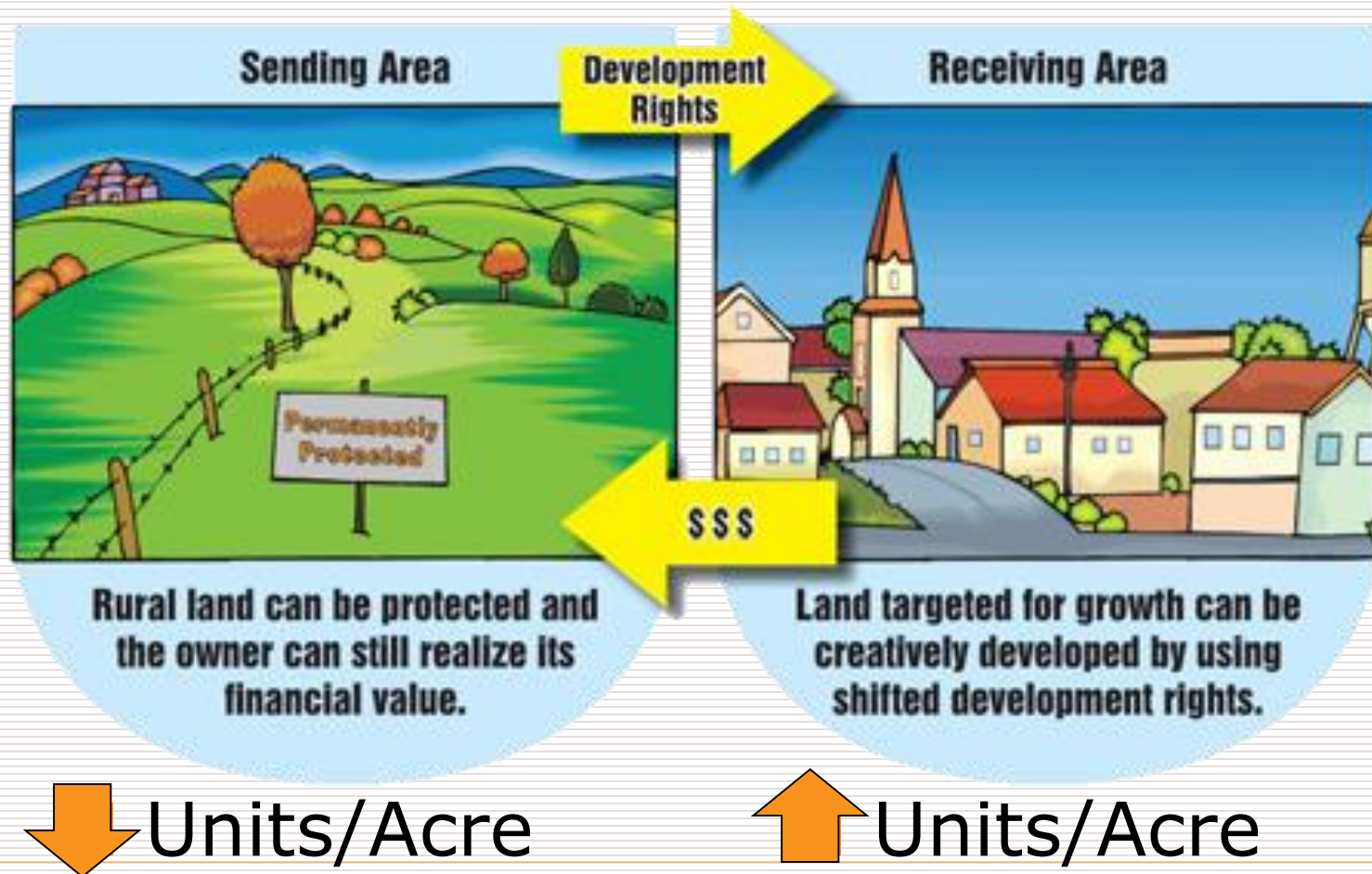


Image Source: James City County, VA

Effectiveness of regulations and plans

- **Ordinances and plans can be effective IF...**
 - **Designed to address the local situation**
 - **Community is driving the change**
 - **Enforceable and enforced**
- **Comprehensive Plans/Land Use Planning**
 - **A powerful but often underutilized**

Remaining Challenges

- Community Interest
- Developers' Rights
- Housing Style Demand
- Current Neighborhood Designs
- Management of Forested Lands
- Collaboration

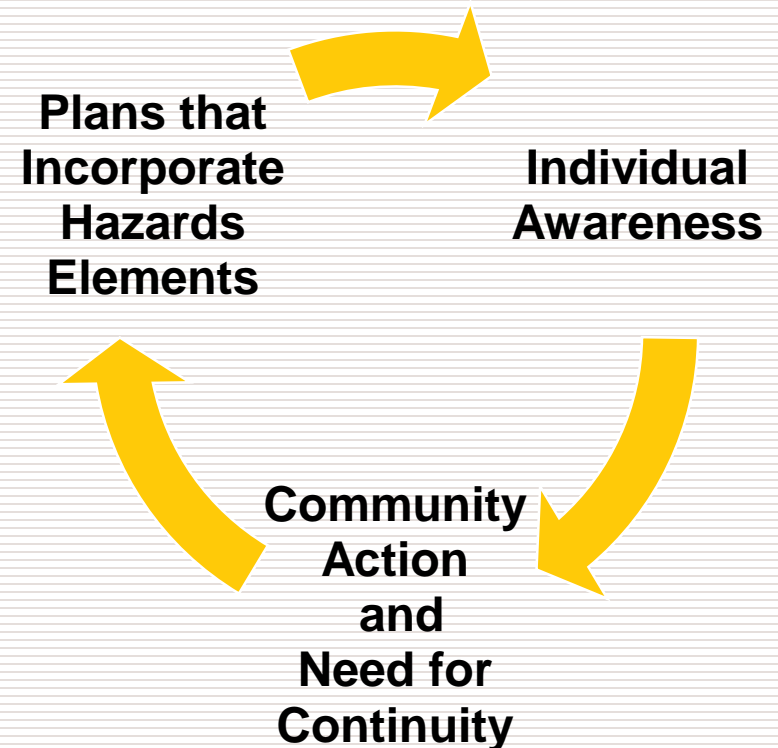
Include Hazard Elements in Comprehensive Plans?

- ❑ **Helps minimize contradictions**
- ❑ **Can create enforcement-friendly environment**
- ❑ **Can help inform various stakeholders about extent and magnitude of risks in the community**



The feedback loop

- **Education and awareness leads to individual and community action**
- **Community action drives desire to institutionalize solutions**
- **Plans can help institutionalize safety**
- **Planners need public demand for plans with safety elements**



Firewise Today

- ❑ **SC – Currently has 30 Nationally Recognized as Firewise Community/USA**
- ❑ **12 of these communities are located here in Horry County.**
- ❑ **In process of creating a County-wide Community Wildfire Protection Plan (CWPP) for Charleston County.**
- ❑ **CWPPs have been created for 3 fire districts in the upstate.**

Firewise Future

- **32 Communities Pending to become Recognized**
 - **Have the requirements and not submitted application**
 - **Have Plan or assessment in process of being completed**
 - **Have reached out and shown interest in becoming Firewise**

- **20 Communities in Horry County**

Firewise Future

- **3 Counties have expressed interest in having a County-wide CWPP**
- **Carolina Forest has expressed an area wide CWPP**
- **Just last week the City of Dillon expressed interest as well**

Large Area CWPP

- **Get local officials directly involved in the Firewise principles**
 - **Allow for better funding**
 - **Increase opportunity for homes to be Firewise in the early stages**
 - **Allow for special training opportunities for first responders**

**ENHANCE THE FIRE ADAPTIVE IDEA AND
MAKE MORE HOMES AND RESIDENTS SAFER**

Contact Information

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www.trees.sc.gov