
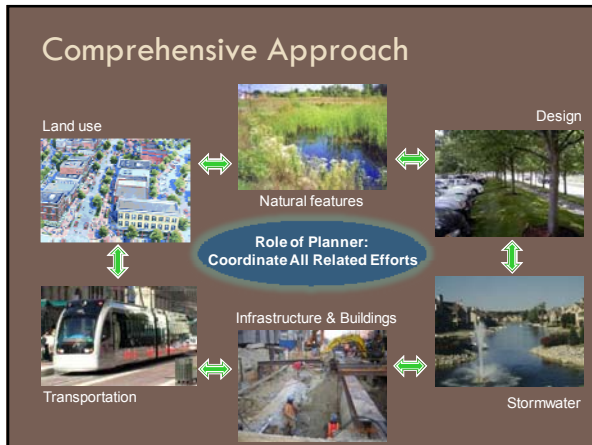


Planning for Sustainability

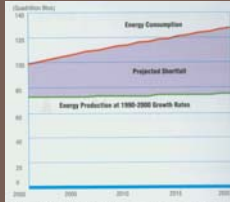
Presented by:
Val Lazdins
Principal Planner, LSL Planning
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Partner, KKG
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Partner, LSL





Why Sustainable?

- Dependency on foreign oil and single occupant vehicle trips
- Environmental concerns
- Aging of population
- Economically distressed
- Public support for a more Green approach



Over the next 20 years, growth in U.S. energy consumption will increasingly outpace U.S. energy production, if production only grows at the rate of the last 10 years.

Source: Energy National Laboratories and U.S. Department of Energy, Energy Information Administration.

Defining Sustainability

- Development that “meets the needs of the present without compromising the ability of future generations to meet their own needs.”
- 1983 World Commission on Environment and Development
- Increased public awareness and national debate
- May vary by community based on values and political will

Elements of Sustainable Plans

- Commit to Green Policies & Regulations
- Land Use & Infill Development
- Building Design/LEED
- Brownfield Redevelopment
- Integrate Land Use & Transportation
- Green Infrastructure
- Renewable Energy
- Fiscal Sustainability
- Implementation



The Green Tract

- Most communities have one or more tracts
- Regulations tied to tract so green solutions fit appropriate context
- Appropriate and responsive green/sustainable techniques fit desired form and tract character
- Elements: lot size, density, dimensional, street design



Example: Green Stormwater Transect



	Rural-----	-----Suburban-----	-----Urban
SWM	On-site processing	On-site/shared processing	Community/off-site
SWM Facilities	Bio-swales, rain gardens, open space	Rain gardens, bio-swales	Engineered soils for street trench plantings
Run-off/ surfaces	Gravel parking lots, shoulders	Gravel parking lots, permeable pavement	Permeable pavement

Green "Infrastructure" Plan

- Prioritizes open space conservation to reflect desired development patterns.
 - Riparian corridors
 - Wetlands
 - Floodplains
 - Major habitat areas
 - Groundwater recharge areas
- Coordinate conservation efforts with surrounding communities to preserve most critical areas
- Connections and corridors



On-site Runoff Storage

- Green roofs absorb rainwater and may redirect it to rooftop gardens
- Gutters can direct rain water to rain barrels for watering, reducing water demand, or released slowly into yard for infiltration
- Allow temporary ponding of stormwater in yards




Xeriscape/Native Plants

- Native species can greatly reduce requirements for watering, fertilizers and pesticides
- Can reduce stormwater pollutants
- Include xeriscape policies in Master Plan
- Require native plants use



Tree Protection Ordinance

- Trees can intercept and slow rainwater, enhance infiltration - delay release of stormwater.
- Clearing, grading and soil compaction reduces the pre-development stormwater capacity.
- Land clearing permits - minimize tree removal and grading.
- Clear planting and maintenance requirements for new and existing on-site and street trees.



Leadership in Energy and Environmental Design (LEED)

- Reduce energy use for lighting, heating, cooling, and transportation
- Promote non-motorized transportation like walking and biking
- Reduce on-site water usage
- Reduce runoff of rainwater
- Protect existing trees and vegetation
- Promote higher density infill development where infrastructure capacity exists



LEED Neighborhood Development

- Smart Location & Linkage
 - Brownfield Redevelopment
 - Reduced Automobile Dependence
 - Proximity to Housing and Jobs
- Green Construction & Technology
 - LEED Certified Green Buildings
 - Energy Efficiency in Buildings
 - Reduced Water Use
 - Storm Water Management
- Neighborhood Pattern & Design
 - Compact Development
 - Diversity of Uses & Housing
 - Walkable/Bikeable Streets


Green Land Use Policies

- Reduce/minimize environmental footprint
- Defined development area (growth boundary)
- Direct growth to developed areas with infrastructure
- Encourage adaptive reuse and in-fill
- Mix land uses



Fiscal Sustainability

- Infrastructure and services costs must be related to land use and density
- Link land use to service areas and consider cost to expand
- Life cycle analysis



Mixed-Use Development

- Jobs, neighborhood services and residences in close proximity
- Mixed uses within site
- Enhance walkability
- Reduce traffic & parking demand



Redevelopment & Historic Preservation

- Accommodate growth on previously developed land: no net increase
- Make urban areas more livable
- Reduce pressure on rural areas



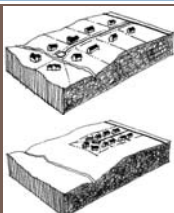
Brownfield Redevelopment

- Site Reuse
- Capitalize Existing infrastructure
- Redevelopment Authority tax increment financing help to fund cleanup
- Incentives like density bonuses and accelerated review
- "Greyfield" redevelopment for outdated sites to create mixed-use neighborhoods



Cluster Development

- Units clustered on smaller lots
- Remaining area preserved for either natural or recreation use
- Development concentrated to preserve significant features
- Density bonus as an incentive
- Minimizes developed area, stormwater requirements and impacts to natural features



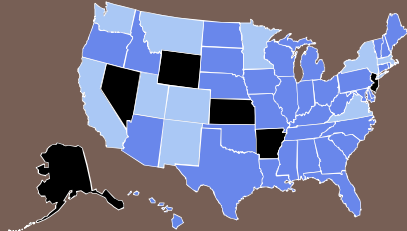
Green Transportation | Sustainable Mobility

- "Goal to provide access to work, goods and service with the least expenditure of energy, time and emission... success measured by trip capture."
—Urban Land Institute
- "Transportation choices... for healthier communities to reduce obesity."
—Centers for Disease Control

Obesity Trends* Among U.S. Adults

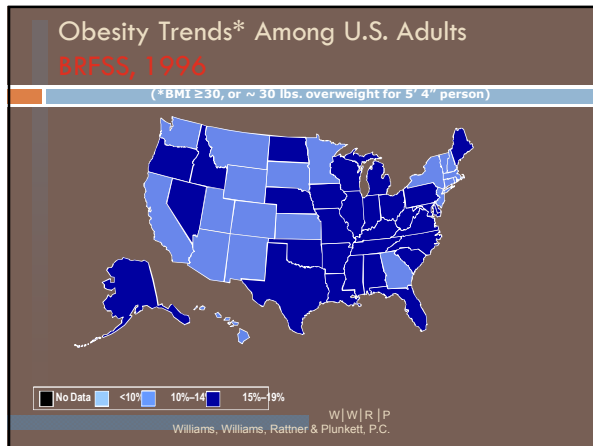
BRFSS, 1990

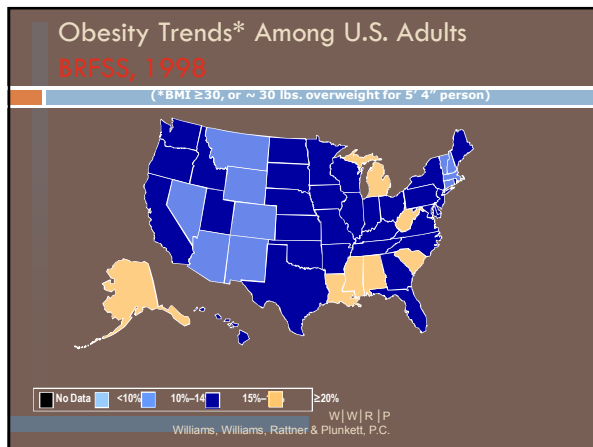
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)

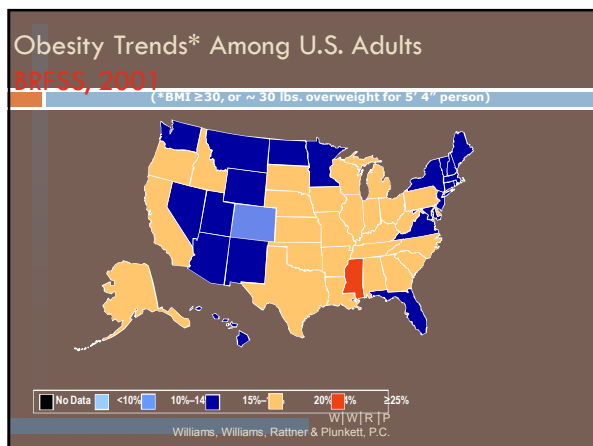


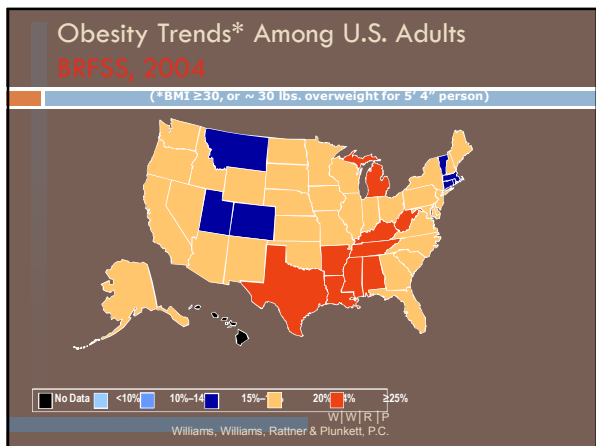
■ No Data ■ <10% ■ 10%-14%

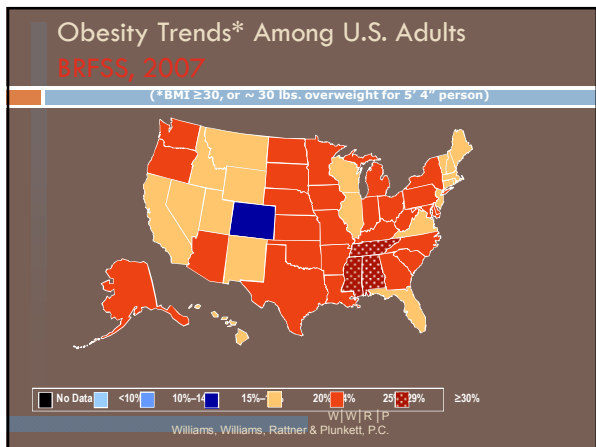
W|W|R|P
Williams, Williams, Rattner & Plunkett, P.C.











Green Transportation

Techniques to:

- Reduce transportation system's environmental impacts
- Reduce carbon footprint and dependency on foreign oil and non-renewable resources
- Actions to accommodate development but with less increase in VMT than might be projected
- Enhance opportunities for non-automotive travel especially single occupant peak hour trips

✓ Planning
✓ Design
✓ Operations

Green Transportation Planning

- Land use **densities and design** to reduce auto trips, promote walking, biking, transit use, etc.
- Mixed uses and transit/pedestrian friendly development
- Incentives for shared parking and travel demand management
- Maximum parking requirement and parking pricing
- Priority parking for energy efficient vehicles and car pools
- **Transportation** Impact Studies: balance modes



Green Street Design

- Stormwater/runoff (rain gardens, bioswales, pervious pavement/parking)
- Landscape/Streetscape
 - Tree canopies
 - Flow-through sidewalk planters
 - Tree wells and continuous trench planters
 - Pervious pavement/pavers
 - Native vegetation
- Variable cross sections/pavement width
- Materials (recycled, solar , LED lights/signals)



Green Transportation Practices

- Its not just getting people out of cars
- Provide viable options to driving
- Technology to improve traffic flow
 - Reduce emissions
 - Signal timing
 - Real-time incident notification and routing
 - On-board navigation and alerts
- Locate transit stops and land use nodes together (TOD)
- Add and/or enhance transit service




Plan for Viable Transit

Transit Oriented Corridors *Should*

- 7+ Units per acre (bus)
- 25-40 employees + residents per acre*
- Compact development
- Activity Centers

NOT

- Deep building setbacks
- Auto dominated uses
- Low density residential



Limit Impervious Surfaces - Lots

- Watershed-based approach more effective than parcel-based (contributes to sprawl)
- Consider lot coverage on a regional basis
- Reduced lot widths and side yard setbacks allow less road per house
- Relaxed front yard setbacks reduce driveway lengths
- Clustered development and smaller lots



Limit Impervious Surfaces - Pavement

- Regulate both maximum and minimum
- Promote shared parking
- Banked/deferred parking
- Bioretention areas, dry swales, perimeter sand filters, and filter strips: Don't forget trees!
- Consider pervious pavement






Pervious Pavement

- Parking lanes, parking lots and pathways
- Bluffton, SC:
 - ▣ 50% of parking area must be pervious
 - ▣ Experimenting with different types
- Consider maintenance


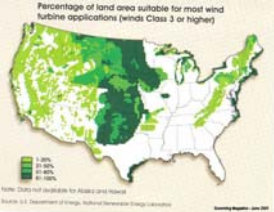


Plan for Renewable Energy

- Solar power
- Wind generation
- Geothermal
- Cogeneration facilities
- Incentives for energy-efficient vehicles



Plan for Renewable Energy




Where the Wind Blows

Plan for Renewable Energy

How Much Land Can They Consume?

- 21 WECS
- 3.7 x 2.2 miles



Map showing renewable energy sites with various colored overlays and labels.

Implementation

- Community policies
- Comprehensive plan
- Subdivision regulations
- Street & infrastructure design
- Zoning ordinance/form-based code
- Incentives
 - Mixed-use/LEED/TOD
 - Historic preservation
 - Natural resource preservation

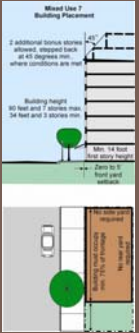


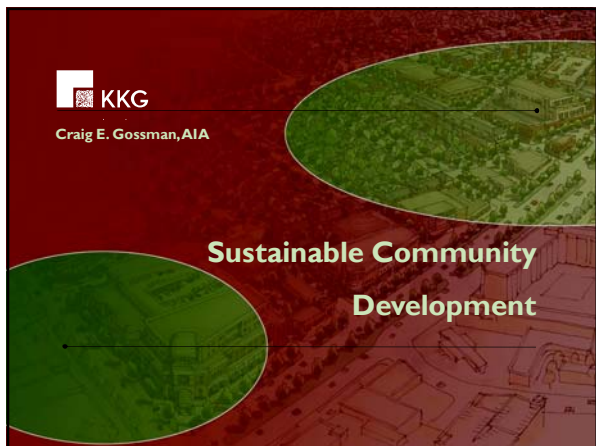
Diagram titled "Mixed Use Zoning Building Placement" showing building height, setbacks, and street layout.

Sustainable Communities in Municipal Practice

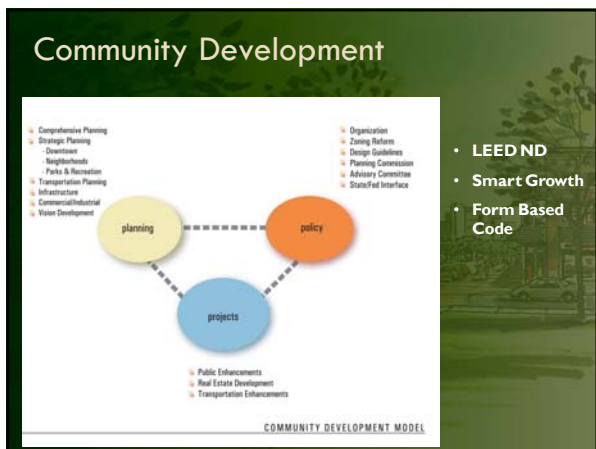
- Flexible regulations, policies to recognize current and future technologies
- Additional technical expertise needed to review plans, perform site inspections
- Inventory of facilities type and location necessary to monitor, maintain, and repair
- Use of recycled/reusable/recyclable materials
- Relative cost of improvements requires flexibility on level of upgrade/compliance
- Education is key!



Photograph of a modern building with greenery in the foreground.



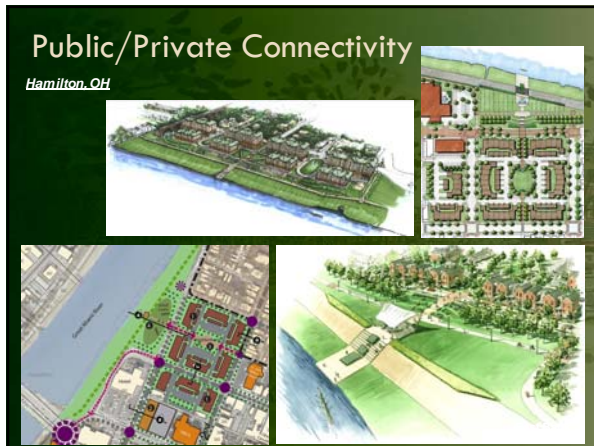
















Green Architecture

Blue Sky, Wanship UT

- ENERGY | Solar, Wind, Hydro
- Green/Reflective Roof
- On Site Water Treatment
- Grey Water
- Day Light Harvesting
- Natural Ventilation
- Water Conservation
- Air Quality
- Low VOC Materials
- Recycled Content Building Materials



Green Architecture

Blue Sky, Wanship UT

