

SUSTAINABLE DEVELOPMENT CODES



Presented By:

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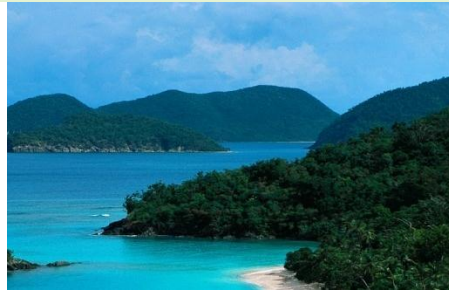
C L A R I O N



Florida APA Conference

September 2011

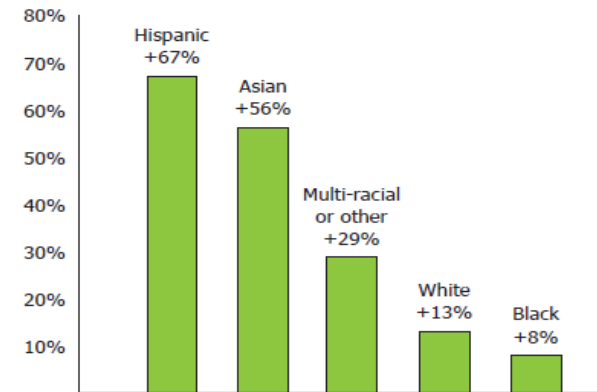
A Sustainable World???



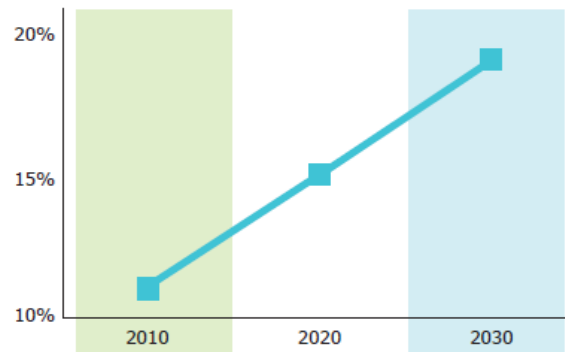
- **Fuel:** Oil production to peak in next 5-10 years...while world oil consumption increases by 50% by 2030.
- **Food:** China will demand more food in 2030 than the entire world produces today.
- **Health:** 34% of U.S. population obese. Obesity in children has tripled in last 3 decades. Costs the nation \$147 billion in weight-related hospital bills.
- **Climate:** Last decade--hottest on record; 99% of glaciers in Alaska in retreat; 5-foot sea level rise; weather extremes predicted...violent storms, drought..
- **Biodiversity:** Habitat destruction...ocean acidification = 6TH major species extinction event looming??

A Changing Nation

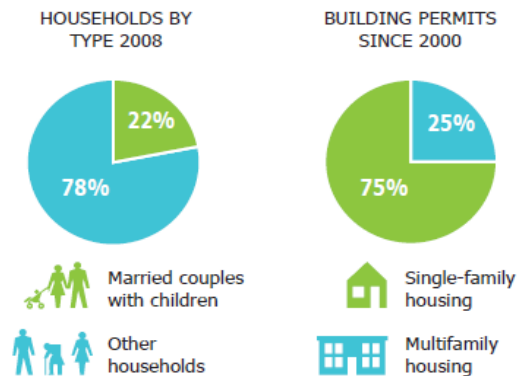
- Changing household makeup
- Aging population
- Increasing fuel costs (peak oil)
- Water shortages/increasing costs
- Local government financial strain



GROWING DIVERSITY: The percentage change by race from 2000–2009 illustrates the growth of minority populations in the region.



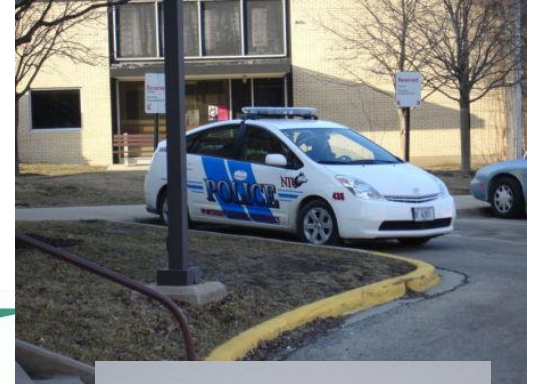
AGING POPULATION: The number of people aged 65 and over is expected to grow from 11 percent in 2010 to 19 percent in 2030.



CHANGING FAMILY DYNAMICS: Families with children make up less than one-fourth of all households, but three-fourths of new homes are designed for single families.

Local Government Sustainability Programs

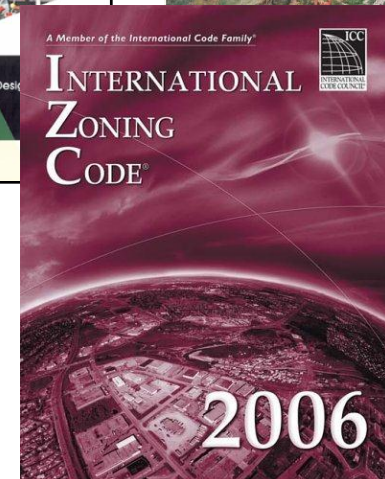
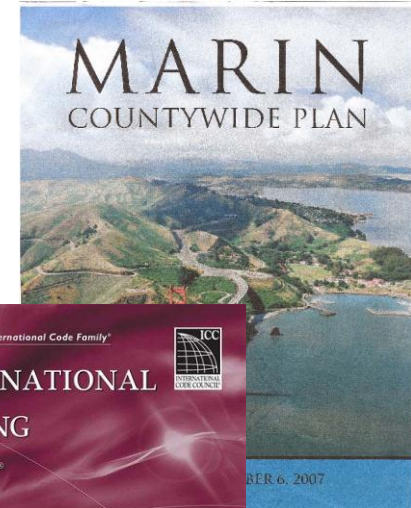
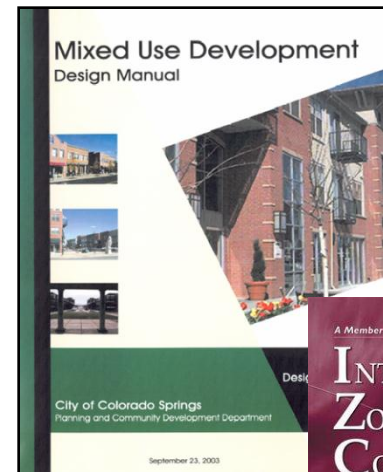
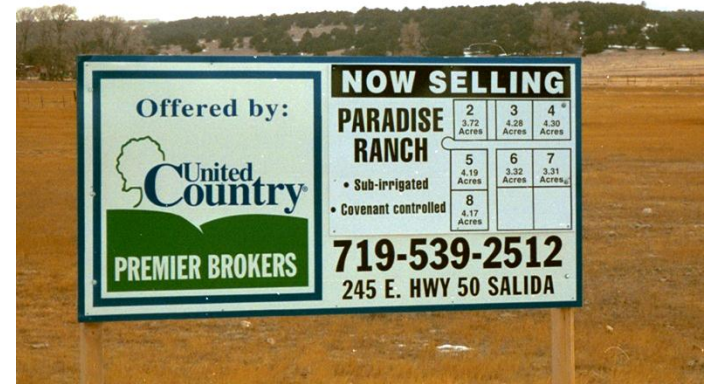
- Hybrid fleets
- Compact fluorescent bulbs
- Plant street trees
- Green city buildings
- Purchase renewable power
- Recycling programs



What's Missing?

Little focus on:

- Development patterns/
private development
- Development code
barriers to “green”
projects
- Incentives



How Can a Development Code Support Sustainability?

- Development codes CAN help address critical issues:
 - CLIMATE CHANGE/CARBON EMISSIONS
 - RENEWABLE ENERGY
 - FOOD SUPPLY
 - HEALTH
 - WATER CONSERVATION
 - MOBILITY
 - HOUSING CHOICES
 - AND OTHERS



Key Features of a Sustainable Code

1. Covers **new topics**: energy, health, food security, climate change, recycling—and relationships among them
2. **Not just reactive or prescriptive**: removes barriers, creates incentives
3. **Balanced approach** to environment, economics, social aspects of development
4. **Tailored** regionally to local climate and ecology



Three Paths to Sustainability

THINK B-I-G!!

- **BARRIERS**

- > Allow mixed-use development by right without special hearings or conditions

- **INCENTIVES**

- > Offer more flexible development standards for infill development.

- **GAPS**

- > Fill regulatory gaps ~ address what is missing



Example: Miami-Dade County

- Funded by DOE EECBG Grant
- Incorporate sustainability provisions into development regulations and building code
- Focus areas:
 - Energy Efficiency
 - Greenhouse Gas Reduction
 - Renewable Energy Systems



Example: Miami-Dade County

Energy Efficiency & Conservation Focus Areas:

Remove barriers to green roofs (lack of standards)

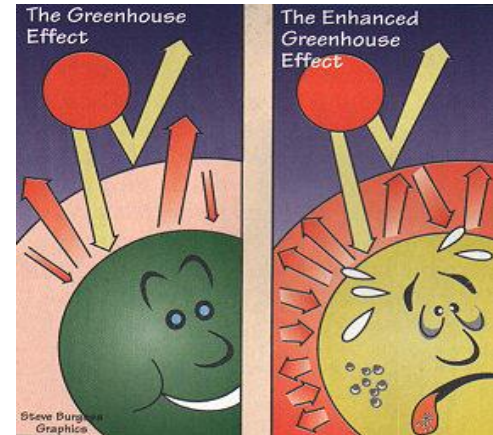
- Energy-efficient outdoor lighting
 - Water budgets for all uses
 - Allow non-conforming uses to add green features without triggering conformity
 - Shade structure requirements
 - Expedited permitting for green buildings
- Major Barrier= FL State Building Code restriction on adopting more stringent standards



Example: Miami-Dade County

Greenhouse Gas Reduction Focus Areas:

- Promoting compact, mixed-use development patterns
- Recycling & composting
- Tree protection strategies (landscape credit)
- Provisions for ADUs
- Standards to increase MXD (incentives, parking reductions, etc)



The greenhouse effect – greenhouse gases trap heat and are linked to the leading cause of global warming.

WWW.LAW.DU.EDU/RMLUI



Sustainable Community Development Code

A Code for the 21st Century

Beta Version 1.1



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K. ECONOMIC HARDSHIP ARGUMENTS

Typical Ordinance Provision:

DISTRICT OF COLUMBIA:

No permit shall be issued unless the Mayor finds that such issuance is necessary in the public interest or that a failure to issue a permit will result in unreasonable economic hardship to the owner. (District of Columbia Historic Landmark and Historic District Protection Act of 1978, D.C. Law 2-144, Section 6(f))

Annotation:

Though many property owners have made hardship arguments when applying for certificates of appropriateness, few court decisions have yet turned on or involved a hardship issue. Future cases involving preservation commissions are likely to focus increasingly on hardship issues. Some owners will argue that designation forces them to continue or institute expensive maintenance procedures, and others will argue that designation so burdens their property or inhibits its usefulness that a constitutional "taking" has occurred.

A Louisiana court held that the location of property within a historic district would not automatically make a case for hardship:

And here the hardship referred to, the requirement of conformity to two separate and sometimes conflicting standards of construction, is neither "unusual" nor "particular" to Mercier. It is common to all property owners in the zoning district in which Mercier's lot is located and therefore is not a hardship which justifies the granting of a variance. To hold otherwise would have the effect of destroying the zoning district. *Phillips v. Board of Zoning Adjustments of City of New Orleans*, 197 So.2d 916, 920 (La. 1967).

Property owners making a hardship argument have often ignored alternatives open to them. The court in *Phillips* noted that though the property owner wished to violate a local ordinance prohibiting the construction of a second main building on his lot, alternatives were open to him:

According to its own architect, Mercier could have accomplished its purpose by construction which did not violate the prohibition against two main buildings on one lot. Therefore, in the absence of a showing that approval of such non-violative construction could not have been obtained from the Vieux Carré Commission, we cannot hold appellant suffered financial loss in being denied an opportunity to obtain an increased return from its property. Even if financial

OLD-STYLE MODEL CODE



ABA APPROVED

Current Topics

- Climate Change
- Low-Impact Development/Green Infrastructure
- Wildlife Habitat And Biodiversity Protection
- Water Conservation
- Wildfires
- Transit-Oriented Development
- Complete Streets
- Bicycle Mobility Systems
- Pedestrian Mobility Systems
- Public Transit
- Parking
- Public Participation
- Affordable Housing
- Housing Diversity and Accessibility
- Food Production and Security
- Renewable Energy: Wind
- Renewable Energy: Solar
- Visual Elements



Climate Change and Greenhouse Gas Reduction

INTRODUCTION

Global warming is being accepted as a fact of life in most quarters. Tangible evidence seems to be accumulating on an almost daily basis—shorter winters, melting polar ice caps, rising sea levels, and deeper droughts. Greenhouse gases are increasingly linked to global warming and are seen as a primary culprit.

Greenhouse gases are made up of carbon dioxide, methane, and nitrous oxides. They contribute to global warming by trapping radiation from the sun. The bulk of greenhouse gases emitted in the United States is associated with transportation (e.g., cars) and energy generation and usage.

IMPLICATIONS OF NOT ADDRESSING THE ISSUE

If current low-density, "sprawl" development patterns in many communities continue and expand, the ability to reduce VMTs in the future will be seriously hampered. Once development patterns are set, it is exceedingly difficult to affect travel patterns and preferences. Low-density development makes cost-effective mass transit nearly impossible.

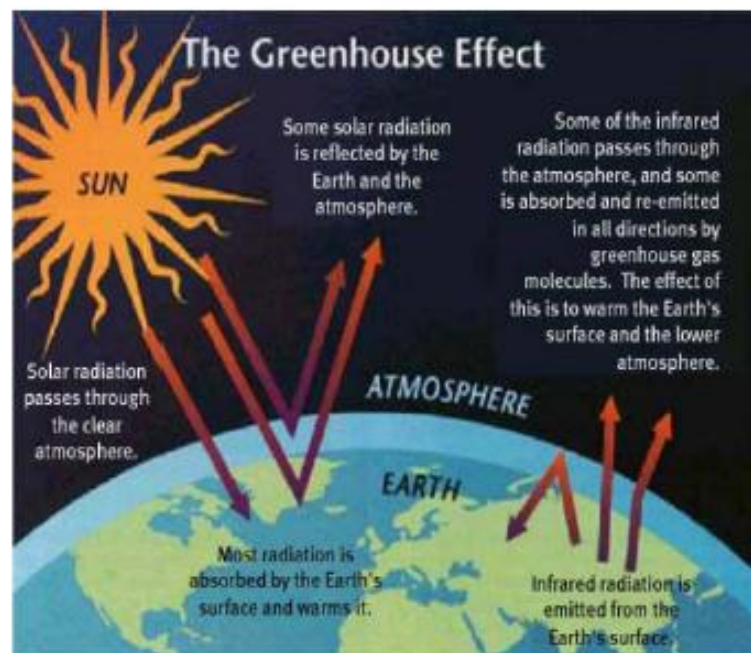
The same is true with preservation of mature trees that absorb huge quantities of greenhouse gases and sequester them for many years. If mature trees are needlessly cut to accommodate new development rather than new development being shaped to preserve these trees whenever possible, their destruction will actually release stored greenhouse gases (through burning or rotting), and it will take decades to replace them with smaller trees that absorb much less carbon dioxide in their early years.

Additionally, if communities do not take steps to accommodate and encourage alternative energy sources such as wind and solar, development patterns may be set that prohibit retrofitting in the future.

THE ROLE OF LAND USE REGULATIONS IN CONTROLLING GREENHOUSE GAS GENERATION

Land-use and zoning regulations can thus play an important role in helping to reduce greenhouse gas emissions through:

- Encouraging development patterns that allow less reliance on autos for mobility and result in reduction in vehicle miles traveled and corresponding greenhouse gas emissions.
- Preserving existing trees that can sequester carbon dioxide and require the planting of new trees.
- Promoting alternative energy generation such as solar and wind power that do not generate greenhouse gases as do oil, gas, and coal-fired power plants.



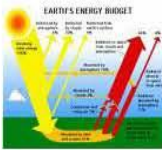
DRAFT Sustainable Community Development Code Framework

CLIMATE CHANGE AND GREENHOUSE GAS REDUCTION

KEY STATISTICS AND FACTS:

- Greenhouse gases include carbon dioxide, methane, and nitrous oxides.
- The United States, with 4% of the world's population, emits almost 25% of global carbon dioxide each year—second only to China. Carbon emissions in the U.S. have increased about 20% since 1990.
- In the U.S., each person's direct emissions amount to 40% of this total—mostly from household energy and transportation. Total per person carbon emissions are about 16.5 metric tons (11.0 home; 5.00 auto; .5 air travel). 60% of transportation emissions come from fueling and driving autos.
- The average mid-size car emits 9,500 pounds of carbon dioxide annually.
- In the U.S., development is becoming more spread out—land consumed for development has increased at a rate of twice that of population growth between 1982 and 2002. During that period, per capita vehicle miles traveled (VMT) increased three times population growth.
- According to a study of 83 metro areas by Reid Ewing, residents in compact regions (Boston, Portland) drove about 25% less than those in sprawling regions (Atlanta, Raleigh).
- Residents in the most walkable neighborhoods drive 26 fewer miles per day than those in the most sprawling areas according to a report conducted in King County, Washington, by Larry Frank. A study for the City of Sacramento, CA, reported that a compact growth scenario would result in a 25% reduction in VMT/house/day.
- According to a study by Ewing, a doubling of development density can reduce VMTs by 5%. Other studies report a 5-15% reduction in VMT associated with mixed-use projects.
- According to the Dept. of Energy, a 30-year old hardwood tree can sequester the equivalent of 136 pounds of carbon dioxide annually. About 70 such trees would offset the carbon dioxide emissions from one medium-size car.
- Planting a hectare of riparian forest can over the next 100 years offset the carbon emissions caused by 54,000 gallons of gasoline.
- Net carbon sequestration by forests, urban trees, and agriculture can offset 15% of total U.S. carbon dioxide emissions annually.

CLIMATE CHANGE AND GREENHOUSE GAS REDUCTION

		ACHIEVEMENT LEVELS			References/Commentary	Code Examples/Citations
		Bronze (Good)	Silver (Better)	Gold (Best)		
 	Remove Obstacles	- Allow mixed-use development by right in selected zone districts - Permit solar and small wind turbines by right in selected zone districts (See Renewable Energy Section (solar access and wind power) of Model Code for citations.) - Allow accessory units and live/work units by right in residential zone districts - Allow live-work units in commercial and mixed-use districts to reduce VMT - Permit small-scale recycling facilities in residential zone districts	- Allow larger recycling facilities in appropriate industrial and commercial zone districts - Reduce parking requirements for mixed-use developments/in mixed-use districts - Tailor development standards (e.g., landscaping, open space, parking) to encourage infill and mixed-use development (e.g., alternative open space such as plazas, community gardens, green roofs; reduced landscaped buffers with enhanced ornamental fencing) - Reduce overly restrict height/setback requirements for small-scale wind turbines	- Require all single-family developments to include minimum % of accessory units - Prohibit single-use developments/buildings in commercial zone districts (e.g., downtown) - Prohibit urban level development (e.g., more than 1 unit/acre) outside defined urban service areas	- See treeools.org for tools for protecting trees and urban forests. T. Litman, Parking Management Best Practices, American Planning Assn. 2006. - See Smart Code mixed-use (transect) districts at http://www.smartcodecentral.org/ - US Department of Energy methodology for calculating carbon sequestration by trees: http://ftp.eia.doe.gov/pub/oiaf/1805/cdr/omvpdf/sequester.pdf	- Colorado Springs Mixed-Use Development Manual, http://www.springs.gov.com/units/planning/Currentorv/CompPlan/MixedUseDev/1.pdf - Santa Cruz, CA – accessory dwelling unit program http://www.ci.santa-cruz.ca.us/pl/hcd/ADUadu.html. See Housing Affordability Section of Model Code for additional citations regarding accessory dwelling units. - State of Oregon urban growth boundary regulations. http://www.oregon.gov/LCD/ruraldev.shtml
	Create Incentives	- Offer density/height bonuses for green roofs - Give bonus points for green/cool roofs in commercial design standard point systems	- Reduce transportation impact fees for mixed-use and infill projects to reflect lower traffic generation - Create density bonus and expedited processing incentives for infill and	Encourage low-energy maintenance landscaping by giving additional landscaping credit.	Chesapeake Bay Program urban tree canopy program http://www.dnr.state.md.us/forests/orc/ams/urban/urban/treecanopygoals.asp	Portland, OR, FAR bonuses for ecoroofs (City zoning code 33.510: http://www.epa.gov/hri/resources/pdf/EcoroofsandGreenCityStrategies.pdf

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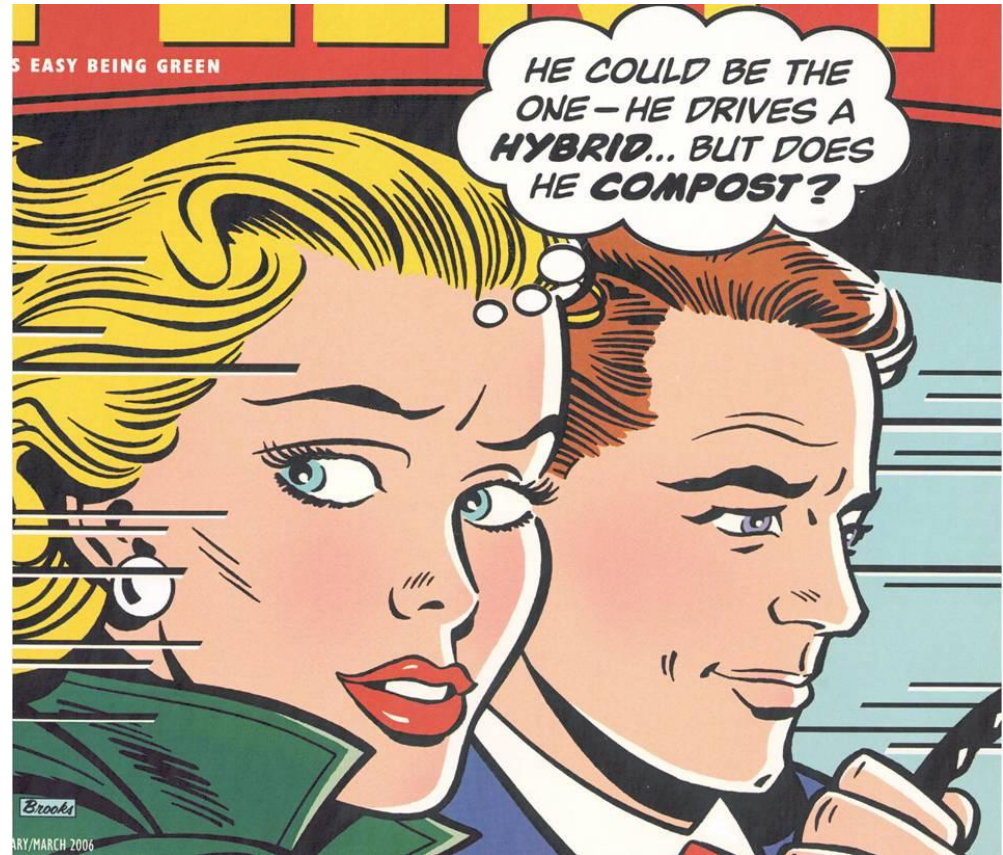
CLIMATE CHANGE AND GREENHOUSE GAS REDUCTION

		- Allow and encourage shared parking arrangements - Give priority parking for vans, hybrid vehicles in parking standards - Give increased landscaping credit for preserving existing trees	- mixed-use developments - Allow green roofs to qualify for open space credits - Offer height increases, density bonuses, and flexibility regarding non-conforming use regulations for projects that remove impermeable surfaces from existing developments or reduce during redevelopment or use permeable pavement		For general information on permeable pavement, see http://www.epa.gov/owow/nps/pavements.pdf and http://www.en.wikipedia.org/wiki/permeable_paving	- Landscaping credit for preserving existing trees: http://www.collinsville.com/files/Ch.%2004%20Landscaping%20and%20Buffering.pdf; http://www.ewgateway.org/pdf/files/library/wrc/TB-LandscapingReqs.pdf - Austin, Texas, Development Code: Subchapter E: Design Standards and Mixed-Use, available online at http://www.ci.austin.tx.us/development/downloads/final.pdf
 	Enact Standards	- Require sidewalks in all developments and connections with adjacent sites - Adopt historic preservation standards to protect existing structures (and energy they represent) - Limit trees on southern sides of buildings in northern climates to preserve solar access - Adopt regulations to protect larger trees - Require provision of bicycle racks in all multifamily and commercial developments	- Require replacement of all trees removed during development on an inch/vinch diameter basis or contribution to offsite tree fund - Enact minimum density/intensity standards to encourage compact development - Adopt pedestrian connectivity standards to reduce vehicle use - Enact solar access ordinance (See Renewable Energy/solar access section.) - Require bicycle fleets for all hotels, resorts - Limit number of garages allowed on each residential lot (1-2 vs. 3-4) - Limit impermeable surface areas and require use of permeable pavement in appropriate areas	- Require green roofs on all commercial and multifamily developments. - Require low-energy landscaping. - Enact limitations on house size - Adopt minimum reforestation requirements for sites without vegetation. - Establish mandatory carbon budgets/limits for new developments (emissions from added traffic, energy used in construction materials, future energy requirements) and offsets/impact fees - Require minimum % of homes in subdivisions to be oriented for passive solar access (on an east/west axis) (See Renewable Energy/solar access section.) - Require outdoor signage to be turned off when business is closed - Require new developments to be carbon neutral	- American Planning Assn. PAS Report 446, Tree Conservation Ordinances, Zoning Practice July 2006, <i>Tree Preservation</i> - For a good discussion of a carbon offset measurement methodology, see Forest Guardians Carbon Offset Program Description: http://www.forestguardians.org/support_documents/document_carbon-calculation-methodology_2-07.pdf - US EPA Personal Emissions Calculator: http://www.epa.gov/climatechange/emissions/ind_calculator.html - U.S. Green Building Council, LEED for Neighborhood Rating System (See Green Construction and Technology chapter.), available online at http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222	- Aspen/Pitkin County Renewable Energy Mitigation Program: http://www.aspeninfo.org/sitepages/pid31.php; http://www.greenpowernews.org/Solar4aspencode.html - Boulder, Colorado, Solar Access Regulations, available online at http://www.boulder.colorado.gov/files/PDS/codes/solarshad.pdf - Maryland Forest Conservation Act/Regulations: http://www.dnr.state.md.us/forests/programaps/newfca.asp - Franklin, TN, connectivity 5.10.4 and tree protection regulations (5.3): http://www.franklin-gov.com/pdf/Franklin%20Zoning%20Ordinance-%20Effective%201-1-08.pdf - Bicycle Level of Service Standards: http://sf-now.com/sf-bike/SFBC_LOS_Research.pdf; Florida DOT: http://www.dot.state.fl.us/planning/svstems/srnl/os/pdfs/blos-art.pdf - Fort Collins, CO, minimum density requirements in medium-density mixed-use zone district: http://www.ci.fortcollins.co.us/cityclerk/codes.php

<http://law.du.edu/index.php/rmlui/rmlui-practice/code-framework/model-code>

Sustainable Code: Other Issues

- Transportation
- Natural area protection
- Urban agriculture
- Community health

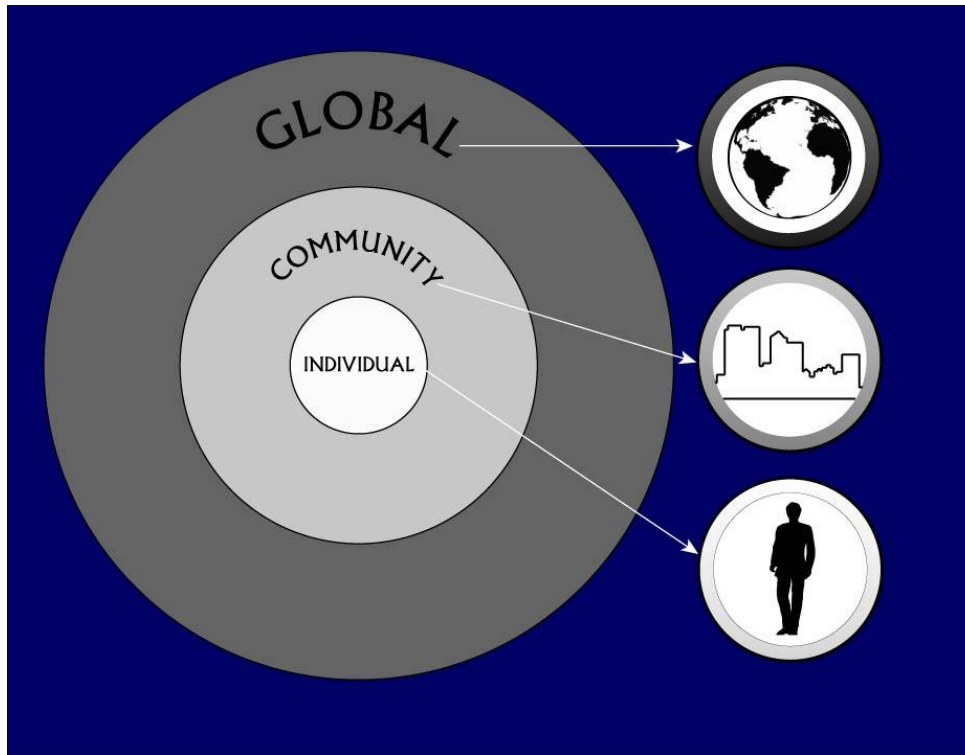


Other Examples

- Tucson, Arizona
 - Food production
 - Water quality and conservation
 - Urban heat island
- Omaha, Nebraska
 - Building design and construction
 - Affordable housing/diversity
- Salt Lake City, Utah
 - Open space
 - Community health and safety



Code Green: Dollars and Sense



- Individual:
 - How will I benefit?
- Community:
 - How will my neighborhood/community benefit?
- Global:
 - How will this benefit my country/the planet?

Example: Water (individual)



- Indoor:
 - Retail cost \$236
 - \$56/year savings



- Outdoor:
 - Xeric landscape savings of \$400-1,000 yr. in water costs & lower maintenance, lower initial capital cost

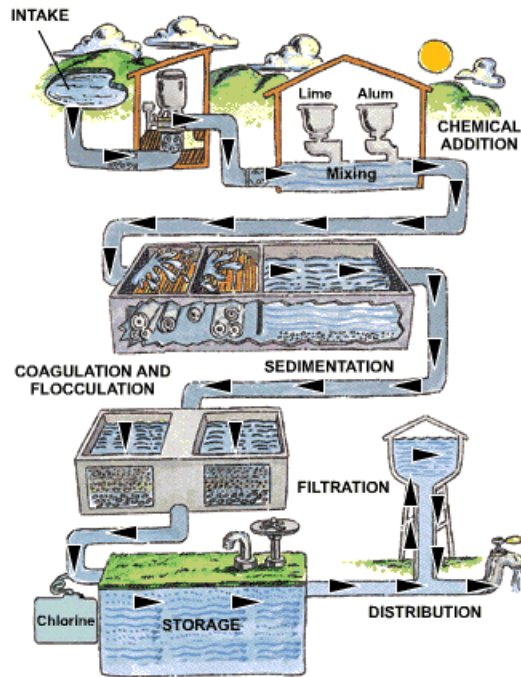
Example: Water (Community)



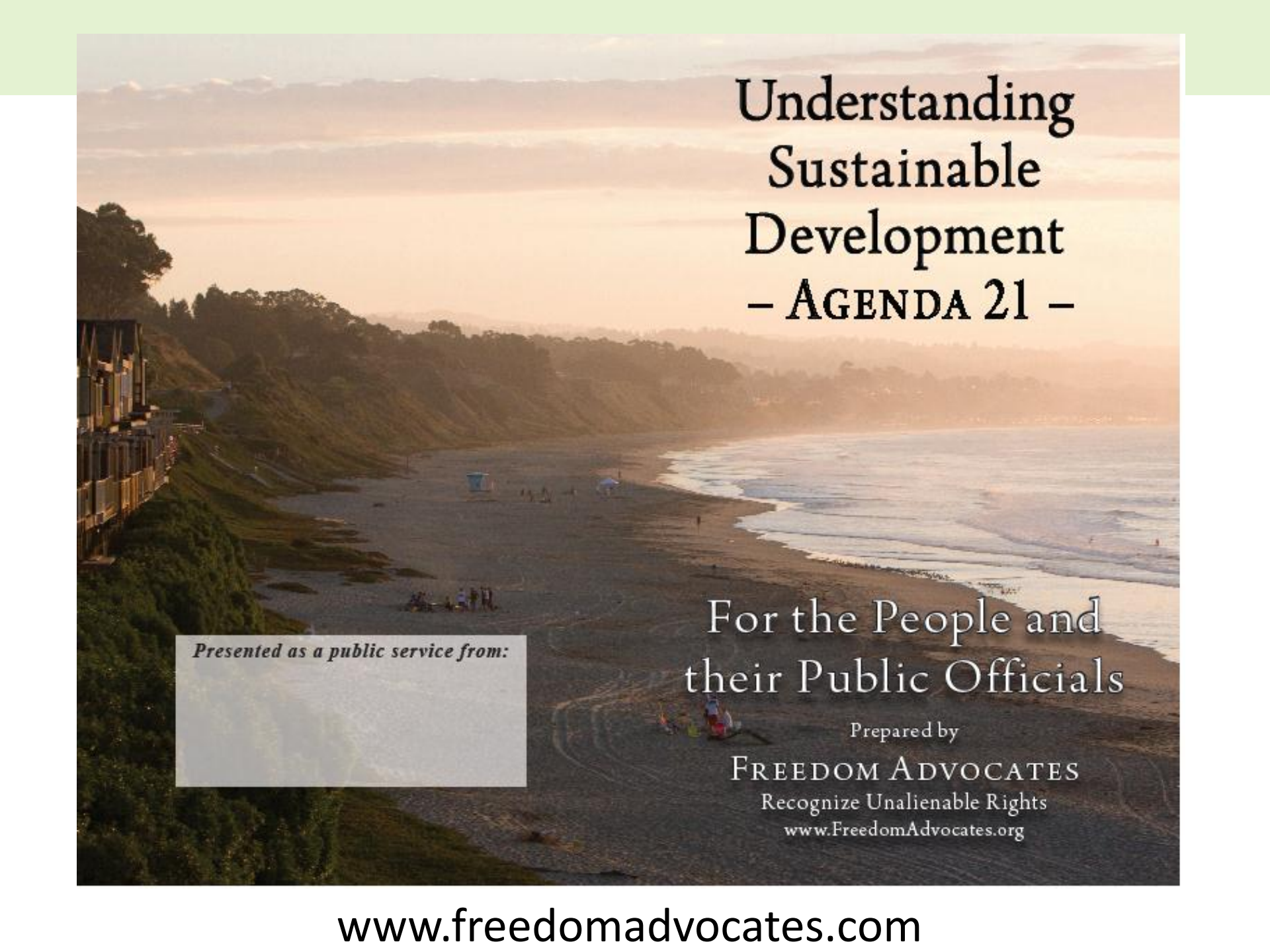
East Bay, CA, Municipal Utilities District

- *Best method to meet district-wide water demands by 2040?*
- Water conservation method...\$1,655 per AF of water.
- Facility/infrastructure expansion method...\$2,086 per AF, not including ongoing operations, maintenance, & environmental costs.

Example: Water (global)



- Water supply and treatment systems are biggest users of electricity in the nation—estimated at 4% of nation's total!!
- Conservation could cut demand by 50%, saving fuel and money and reducing GHG emissions



Understanding Sustainable Development – AGENDA 21 –

Presented as a public service from:

For the People and
their Public Officials

Prepared by

FREEDOM ADVOCATES

Recognize Unalienable Rights

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Closing Thoughts

“I’m a simple guy – a cleaner planet is better for everyone. So I don’t care whether its automobiles making it dirty or smokestacks in Ohio or it’s the natural cycle of the universe...it doesn’t matter.”

“When we have a cleaner planet
its better for everyone – so lets
work together to get the planet
healthy. That’s all.”

Bill O'Reilly – Fox News

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