



Smart Growth 101

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The Three Ages of Environmentalism

- Preserving our wilderness:
Creating the National Park System (early 1900s)
- Protection from polluters:
Addressing the environment as a public health crisis (mid-1900s)
- Livability: Linking the environment with economic prosperity and quality of life (late 1900s to today)





A Fourth Age of Environmentalism

- Green building
- Renewable energy
- Sustainability and Climate Adaptation





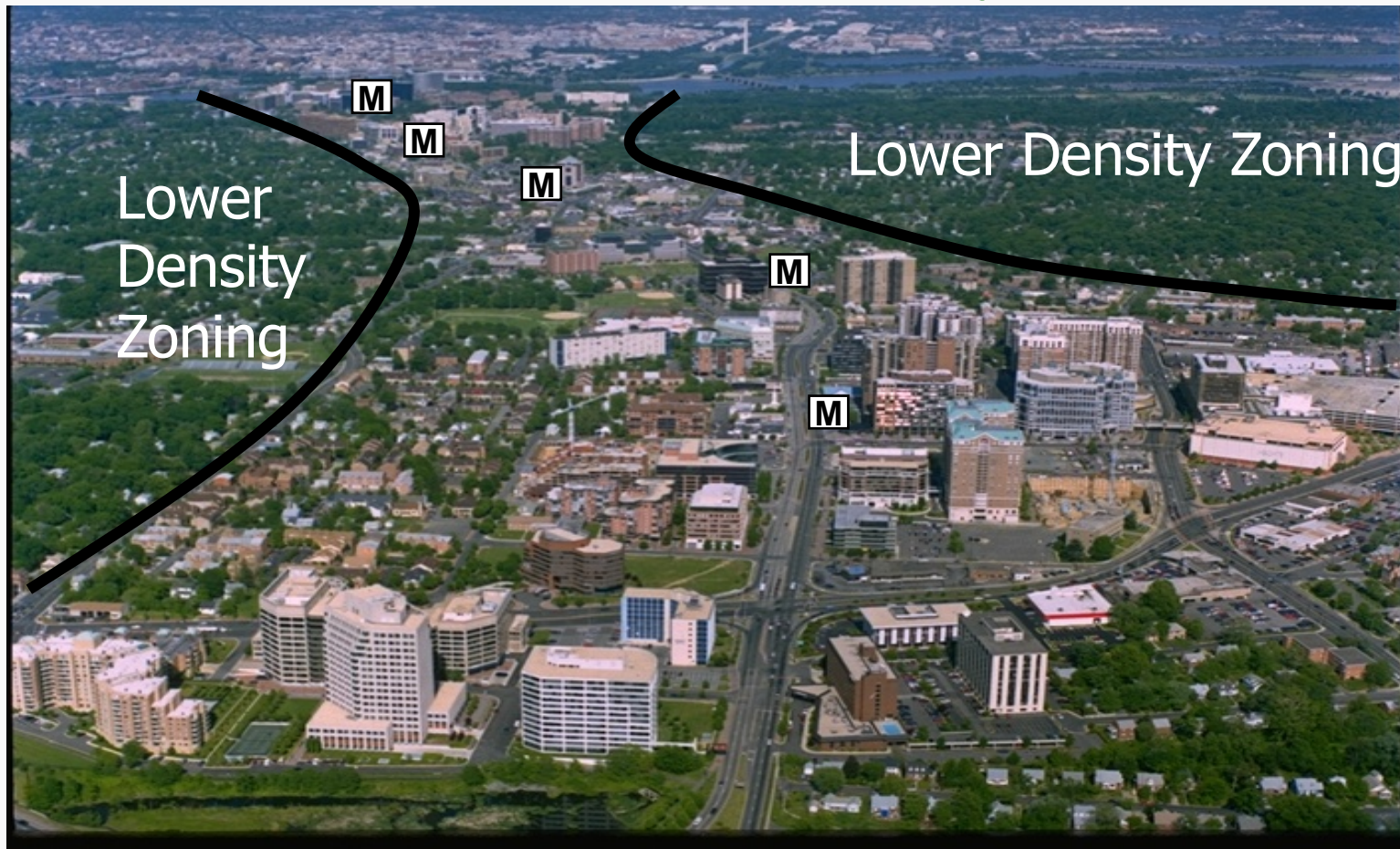
What Is a Sustainable Community?

A sustainable community is an urban, suburban or rural community that has more housing and transportation choices, is closer to jobs, shops or schools, is more energy independent and helps protect clean air and water.

Smart growth approaches can help communities become more sustainable.



What a Smart Growth Community Can Look Like



Because of this style of development, just under 3% of the land mass of Arlington County, VA, generates 37% of the county's tax base.



Photo courtesy of Jeff Speck, NEA

A sustainable community in rural New York.



Why Should We Care?

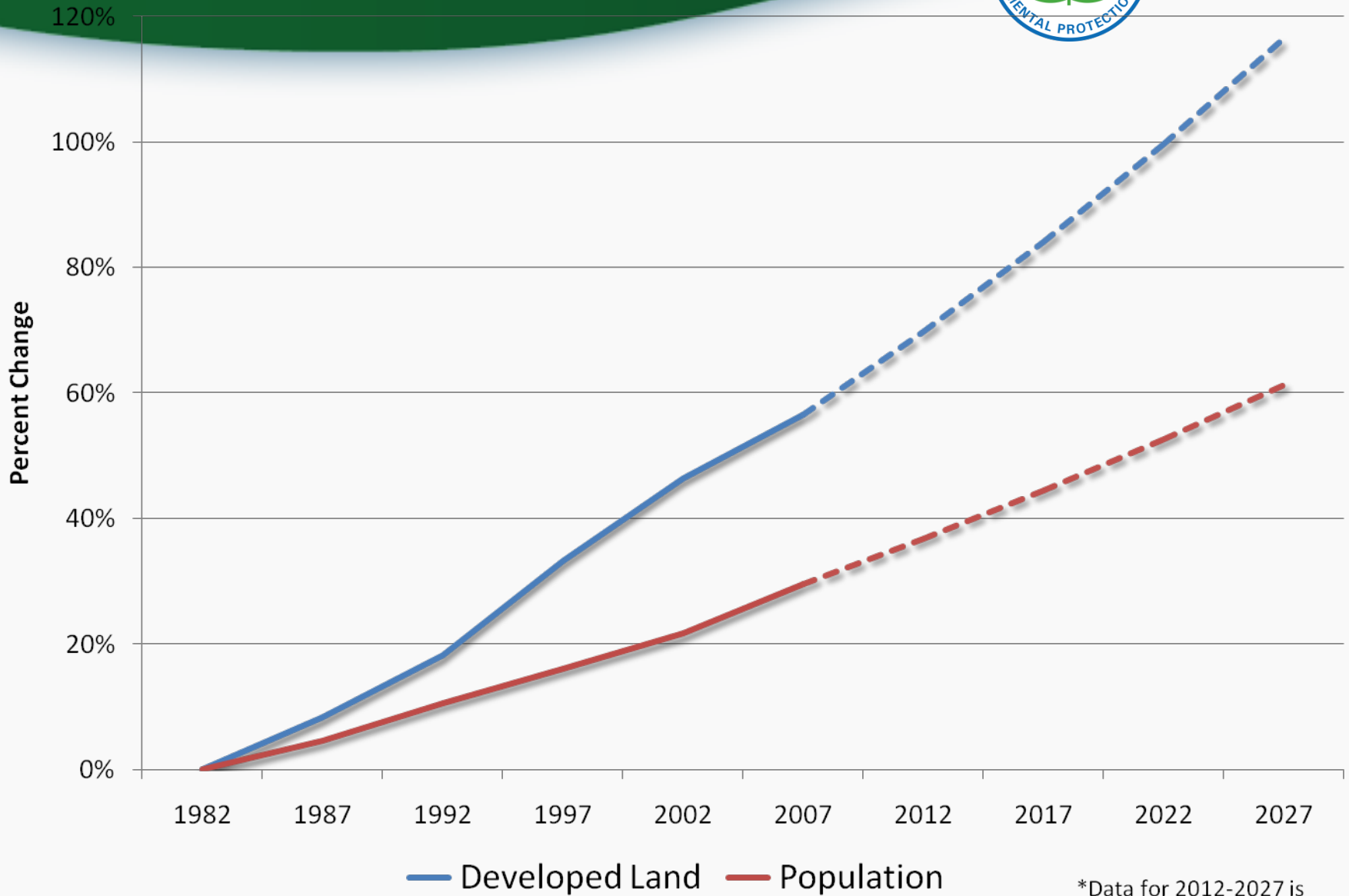
- *Fiscal*: Expensive for services and infrastructure
- *Health*: Reduced physical activity, high rates of obesity and related diseases
- *Social*: Can reduce race and class segregation, loss of the public realm
- *Environmental*: Can reduce land and resource consumption, air and water pollution, mitigate climate change





Population, Development and Transportation Trends

U.S. Population Growth and Land Consumption, 1982-2027



*Data for 2012-2027 is extrapolated.

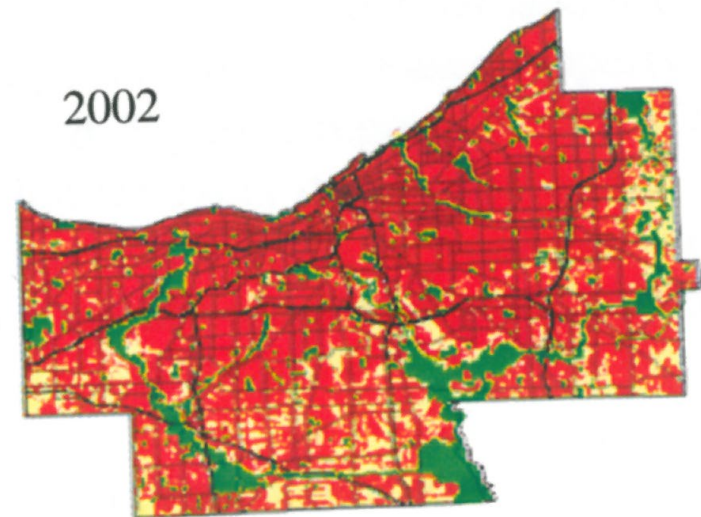
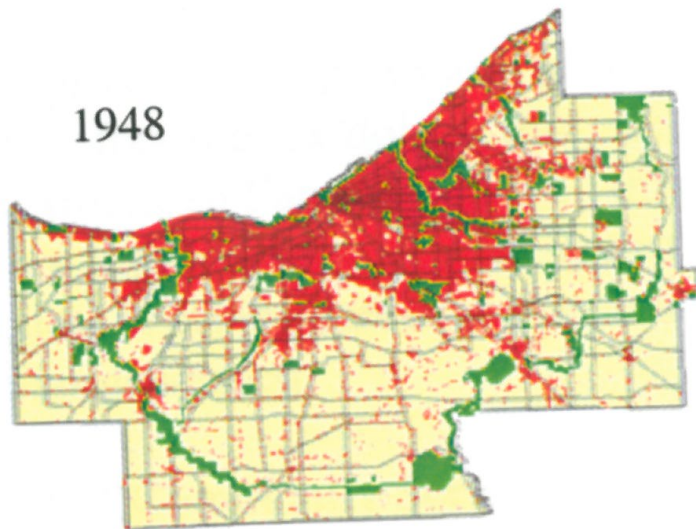


Growth of Metropolitan Areas

- The land area in virtually every metropolitan region in the U.S. has expanded substantially since 1950.
- **Urbanized area increased 2.5 times faster than population growth between 1950 and 2010.**
- Urbanized area continued to grow even in areas losing population.



Expansion with Little Population Growth



U.S. Census 1950
1,389,582 pop.

U.S. Census 2002
1,393,978 pop.



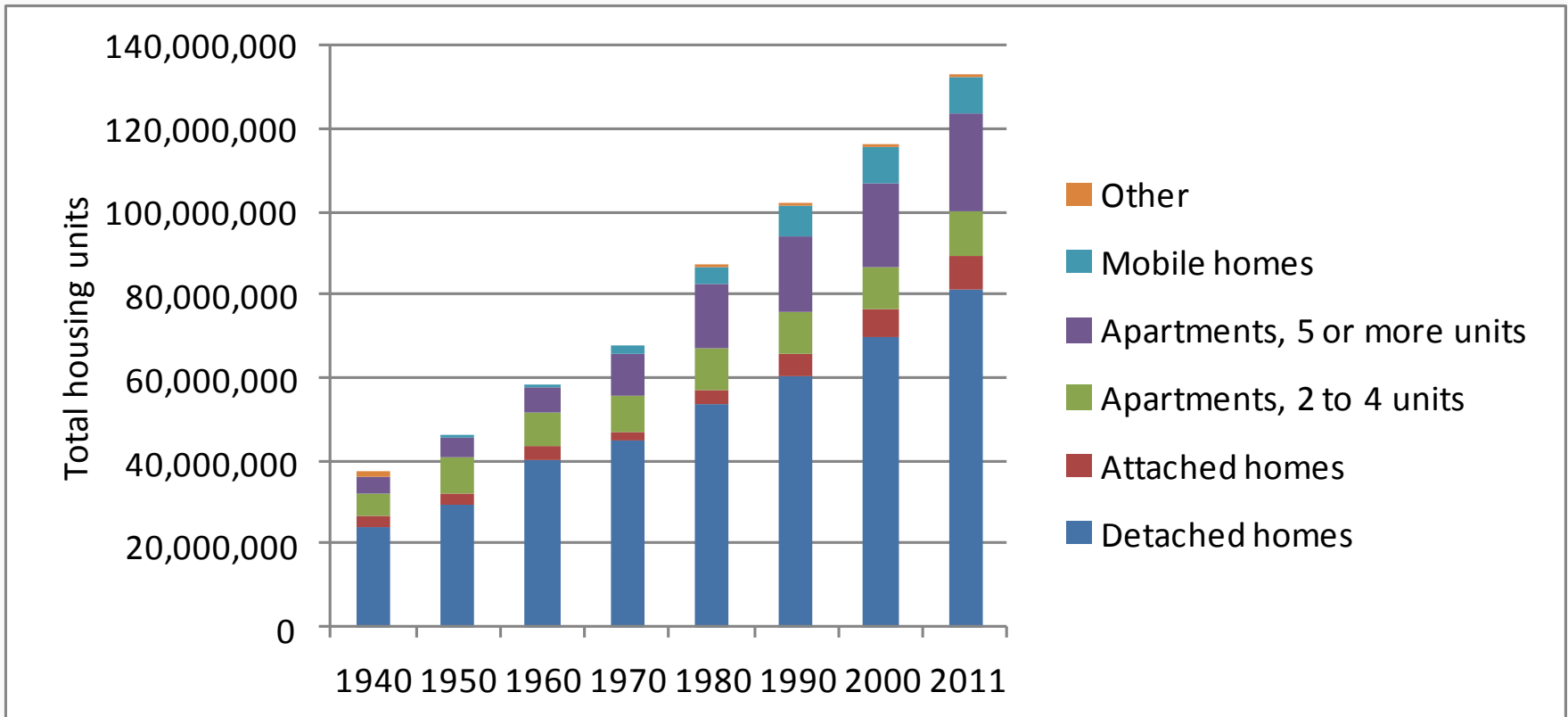
Expansion of Developed Land

- 1982: Nearly 71 million acres of land developed
- 2007: More than 111 million acres (57% increase)
- Over this 25-year period, the U.S. population increased about half as much (30%).
- Of the newly developed land:
 - Nearly half (17,083,500 acres) was forestland.
 - About one quarter (11,117,500 acres) was cropland.
 - The remainder was pastureland, rangeland, or other rural land.





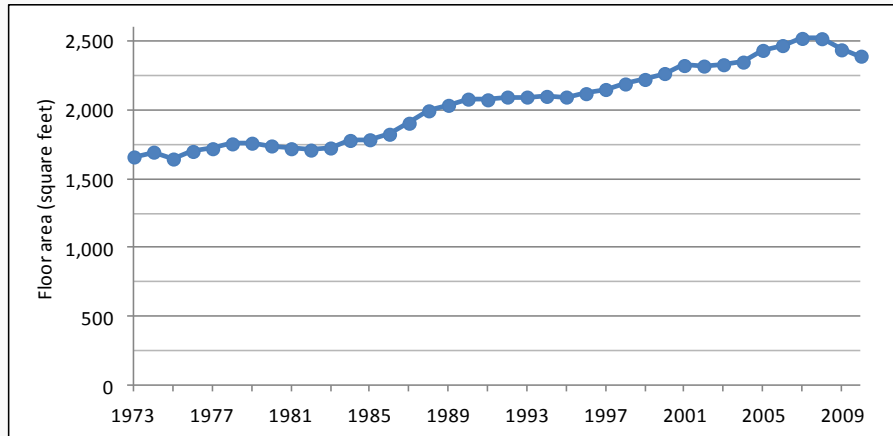
Growth in Housing Units



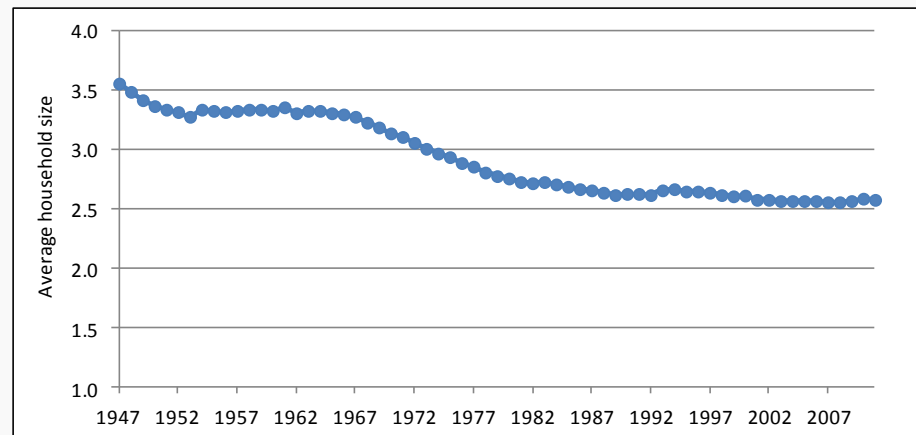
Data source: U.S. Census Bureau



Average Size of Single-Family Homes



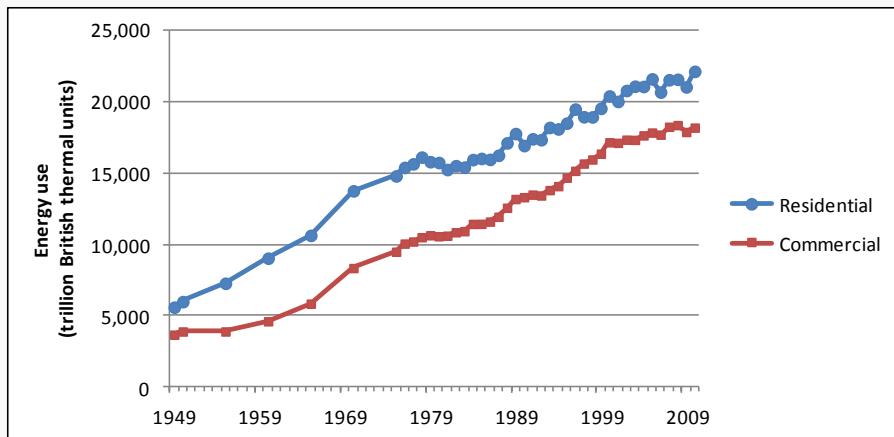
Average U.S. Household Size



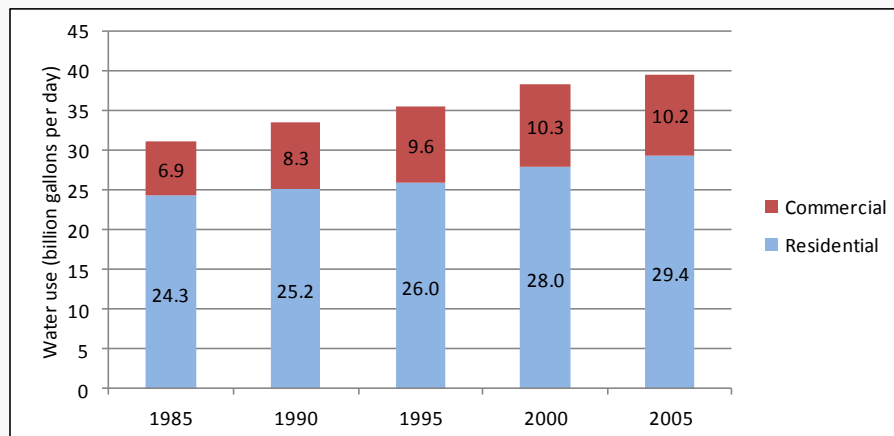
Data source: U.S. Census Bureau



Building Energy Use



Building Water Use



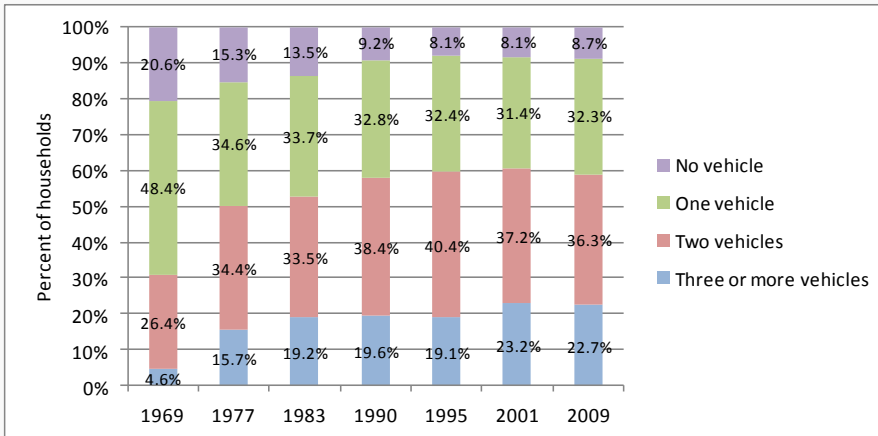
Data source: U.S. Energy Information Administration



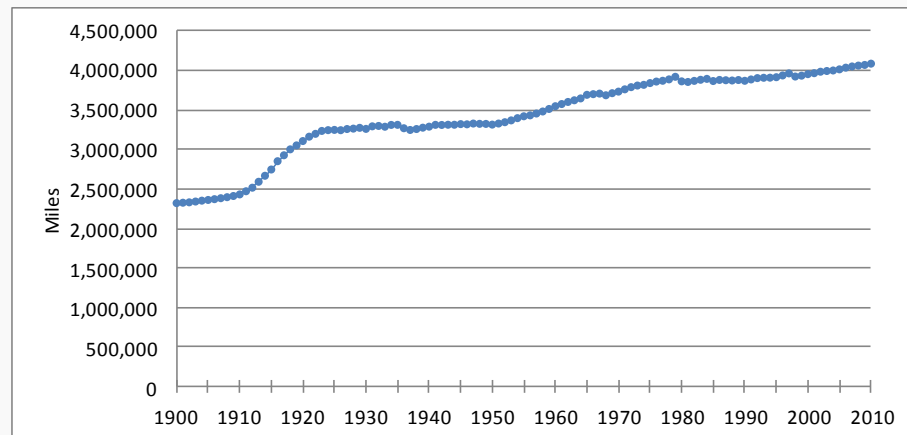
More Impervious Cover

- One estimate: 40,006 square miles—an area slightly smaller than Kentucky
- 4% increase between 2001 and 2006
 - Arizona: 8.9% increase
 - Georgia: 8.4% increase
 - South Carolina: 7.9% increase
- Most cities have levels of impervious cover known to stress or seriously degrade watersheds.

More Vehicles per Household



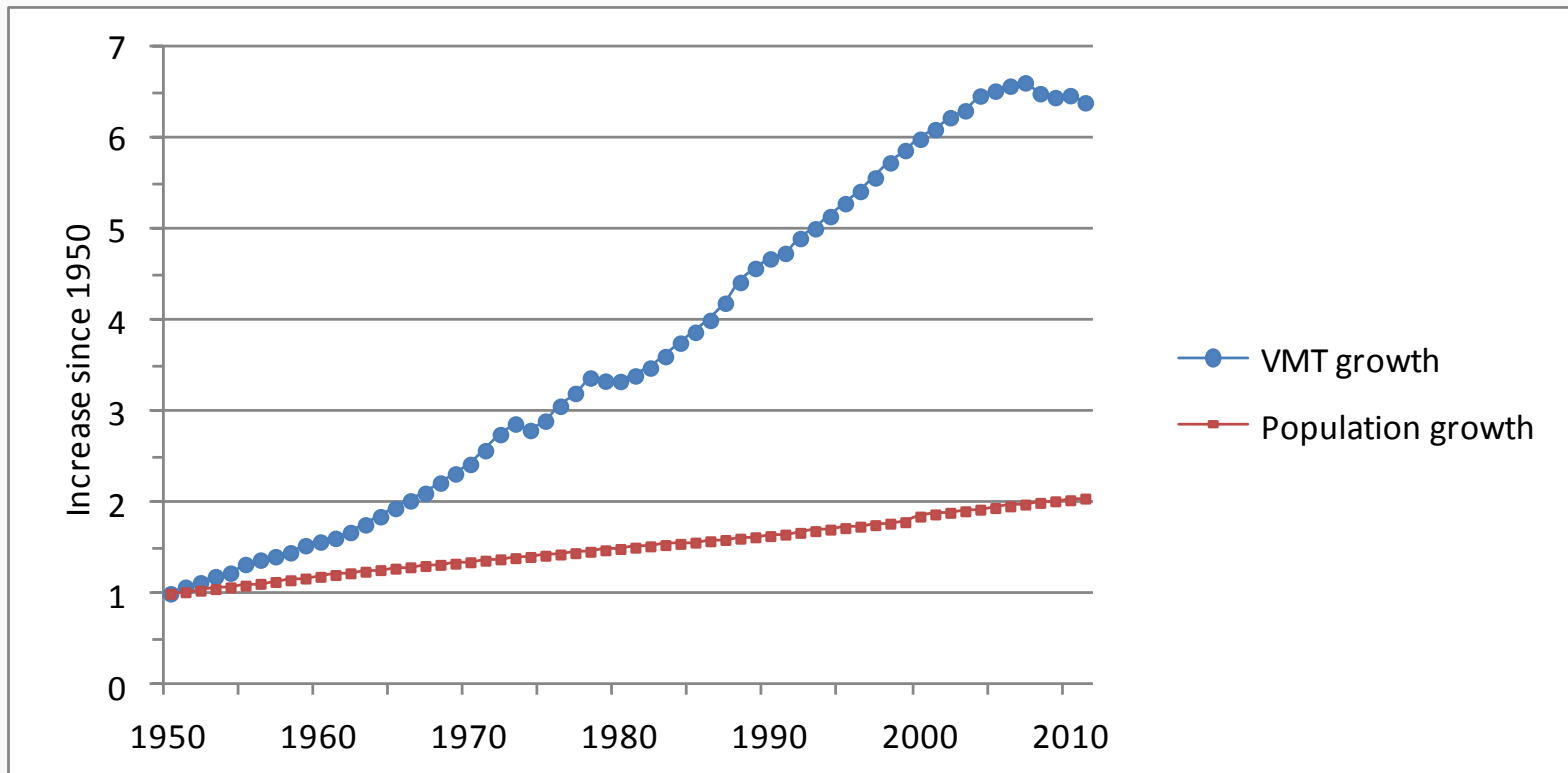
More Roads



Data source: Federal Highway Administration



Growth in Vehicle Miles Traveled (VMT) Far Outpaces Growth in Population



Data sources: U.S. Census Bureau; Federal Highway Administration



Future Trends

- 2010 to 2050
 - Population growth: 42%
 - New housing: 52 million units
 - Replacement housing: 37 million units
- One estimate of acres that will be lost between 1997 and 2060:
 - Rural land: 60-85 million acres
 - Forests: 24-38 million acres
 - Cropland: 19-28 million acres
 - Rangeland: 8-11 million acres

*“Researchers estimate that the number of new and replacement units projected to be built between 2005 and 2050 is equivalent to about **two-thirds** of the 132 million housing units that existed in 2011.”*



Environmental Consequences of These Trends



Land Contamination

- Between 235,000 and 355,000 sites in the U.S. are contaminated with hazardous waste and petroleum products:
 - Atlanta: 4% of land area
 - Cleveland: >7% of land area
 - Milwaukee: 7.5% of land area
- Poor and minority neighborhoods often have a disproportionately high number of brownfields.





Degradation of Water Resources

- Urban-related stormwater runoff is thought to be responsible for the impairment of:
 - 51,548 miles of rivers and streams
 - 858,186 acres of lakes, reservoirs, and ponds
 - 1,877 square miles of bays and estuaries
 - 270 coastal shoreline miles
 - 452 square miles of ocean and near coastal area
 - 13,867 square miles of Great Lakes open water
- But the majority of U.S. waters have not been assessed.





Heat Island Effect

- Cities can be 6-8°F. warmer than outlying areas due to:
 - Dark pavement and roofs that absorb and reflect more heat.
 - Fewer trees and less vegetation that reduce shade and evaporative cooling.
- Increased heat can be a health hazard:
 - Heat stroke
 - Increased air pollution



Slippers protect Las Vegas dog from hot pavement.

Activity Levels, Obesity, and Chronic Disease

- How we build our communities affects:
 - The amount of time we spend in cars.
 - The opportunity, practicality, and necessity of physical activity.
- The degree of land use mix and county-level measures of sprawl both likely affect the incidence of obesity.
- As the number of minorities and poor increases in an area, the number of facilities for physical activity and recreation often decreases.



Air Quality Impacts



- Since 1990, GHG emissions from personal vehicles have risen 14% and emissions from trucks have risen 74%*
- Buildings and transportation together account for about 2/3 of U.S. GHG emissions.**

* Source: US EPA Greenhouse Gas Inventory, April 2012

** Source: US EPA 2009 Inventory of Greenhouse Gas Emissions and Sinks

*FHWA Highway Statistics Series

**US EPA 2009 Inventory of Greenhouse Gas Emissions and Sinks



Effects of Global Climate Change

- Increased temperature
- Rainfall changes
- More frequent and intense extreme weather events
- Stronger winter storms
- Increased wildfires
- Rising sea level
- Shrinking sea ice





Effects of Different Types of Development on the Environment

Where We Build and How We Build

How Where and How We Build Affects the Environment

- Where we build
 - Safeguarding sensitive areas
 - Locating development in built-up areas
 - Focusing development around existing transit
- How we build
 - Compact development
 - Mixed-use development
 - Street connectivity
 - Community design
 - Destination accessibility
 - Transit accessibility
 - Green building





Climate Adaptation Strategies

- Direct new development away from vulnerable areas and toward safer areas that are well-connected to existing communities.
- Build compact, mixed-use, mixed-income development in safer places.
- Offer safe, appealing, affordable transportation options.
- Build water- and energy-efficient structures and neighborhoods.

Vulnerable populations (low income, elderly, children, chronically ill, and minority) need particular attention.





Overcoming Political Obstacles to Climate Adaptation

- “No regrets” strategies – bring multiple short- and long-term benefits.
 - Regardless of extent of climate impacts, they improve everyday life.
- Fiscally responsible; save people money.
- Can help communities prepare for economic changes as well.
- Can often be tied to regular community processes (e.g., regular zoning or building code updates).

Barriers to Smart Growth

- Local governments influence development choices by mandating:
 - Minimum lot sizes
 - Separation of uses
 - Minimum numbers of parking spaces
 - Minimum setbacks and street widths
 - Density limits
 - Minimum acreage requirements for schools
 - Single housing types
- State and federal governments provide:
 - Water infrastructure and regulation
 - Transportation
 - Sometimes inflexible funding rules
 - Environmental requirements

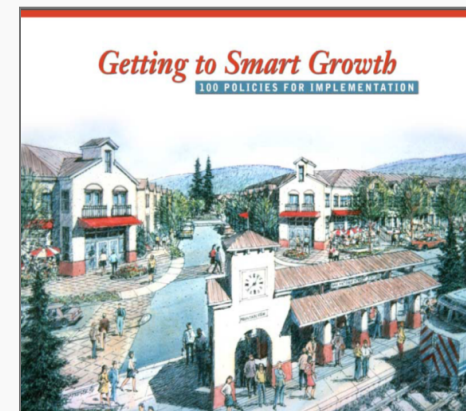
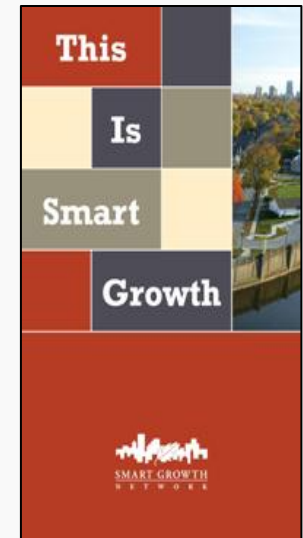
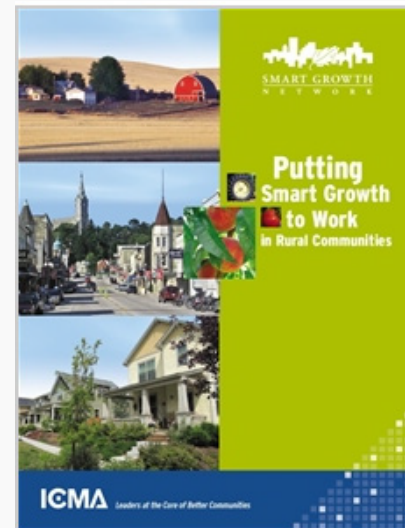


EPA's smart growth program –
the Office of Sustainable Communities –
works to remove
or modify these actions when they
become barriers.



Changing the Conversation

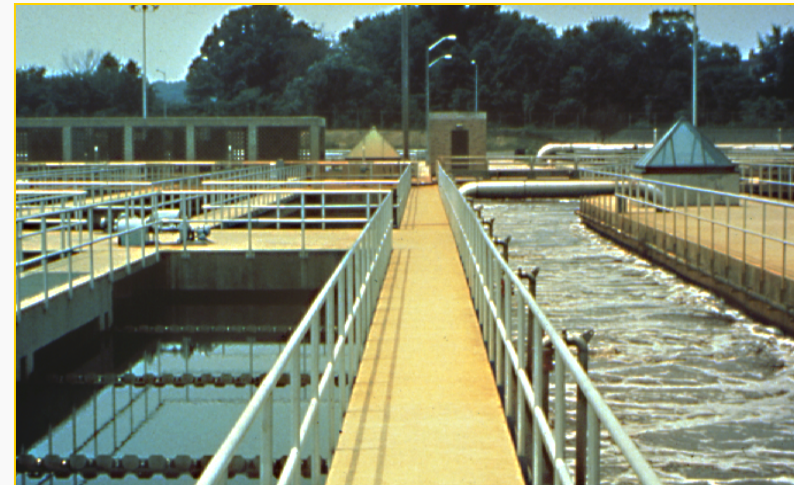
- Smart Growth Network – 45 partners
 - A national coalition that defines and advances smart growth practices
- National Smart Growth Conferences (17 conferences since 1998)
- Smart Growth Online (smartgrowth.org)
- National Award for Smart Growth Achievement (since 2002)
 - 857 applications from all 50 states, Puerto Rico and D.C., 59 communities selected.





Changing the Rules

- Water infrastructure
 - EPA works with HUD, DOT and USDA to make green infrastructure approaches more commonplace.
- 2011 SRF Procedures
 - EPA provides guidance to states on Water Infrastructure Sustainability.
- Green building
 - EPA works with the US Green Building Council, the International Code Council, and other standard setting organizations.





Helping the Willing

- Technical assistance to state and local governments – more than 50% of OSC's FY12, FY13 and FY14 work plans.
 - Cutting-edge issues (SGIA)
 - State policy changes (GICD)
 - High-visibility demo projects (GAC)
 - Tools to overcome common barriers (BB)





Partnership for Sustainable Communities



Original Partners – Shaun Donovan, Ray LaHood, Lisa Jackson - June 16, 2009



New Partners – Julian Castro, Gina McCarthy, Anthony Foxx - 2014

Livability Principles

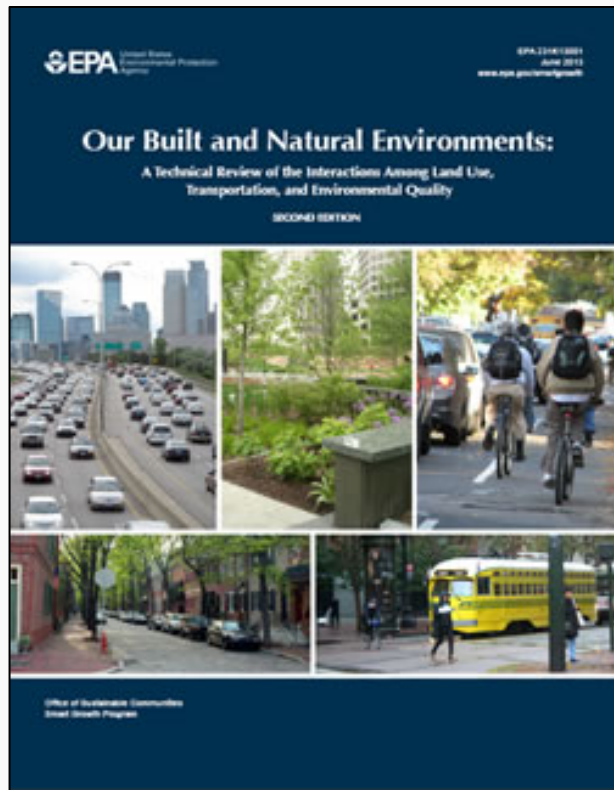
1. Provide more transportation choices
2. Promote equitable, affordable housing
3. Enhance economic competitiveness
4. Support existing communities
5. Coordinate policies and leverage investment
6. Value communities and neighborhoods





Benefits of Smart Growth Approaches

- **SAVE MONEY** through lower transportation and infrastructure costs.
- **CREATE JOBS** in construction, maintenance, rehabilitation of older buildings, or cleanup and redevelopment of brownfields.
- **INCREASE PRIVATE INVESTMENTS** by providing amenities like public transportation that tend to attract such investment.
- **MAKE MONEY** through higher property values from redeveloped shopping centers, reclaimed buildings or lots, or by providing places with more transportation or housing options.
- **MEET MARKET DEMAND** at both ends of the demographic spectrum :
 - Helps Millennials who yearn for lively urban settings; and,
 - Baby Boomers who increasingly look for amenities — health care, theaters, or grocery stores —reachable by foot or transit.



Our Built and Natural Environments:

A Technical Review of the Interactions Among Land Use, Transportation, and Environmental Quality

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