Planners and Climate Change

The Role of Urban and Rural Area Planners in Helping Mitigate and Communicate Climate Change

Rocky Mountain Land Use Institute

March 7, 2008

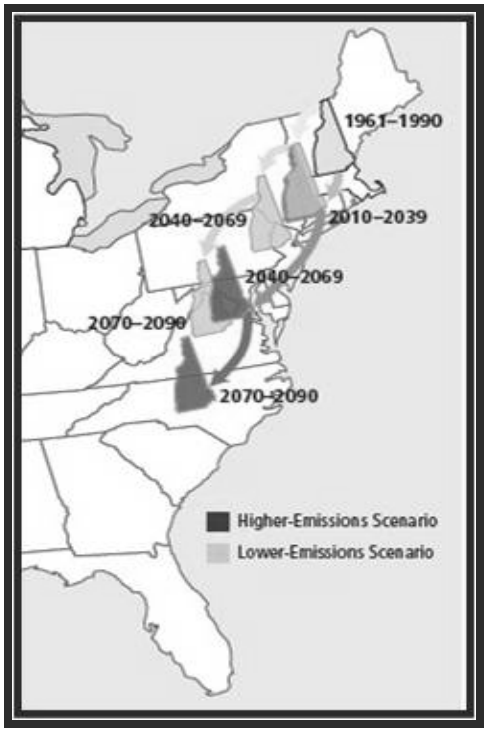
Climate Change Handbook

NOAA's National Climatic Data Center

UNC-Asheville's Environmental Quality Institute and National Environmental Modeling and Analysis Center

Climate Change Handbook

- Climate change science
- Climate change effects
- Climate change responses in 8 planning areas
- Communicating climate change



Source: Union of Concerned Scientists

Today's Presentation

- Climate change science – certainties and uncertainties
- Mitigation of climate change through a more compact urban form
- Communicating climate change

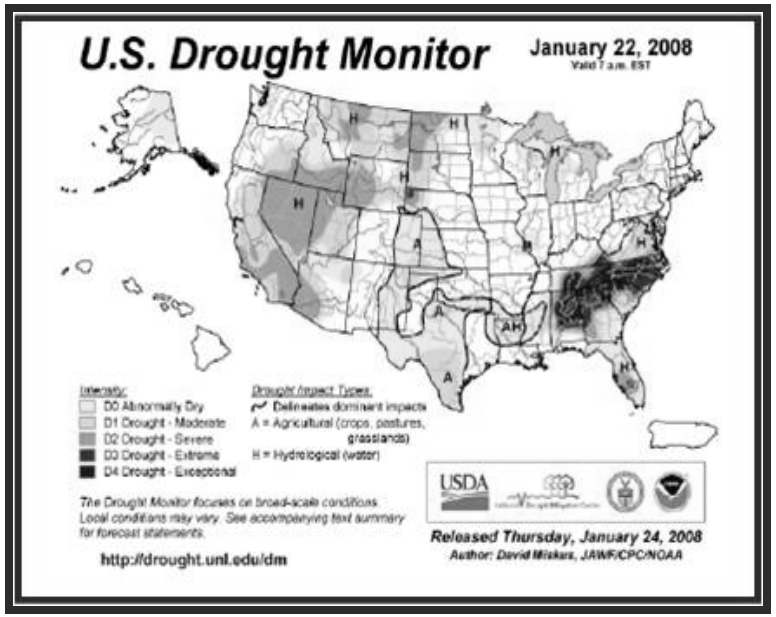
Climate Change – What We Know

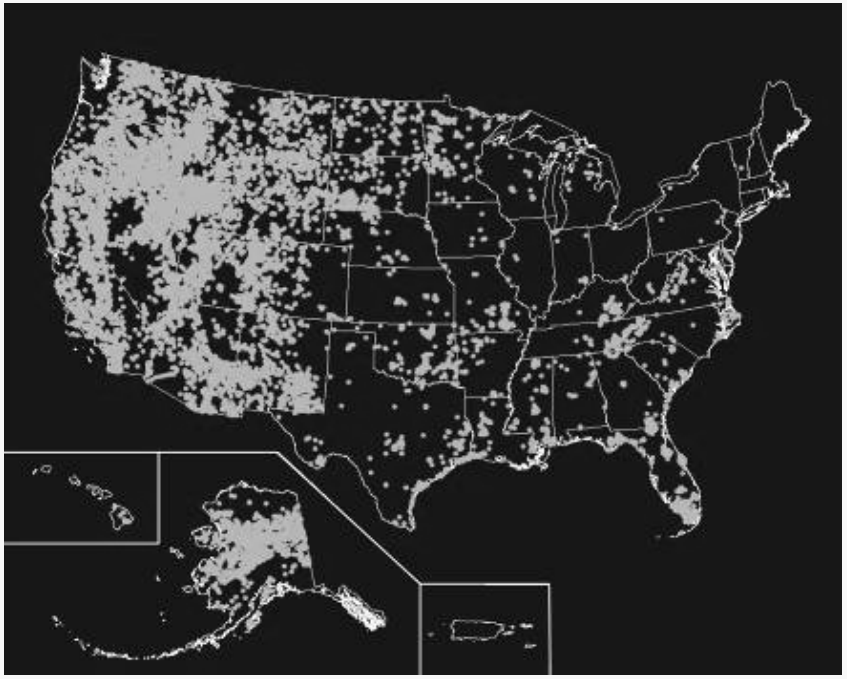
Our future world will be much warmer

Many changes will occur

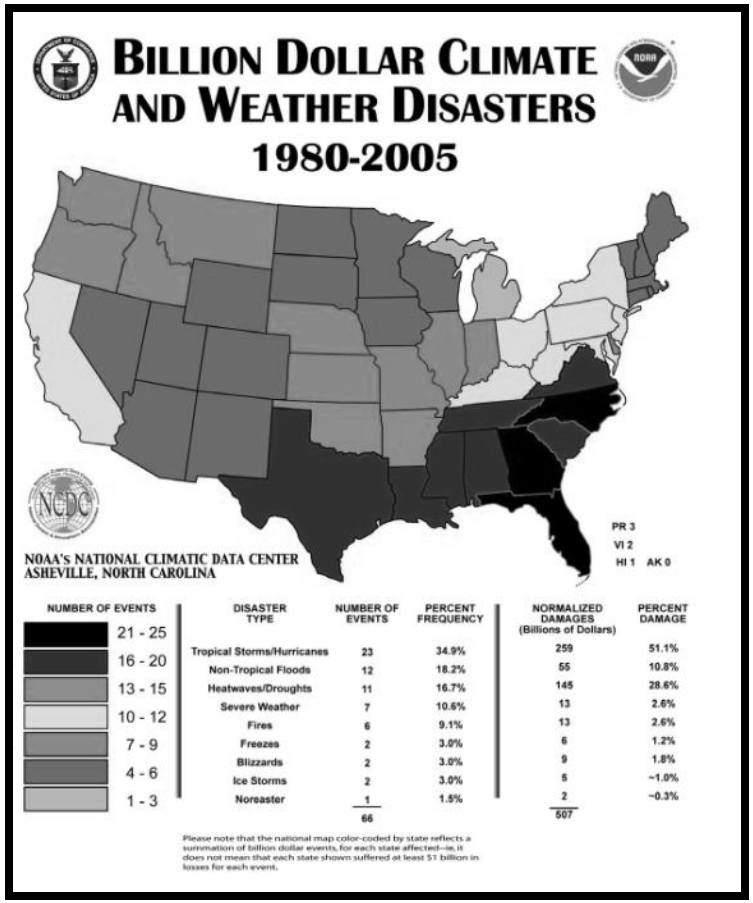
- Precipitation patterns – intensity & amount
- Growing seasons
- Heat waves and other extreme weather events

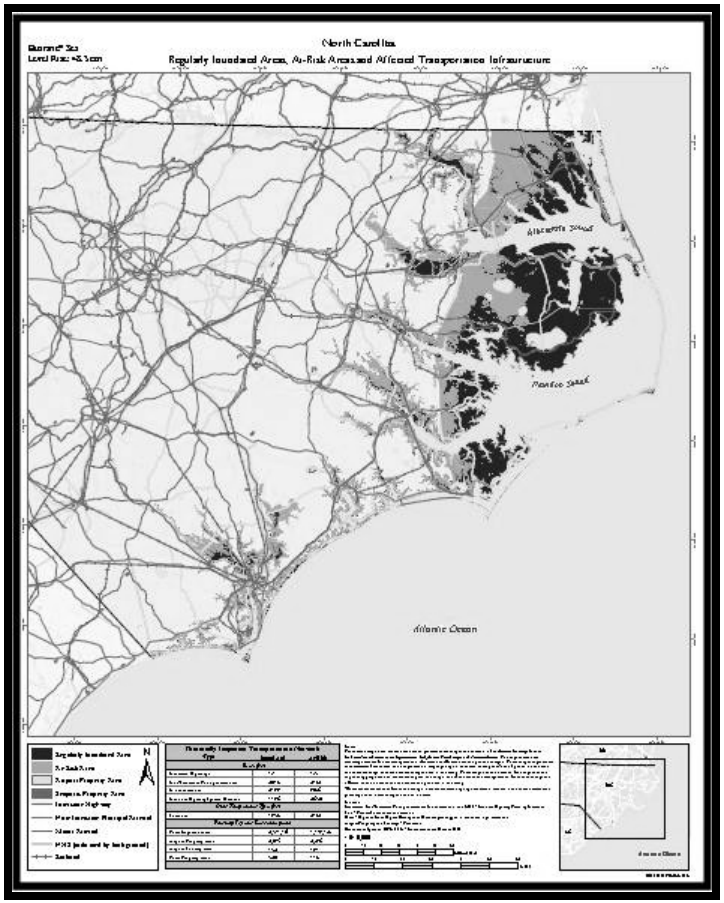
Climate Change – What We Know



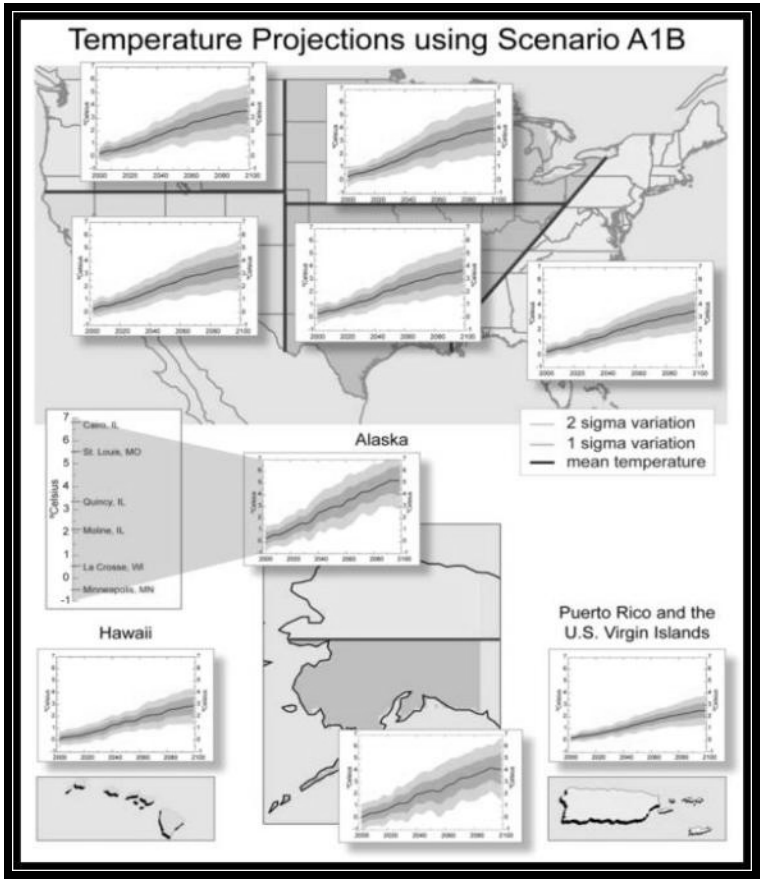


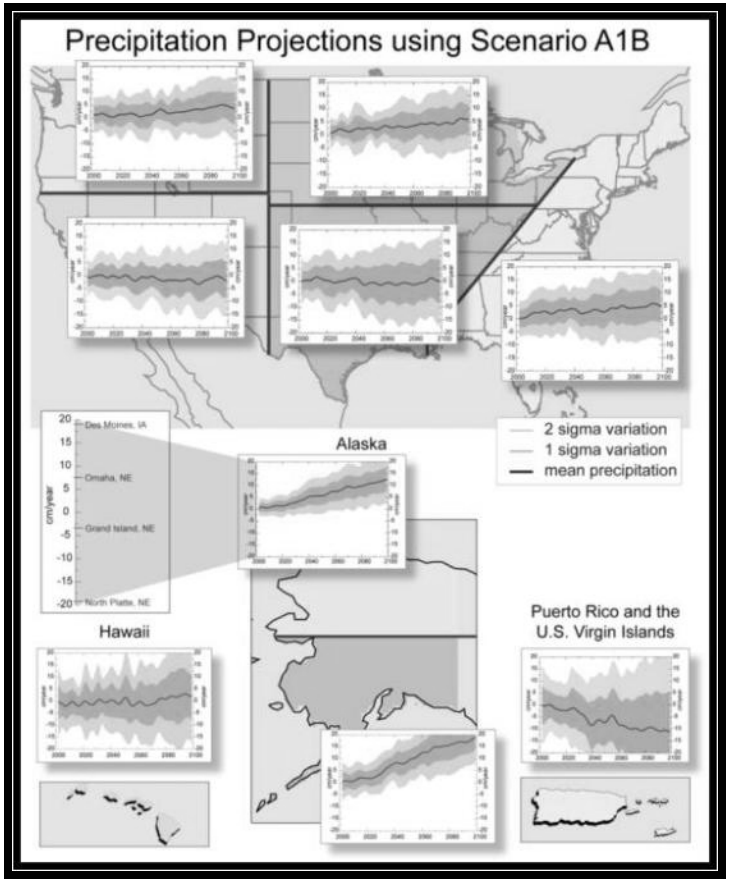
Climate Change – What We Know



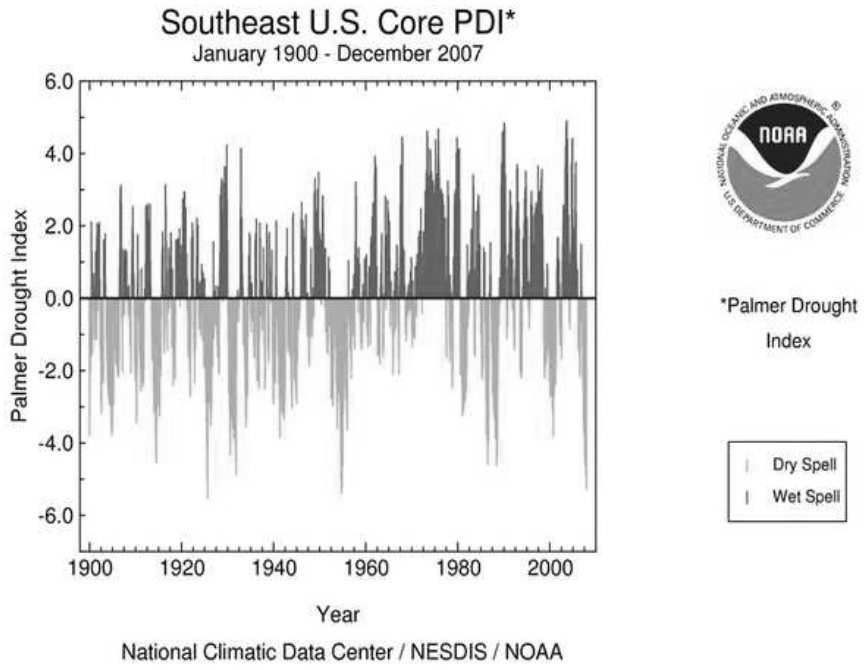


Climate Change – What We Know





There Is Still Much We Don't Know



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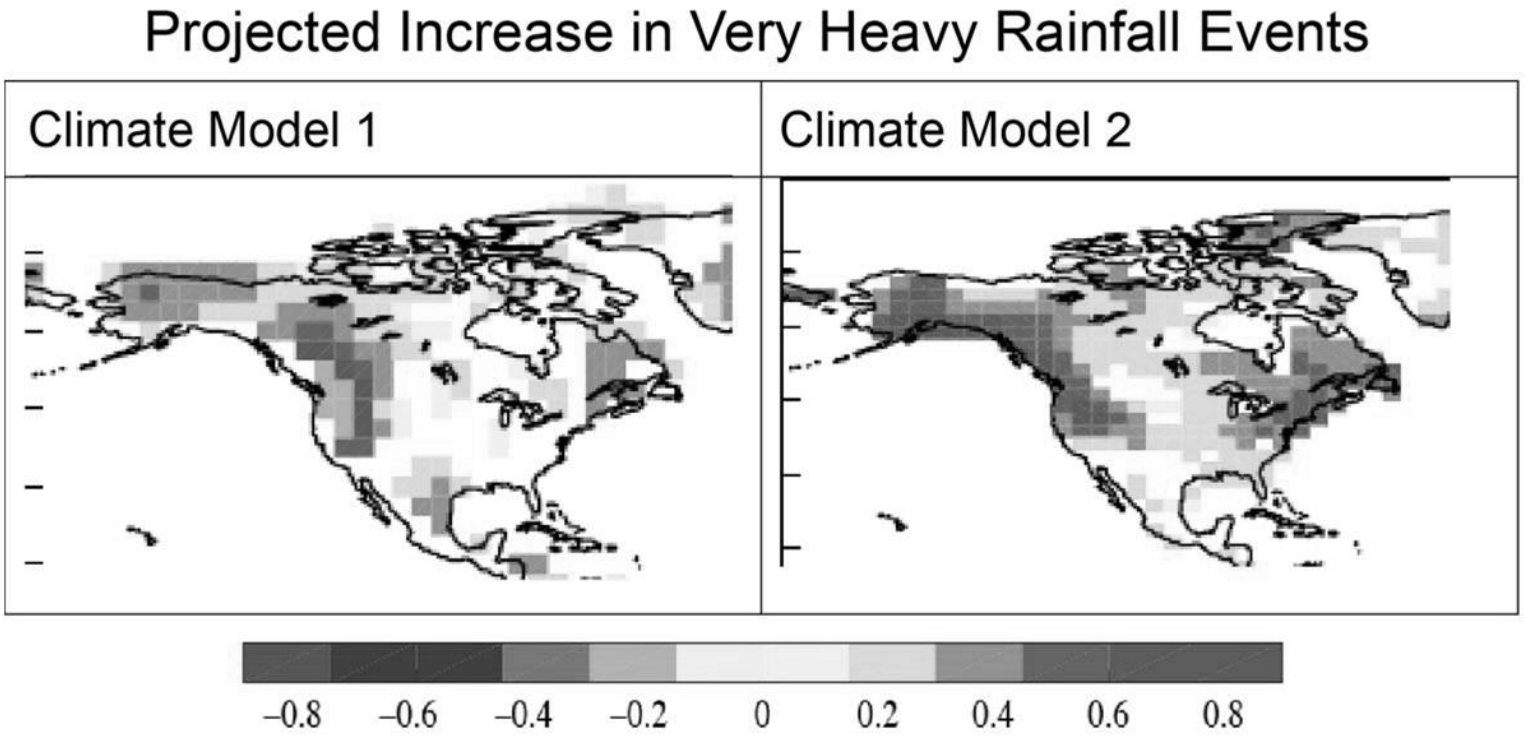


There Is Still Much We Don't Know

A great deal depends on which emissions scenario actually materializes.

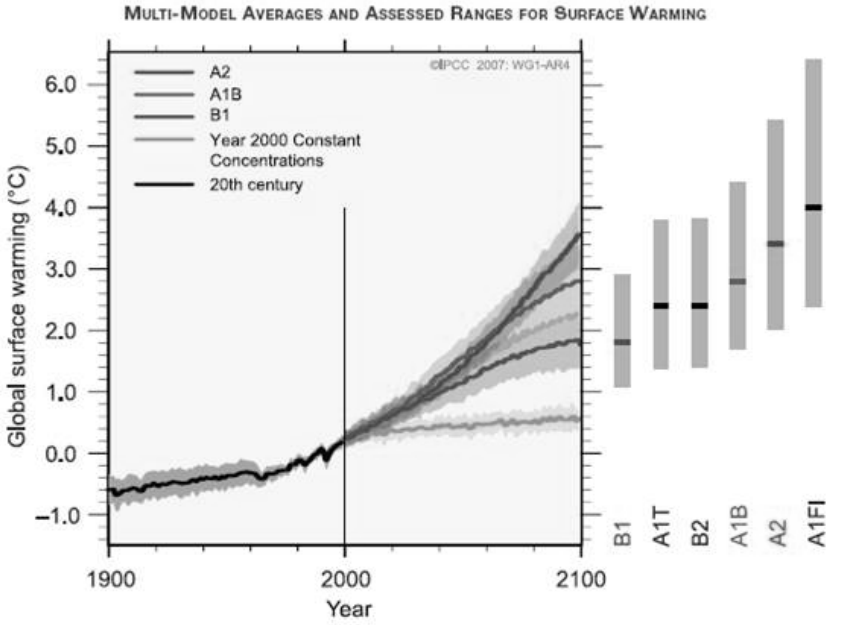


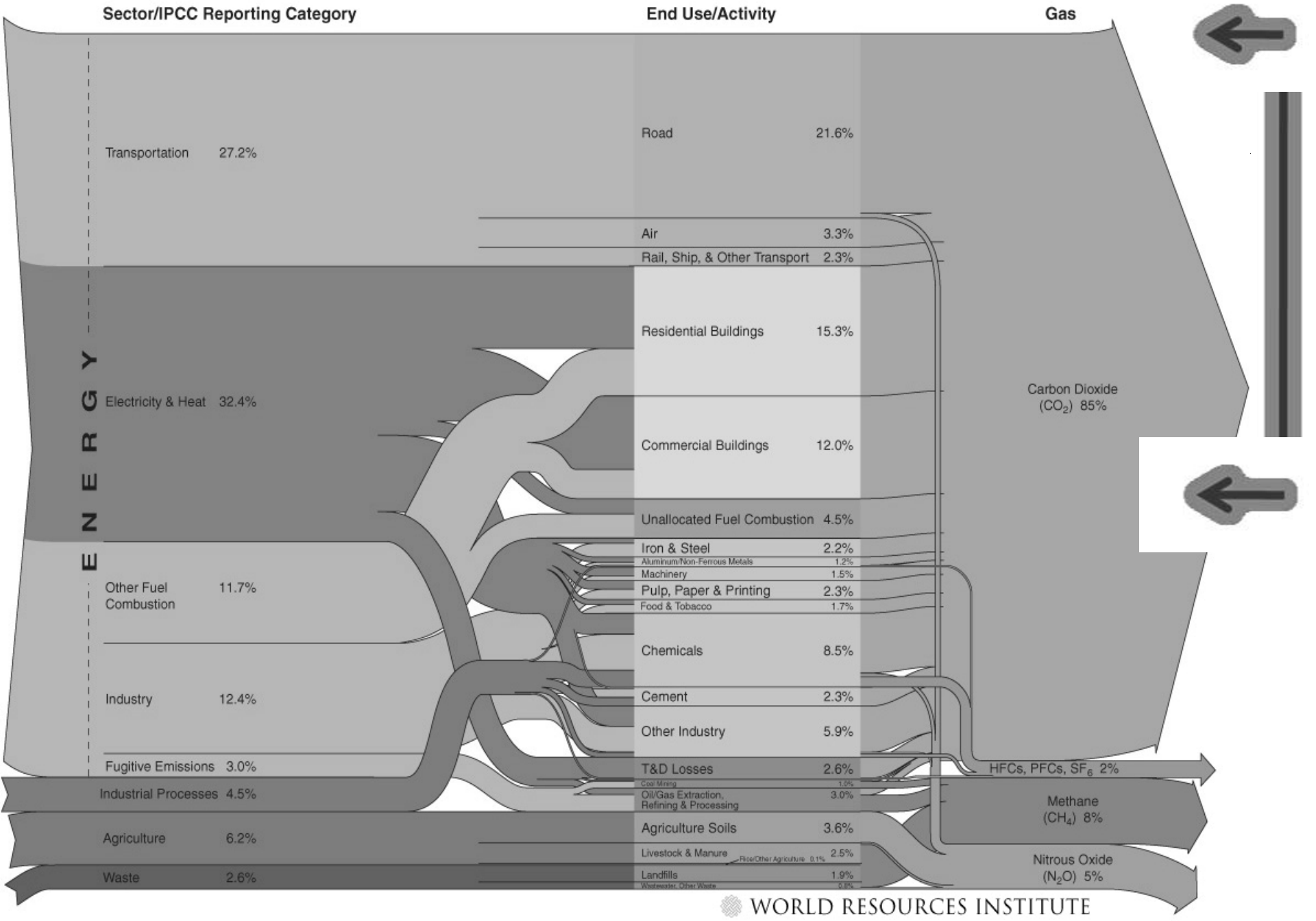
Figure SPM.5. *Solid lines are multi-model global averages of surface warming (relative to 1980–1999) for the scenarios A2, A1B and B1, shown as continuations of the 20th century simulations. Shading denotes the ±1 standard deviation range of individual model annual averages. The orange line is for the experiment where concentrations were held constant at year 2000 values. The grey bars at right indicate the best estimate (solid line within each bar) and the* ***likely*** *range assessed for the six SRES marker scenarios. The assessment of the best estimate and* ***likely*** *rangee in the grey bars includes the AOGCMs in the left part of the figure, as well as results from a hierarchy of independent models and observational constraints. (Figuree 10.4 and 10.29)*

Two Roles Planners Play in Helping Mitigate Climate Change

Implementing a more compact urban form

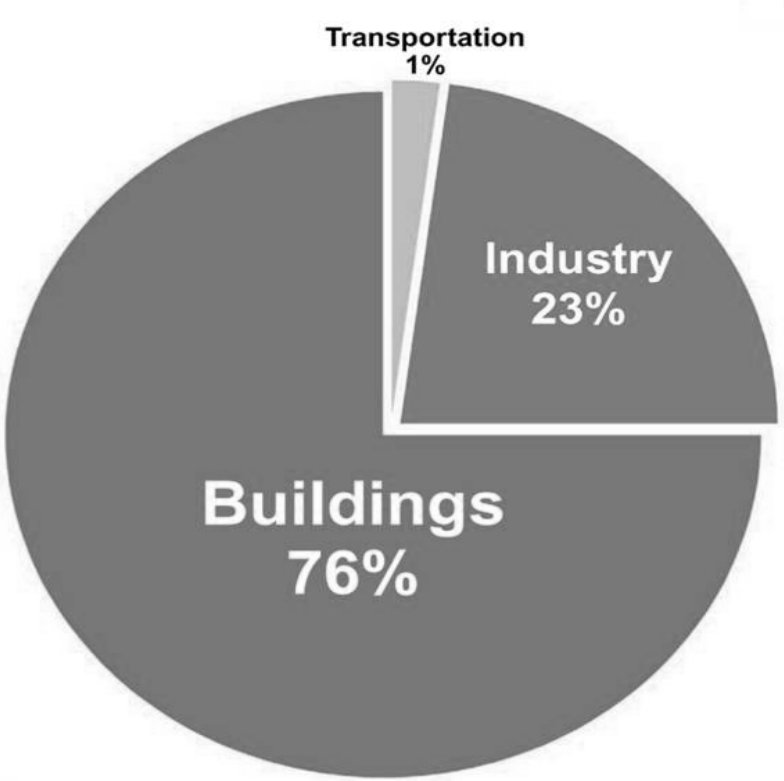
Communicating climate change

U.S. GHG Emissions Flow Chart



WORLD RESOURCES INSTITUTE

Role of Planners – Climate Change Mitigation



U.S. Energy Consumption

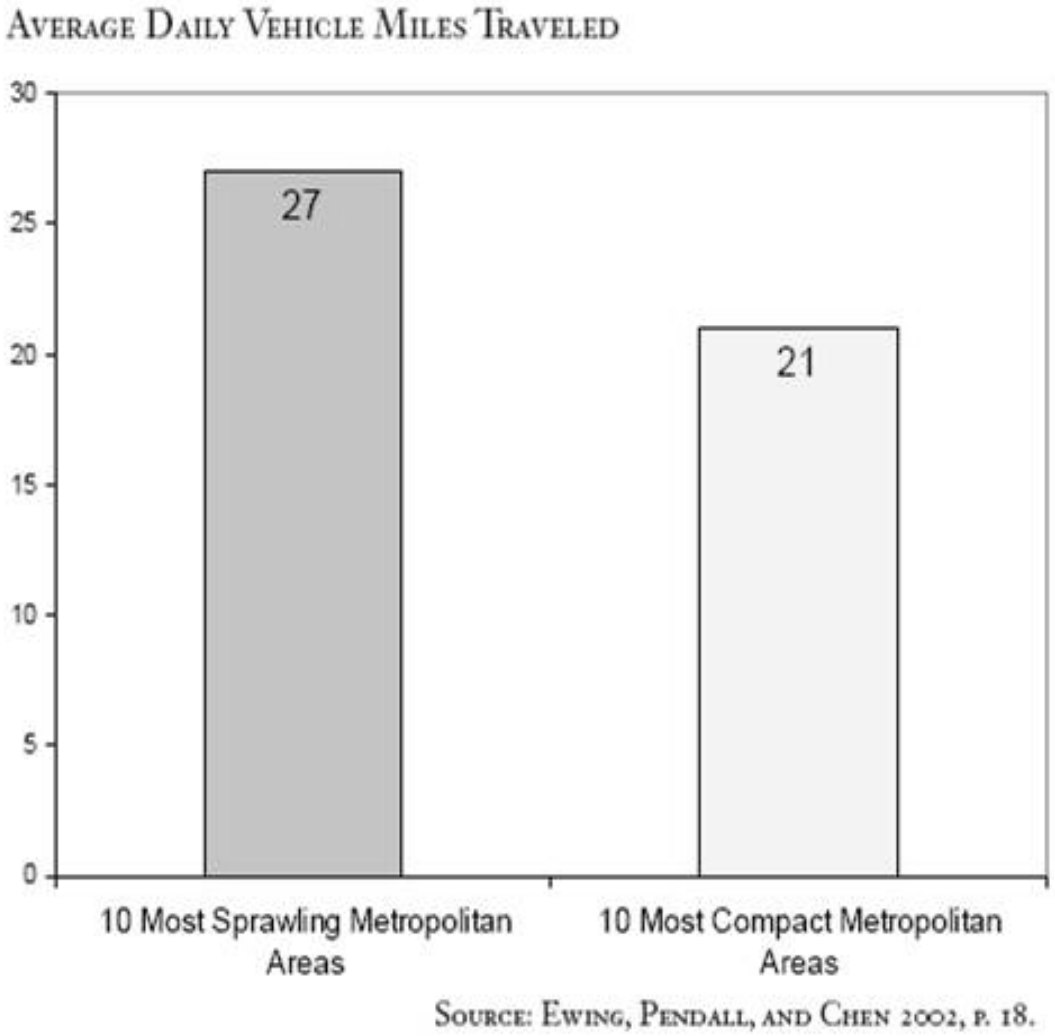
- The graphic shows where <u>electricity</u> is used in the US
- By the year 2035, three quarters of the built environment in the U.S. will be either new or renovated.
- The AIA has a carbon neutral goal by 2030.

Source: American Institute of Architects (AIA)

	U.S. UNITS	METRIC UNITS
Average U.S. commute distance – one way[1]	12.2 mi	19.6 km
U.S. average vehicle fuel economy – 2006[2]	21.0 mi/gal	8.9 km/liter
Work days	235 days/yr	
Annual fuel consumption	273 gal/year	1,030 liters/yr
Annual fuel consumption per automobile commuter[3]	33,900 kBtu/yr	9,890 kWh/yr
Transportation energy use per employee[4]	27,700 kBtu/yr	8,100 kWh/yr
Average office building occupancy[5]	230 ft^2/person	21.3 m^2/person
Transportation energy use for average office building	121 kBtu/ft^2	381 kWh/m^2
Operating energy use for average office building[6]	92.9 kBtu/ft^2-yr	293 kWh/m^2-yr
Operating energy use for code-compliant office building[7]	51.0 kBtu/ft^2-yr	161 kWh/m^2-yr
Percent transportation energy use exceeds operation energy use for an average office building	30.2%	
Percent transportation energy use exceeds operation energy use for an office building built to ASHRAE 90.1-2004 code	137%	

Source: Alex Wilson with Rachel Navaro
BuildingGreen.com

Role of Planners – Climate Change Mitigation

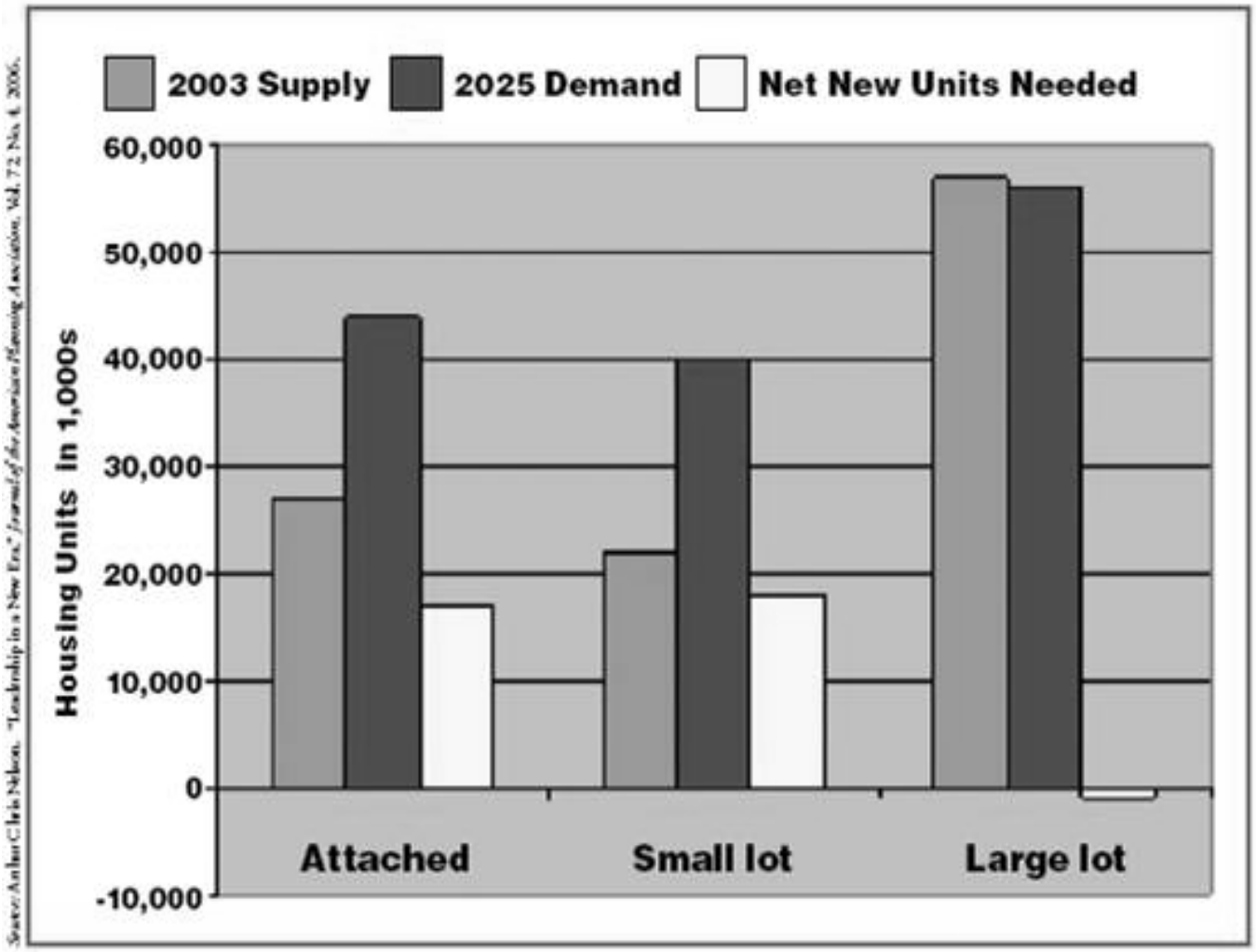


Role of Planners – Climate Change Mitigation

A More Compact Urban Form

- New Urbanism
- Infill Development
- Downtown/CBD Zoning
- Adaptive Reuse
- Conservation Zoning
- Transit-Oriented Development
- Urban Service Boundaries
- Urban Growth Boundaries
- Transfer of Development Rights

Role of Planners – Climate Change Mitigation



Role of Planners – Climate Change Mitigation

Climate Change "Winners" and "Losers"

Climate change will result in migration of population.

Some communities will experience new investment and others will experience disinvestment as a result of climate change.

Role of Planners – Climate Change Mitigation

Migration = Opportunity

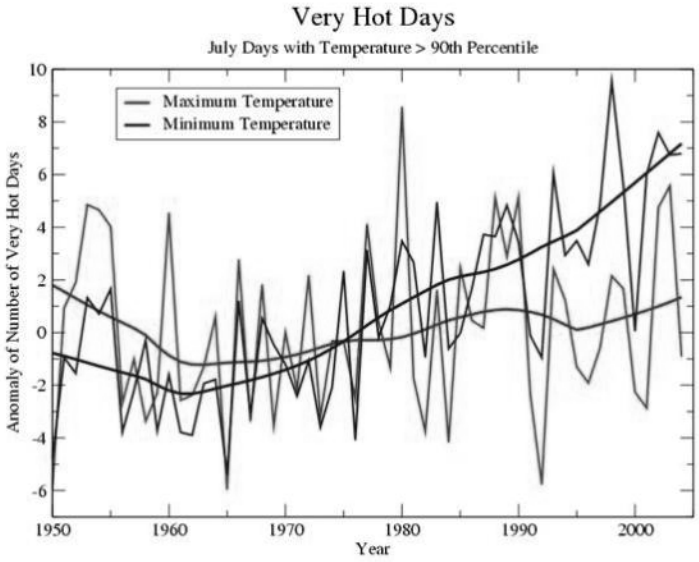
- ¾'s of US buildings will be new or renovated by 2035 (AIA).
- Market demand for compact housing development (JAPA).
- Communities that experience climate-related population growth or loss can use those changes to help mitigate climate change.

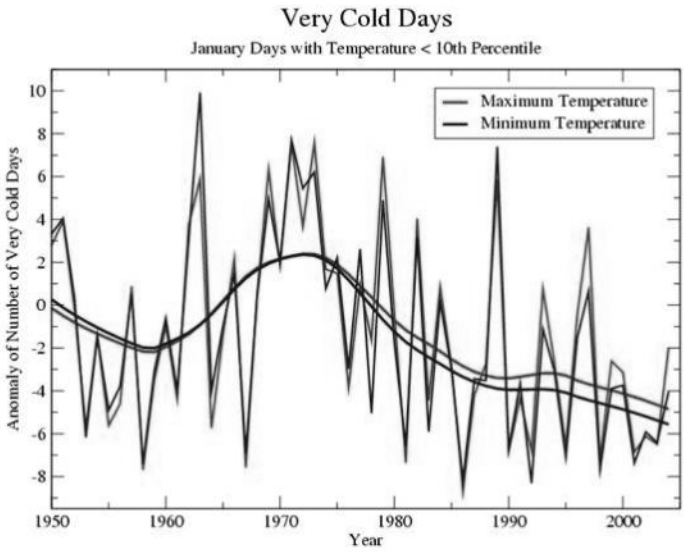
Role of Planners – Thinking Comprehensively

The Communication Challenge for Planners

How to translate the science of climate change into information that produces a rational political response at the local level

Climate Science May Be Sound . . .



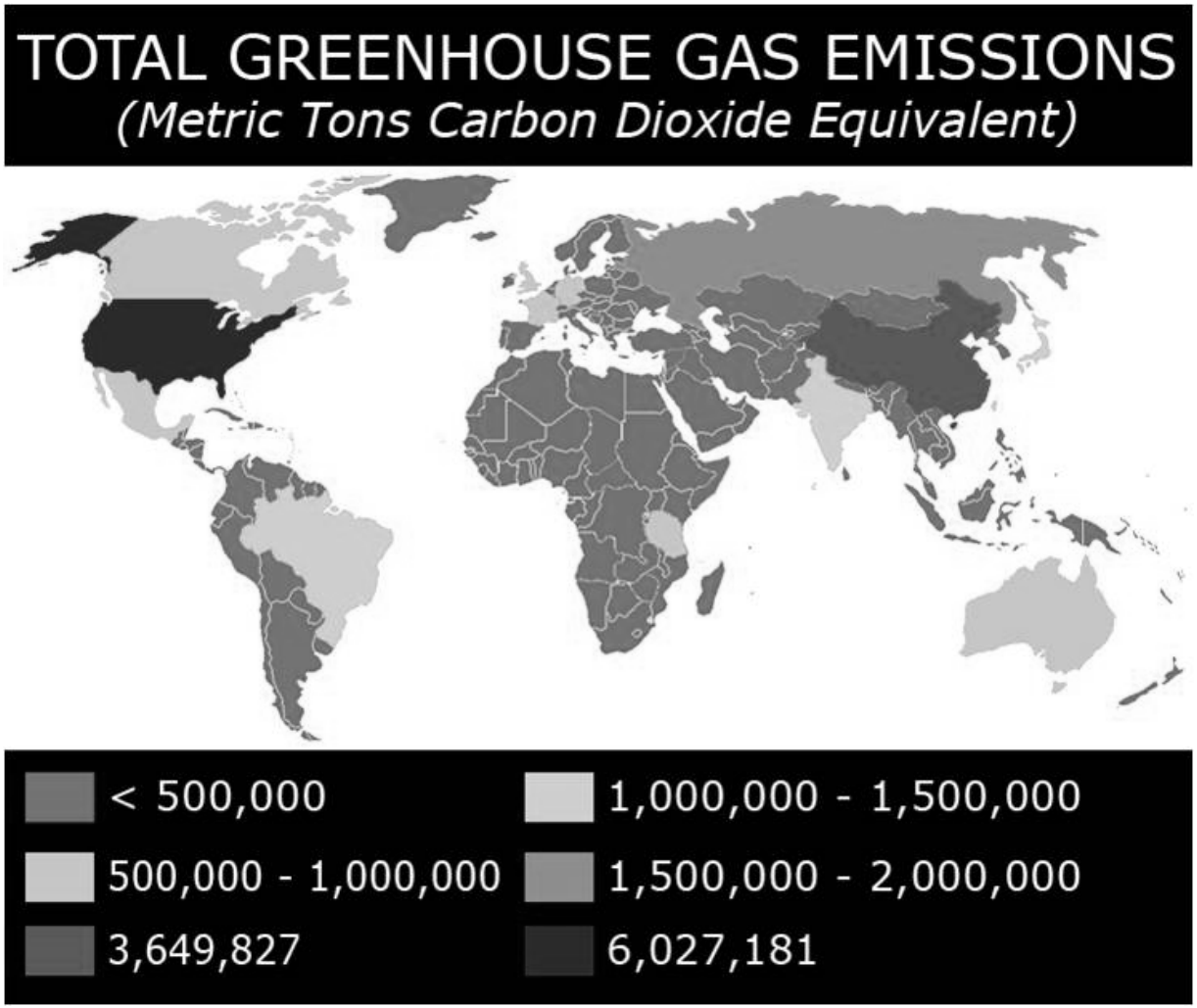


. . . but:

"Politics is not an exact science."

Otto von Bismarck

Climate Change May Be Global . . .



. . . but:

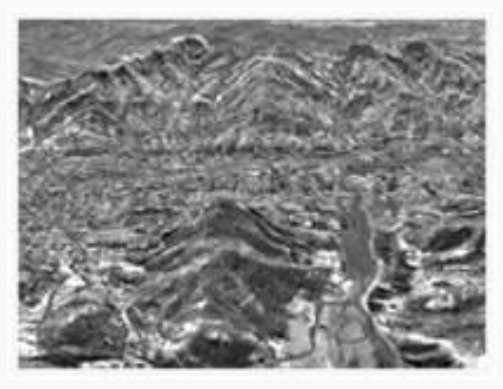
"All politics is local."

Tip O'Neill

The Communication Challenge for Planners

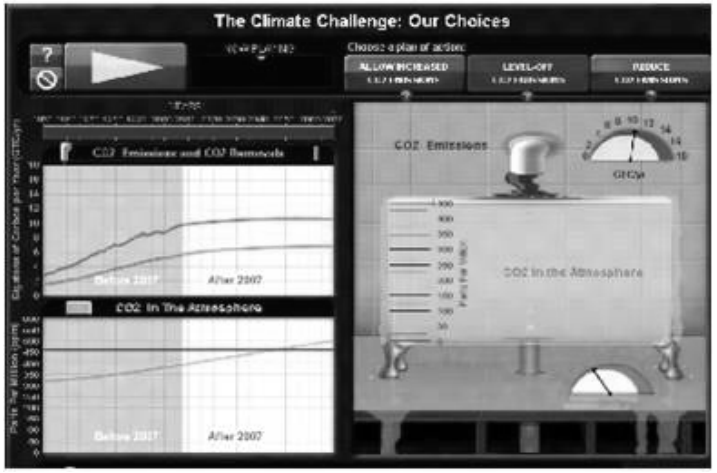
Actual Flooding

NEMAC Visualizations



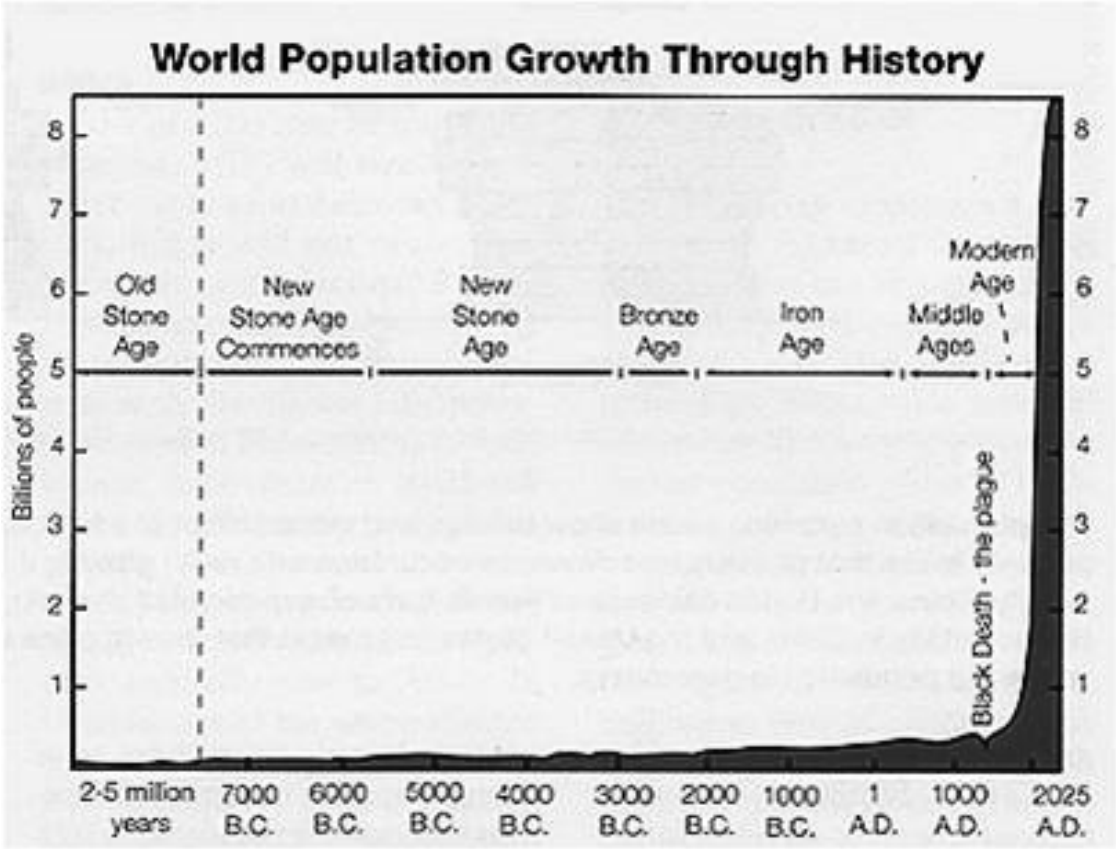
The Communications Challenge for Planners

- Carbonopoly
- Fossil Fuel Lifetime Estimator
- Climate Bathtub Simulation
- Migrating Climates
- Temperature Simulation



Source: Sustainability Institute

The Communications Challenge for Planners



Source: *Facing the Future*, 1998

Contact Information

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