Planning for Places: The Scales of Sustainability

Pathways to Urban Sustainability:
A Focus on the Houston Metropolitan Area
The National Academies
January 18, 2012

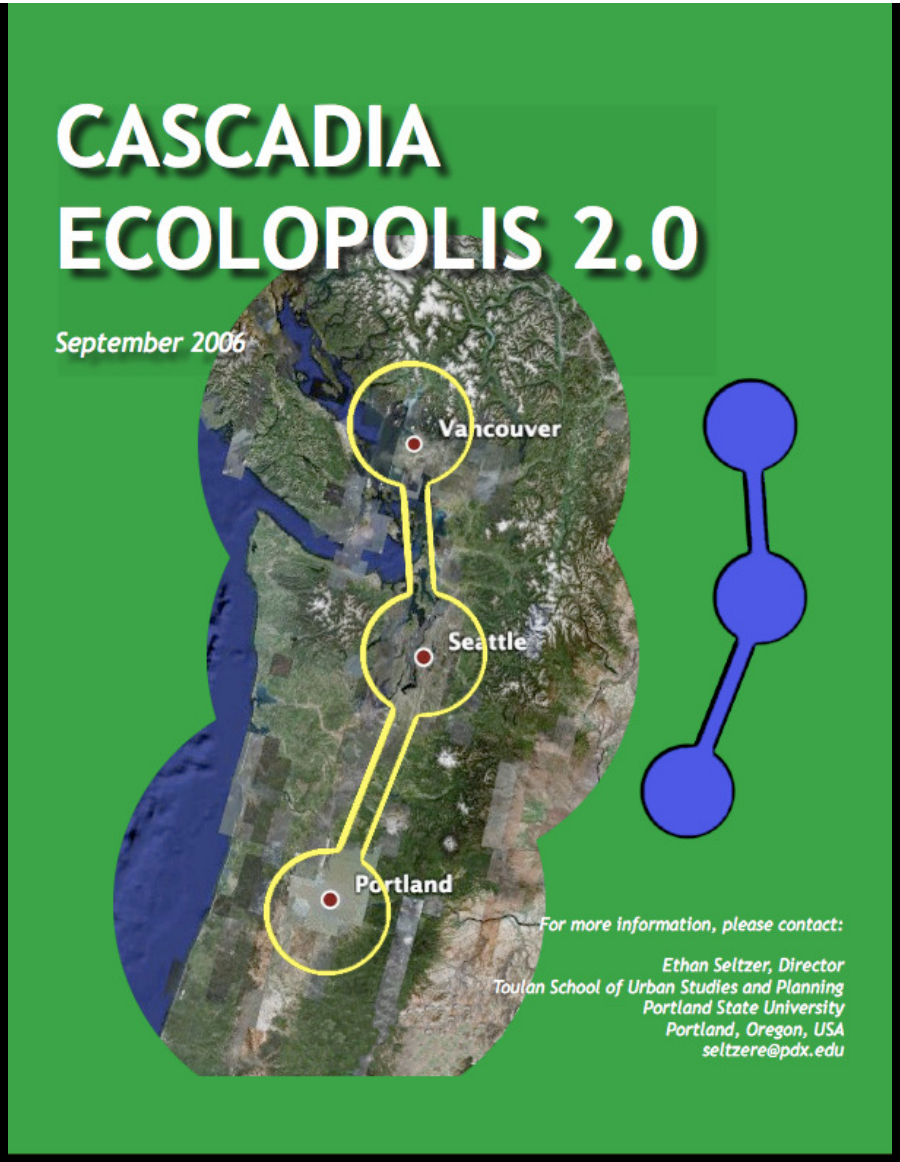
Armando Carbonell
Lincoln Institute of Land Policy

Cities and Nature

Cities in Nature

Nature in Cities

From flowerpots on a windowsill …



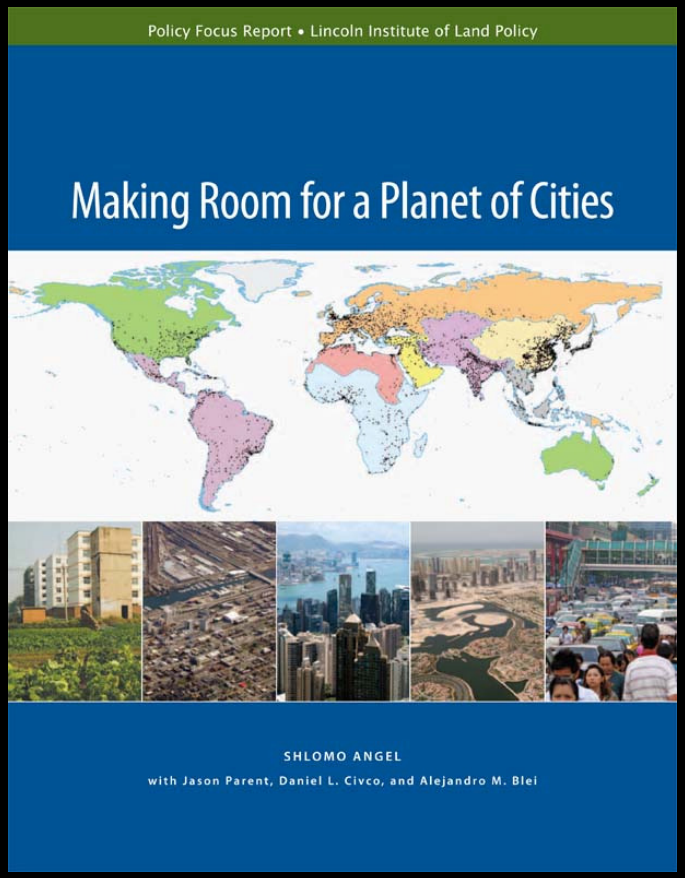
… to the megaregion.

…Out of the cold and rain,
dust and sunshine, came the
music of cities and streets.
The music and cities of the
future wait beyond the edge.

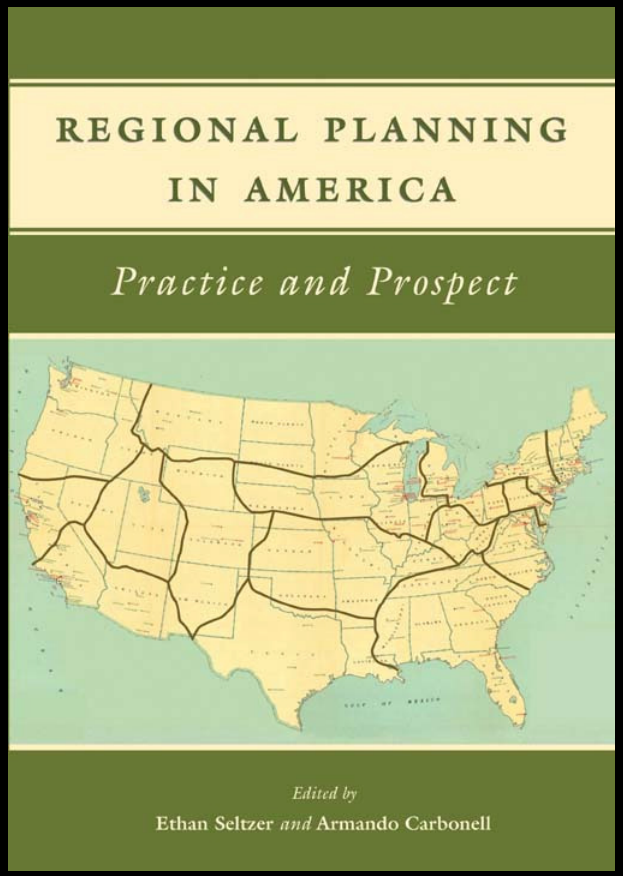
Gary Snyder

“Out of the soil and rock”


HOUSTON, TEXAS.


Policy Focus Report • Lincoln Institute of Land Policy
Making Room for a Planet of Cities
SHLOMO ANGEL
with Jason Parent, Daniel L. Civco, and Alejandro M. Blei

The Problem


REGIONAL PLANNING
IN AMERICA
Practice and Prospect
Edited by
Ethan Seltzer and Armando Carbonell

The Remedy

The Scales of Sustainability

1. Global: Planning for Climate Change

2. Megaregional/National: America 2050

3. Metropolitan/Local: Redesigning Edgeless City; Southeastern MA

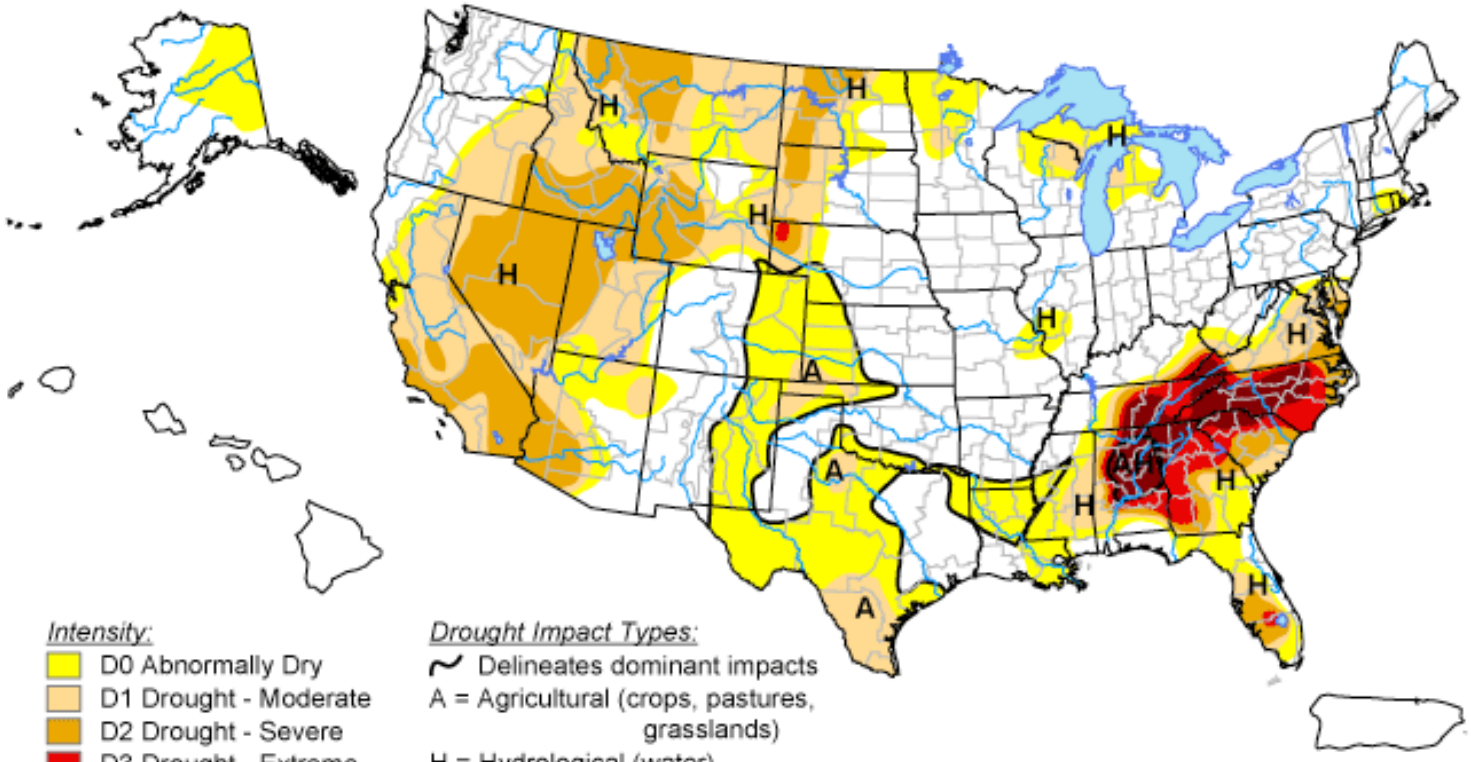
Scale 1

Global

Planning for Climate Change

U.S. Drought Monitor

January 8, 2008
Valid 7 a.m. EST



Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:
- ~ Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

USDA National Drought Mitigation Center

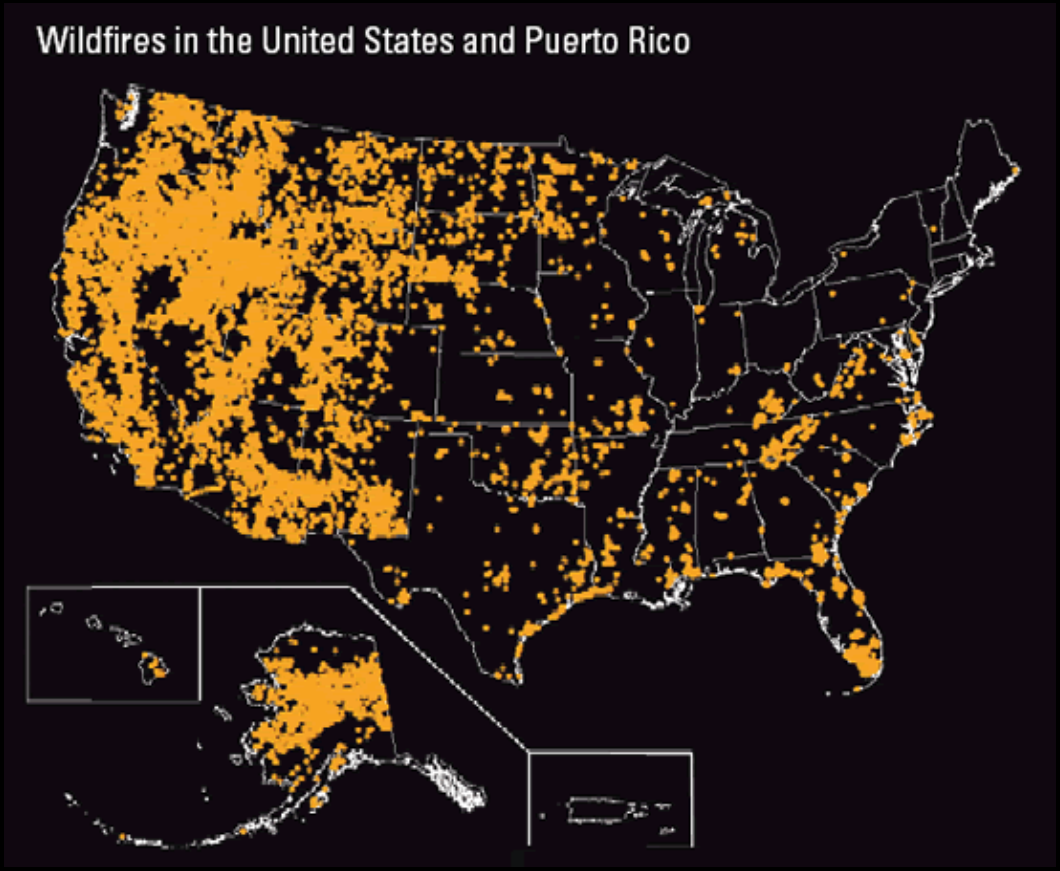
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Released Thursday, January 10, 2008

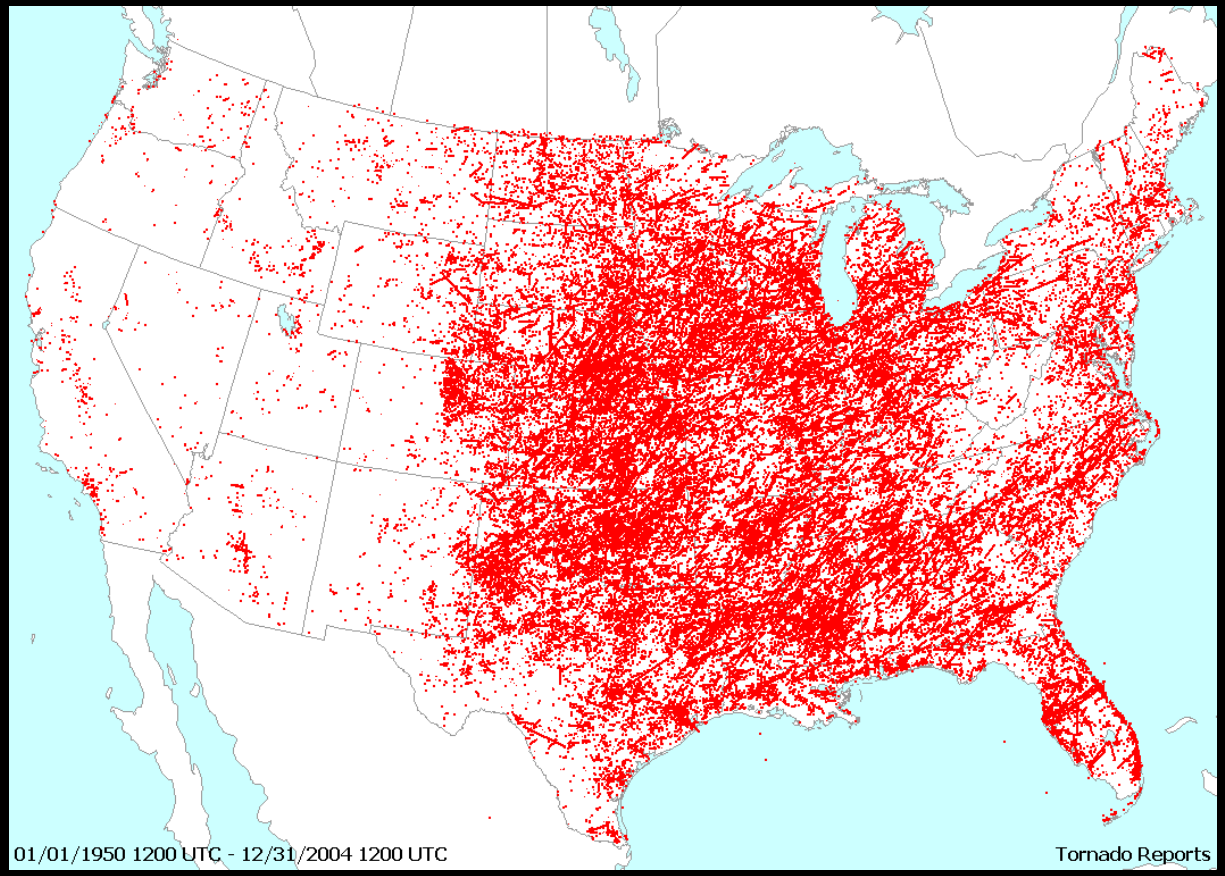
Author: Rich Tinker, Climate Prediction Center, NOAA

http://drought.unl.edu/dm

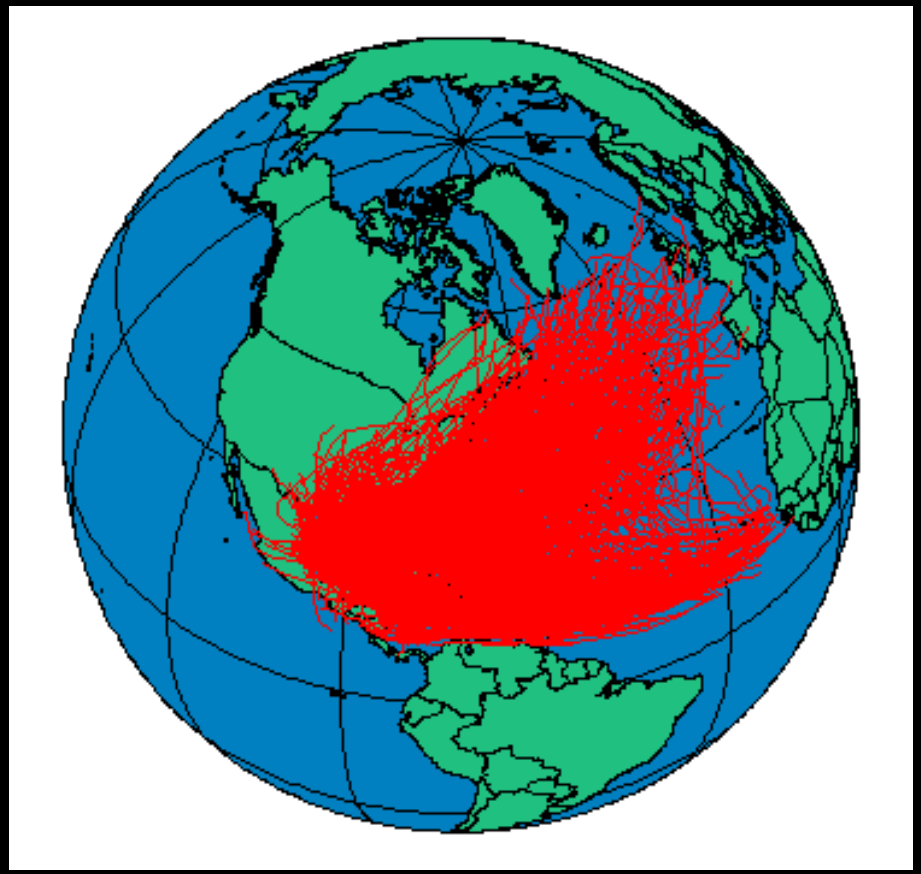
Wildfires 1980-2003 (USGS)



Tornados 1950-2004



Hurricane Tracks 1886-1996




STERN
review
ON THE ECONOMICS
OF CLIMATE CHANGE

“Climate change is the greatest and widest-ranging market failure ever seen .”

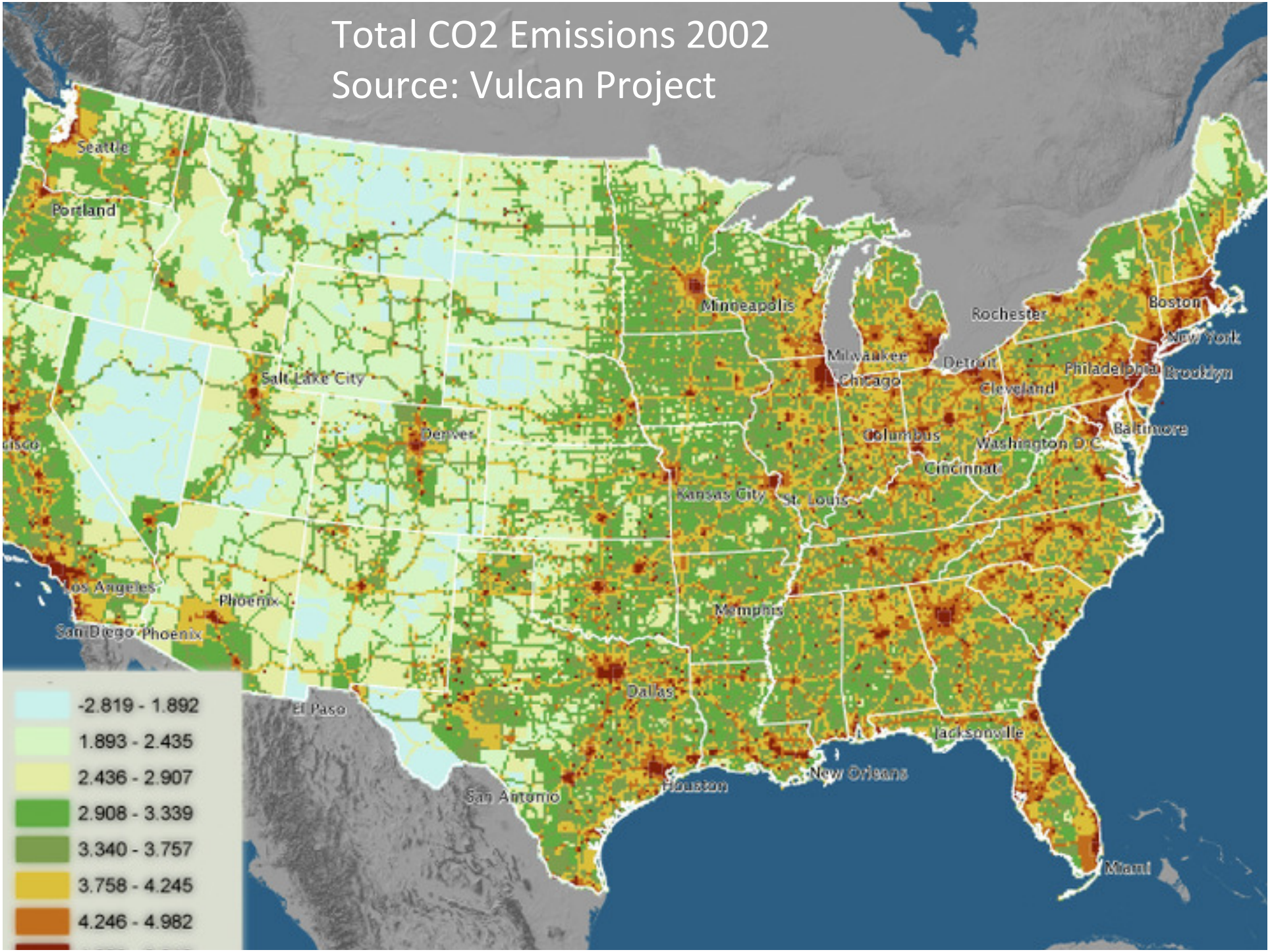
Lord Stern

How much do cities contribute to GHG emissions?

75-80%?

Cities cover less than one per cent of the earth's surface but are disproportionately responsible for causing climate change.

Clinton Climate Initiative


Total CO2 Emissions 2002
Source: Vulcan Project
Seattle
Portland
Salt Lake City
Denver
Minneapolis
Rochester
Boston
New York
Milwaukee
Detroit
Chicago
Cleveland
Philadelphia
Brooklyn
Baltimore
Columbus
Washington D.C.
Cincinnati
Kansas City
St. Louis
Memphis
Los Angeles
Phoenix
San Diego
Phoenix
Dallas
El Paso
San Antonio
Houston
New Orleans
Jacksonville
Miami
-2.819 - 1.892
1.893 - 2.435
2.436 - 2.907
2.908 - 3.339
3.340 - 3.757
3.758 - 4.245
4.246 - 4.982

Or is it more like 40%?

Cities produce surprisingly low carbon emissions per capita

2009-03-23 09:17.

Greenhouse gas emissions of city dwellers are often far smaller than the national averages, says a study in the April issue of Environment and Urbanization by David Dodman of the International Institute for Environment and Development.

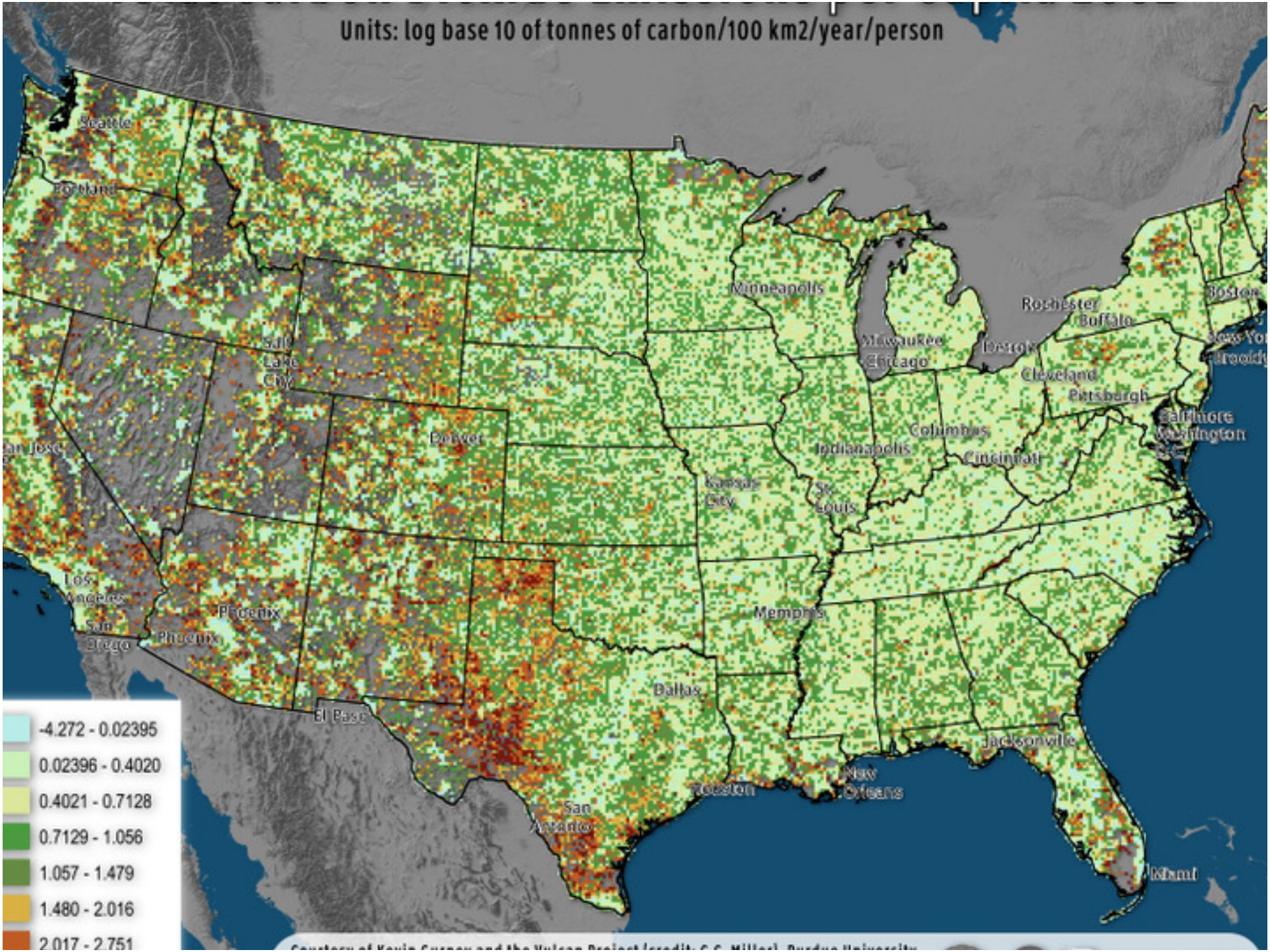
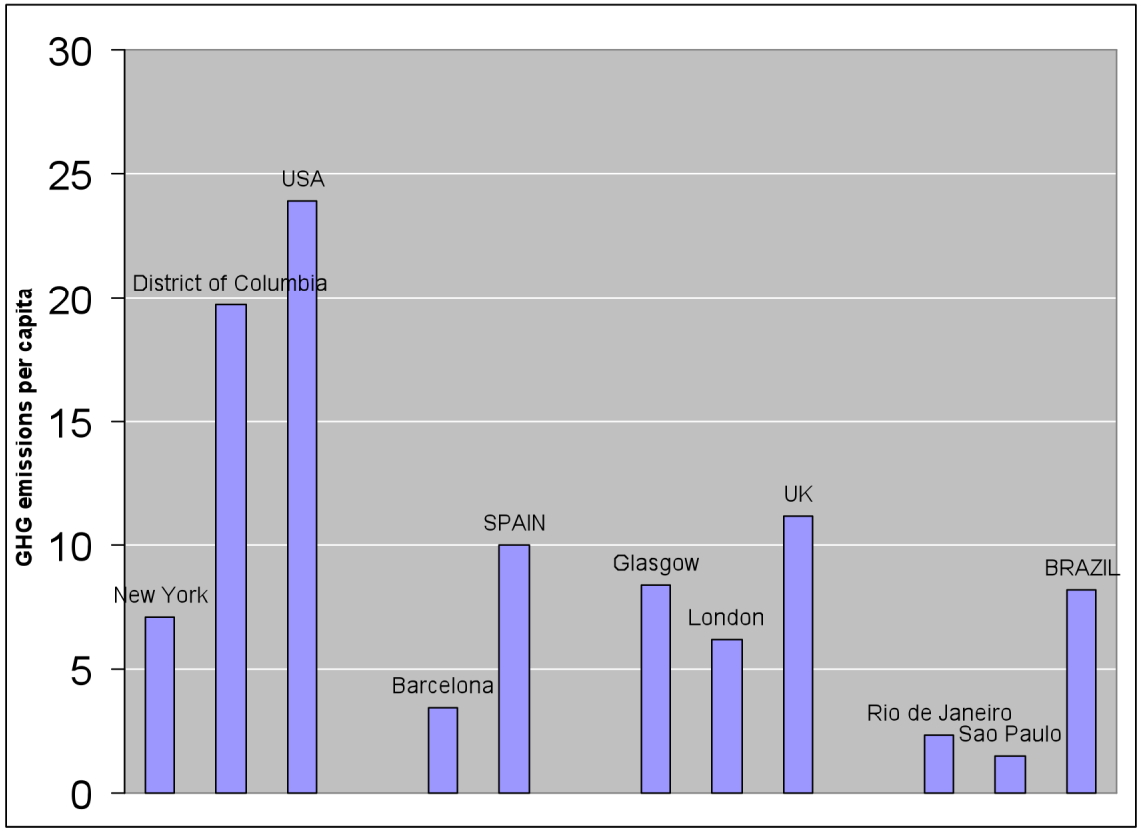

Units: log base 10 of tonnes of carbon/100 km2/year/person
Seattle
Portland
Salt Lake City
Denver
Minneapolis
Milwaukee
Chicago
Detroit
Rochester
Buffalo
Cleveland
Pittsburgh
Boston
Columbus
Indianapolis
Cincinnati
Kansas City
St. Louis
Memphis
Dallas
El Paso
Houston
New Orleans
San Antonio
Jacksonville
Miami
Los Angeles
San Diego
Phoenix
-4.272 - 0.02395
0.02396 - 0.4020
0.4021 - 0.7128
0.7129 - 1.056
1.057 - 1.479
1.480 - 2.016
2.017 - 2.751

Figure 1: Comparing cities and their nations for greenhouse gas emissions per person



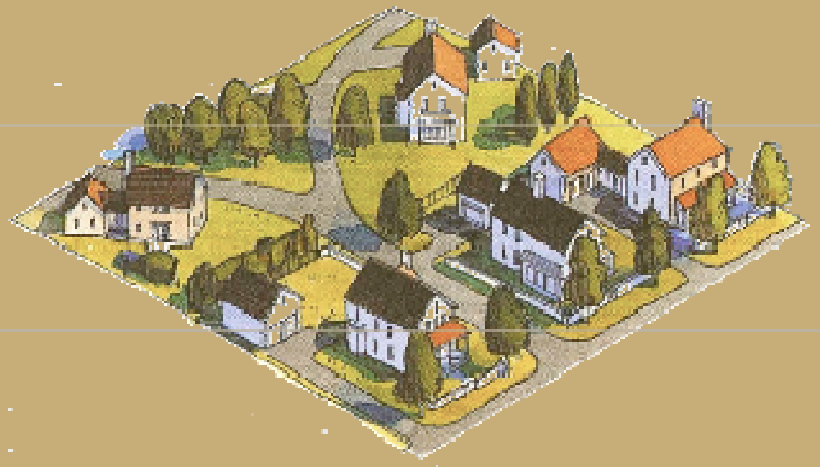
Source: Dodman 2009. NB Care should be taken in comparing figures for the cities in different nations, due to differences in methodologies for counting and assigning greenhouse gas emissions.

LINCOLN INSTITUTE OF LAND POLICY

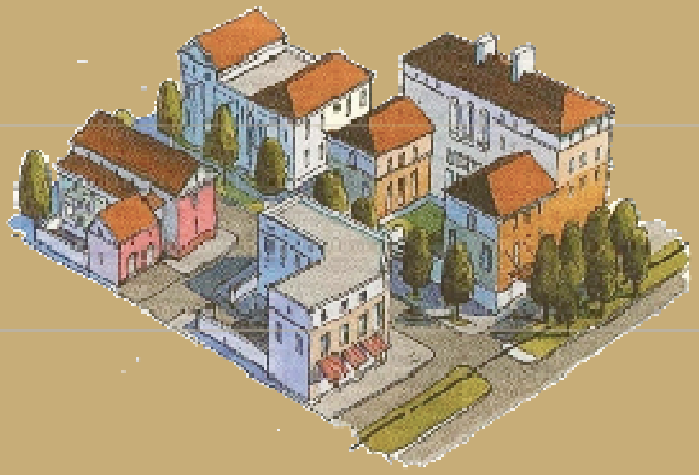
Urban Planning Tools for Climate Change Mitigation

Land-Use and CO_2

Suburban
8 DU/acre
0.25 FAR



Urban
40 DU/acre
2.5 FAR



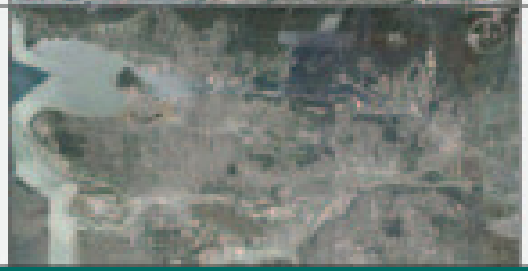
CO_2 Lbs/Yr/Household		
Buildings	25,000	10,000
Transportation	24,000	9,000
Total	49,000	19,000

Source: Eliot Allen, “Cool Spots”

LINCOLN INSTITUTE OF LAND POLICY

FIGURE 2

Scales of Urban Form and Policy Instruments to Impact GHG Emissions

Scales	Scale	Urban Form	Common Policies
	Building, parcel		Building codes, zoning bylaws, development guidelines
	Block, neighborhood, district		Local area plans, concept plans, community visions, development guidelines
	Municipality		Municipal development plans, comprehensive plans
	Region, bioregion, megaregion		Regional growth strategies, regional visions, regional transportation plans

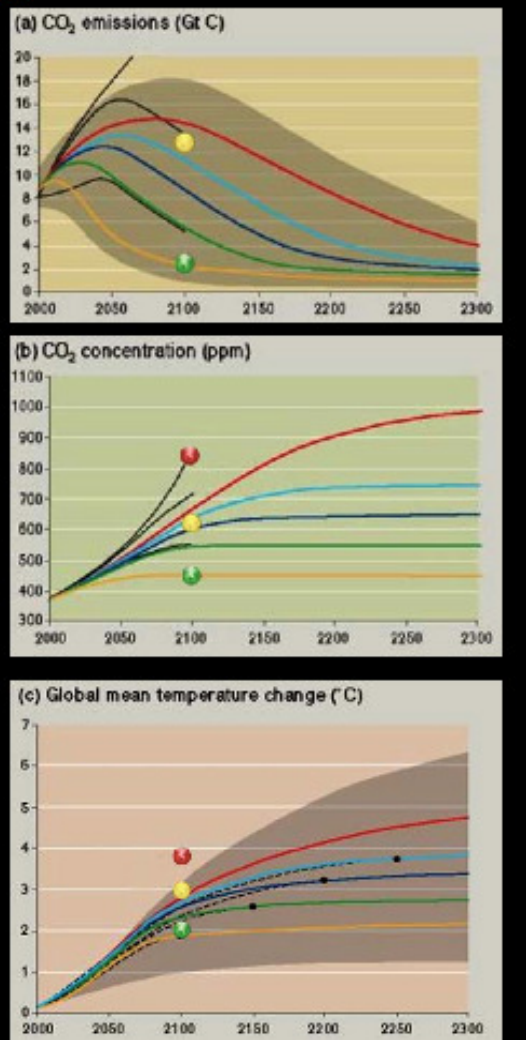
Four Possible Future Worlds

4 **Deep Sustainability**

3 **Efficient Development**

2 **Adapt to Risk**

1 **Do Nothing**



(IPCC TAR)


1
2
3
4
Existing Conditions


1
2
3
4
Dike Adaptation

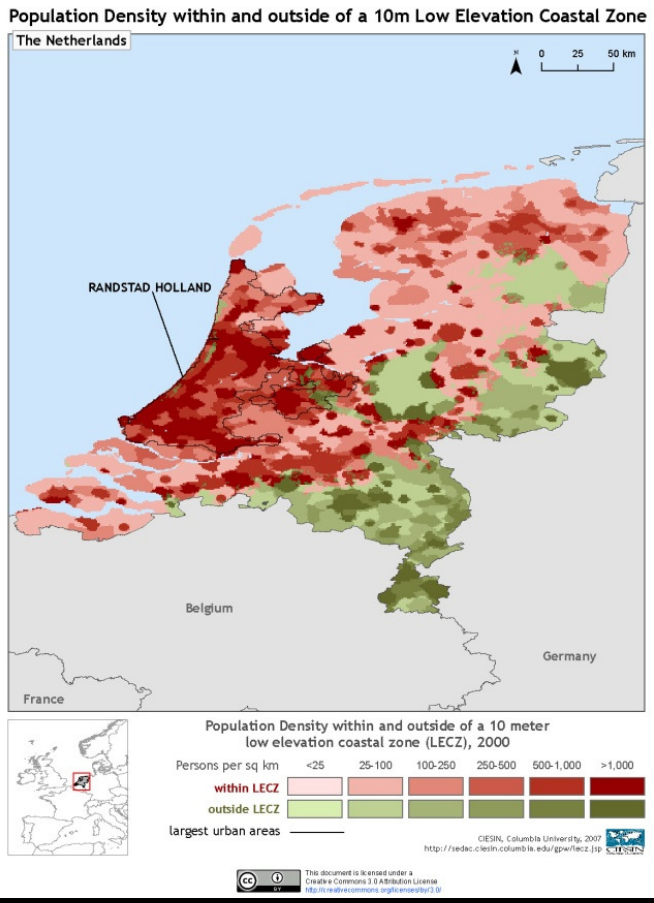

1
2
3
4
Raised wall/
homes; some
energy retrofit
(2050)


1
2
3
4
Completed energy retrofit (2050)


1
2
3
4
2100:
Storm surge with
breach / overtopping

Sea Level Rise

The Harvard –Netherlands Project on Climate Change, Water, Land Use, and Adaptation



The Netherlands:

50% Land area
60% Population
70% GDP

below sea level

Ijsselmeer north, Afsluitduijk, Friesland

Kampen, Ijssel river, Balgstuw

IJburg, Almere center, Zeewolde

Adaptation

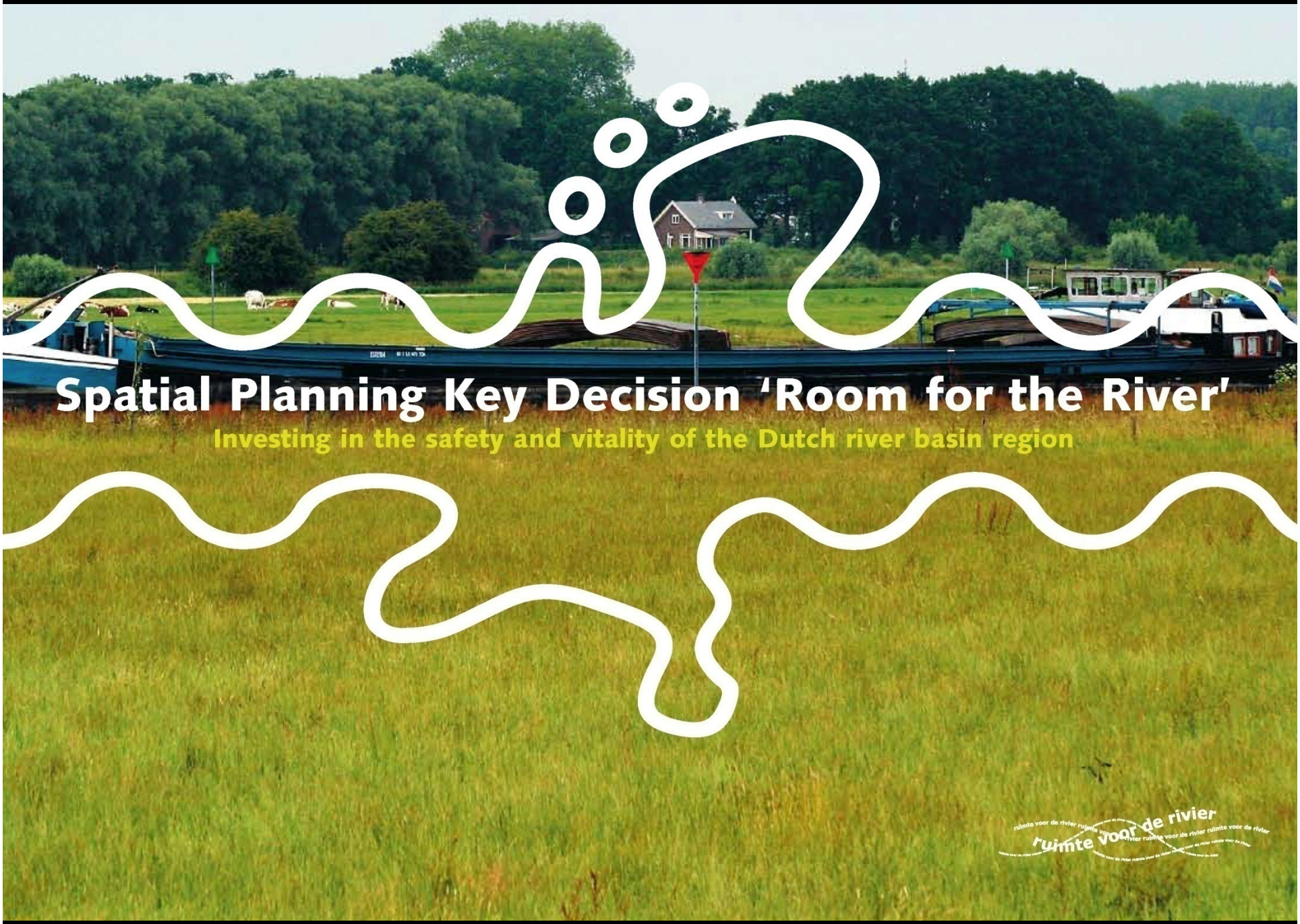
Resistance
Resilience
Retreat

DELTACOMMISSIE 2008

Samen *werken* met water

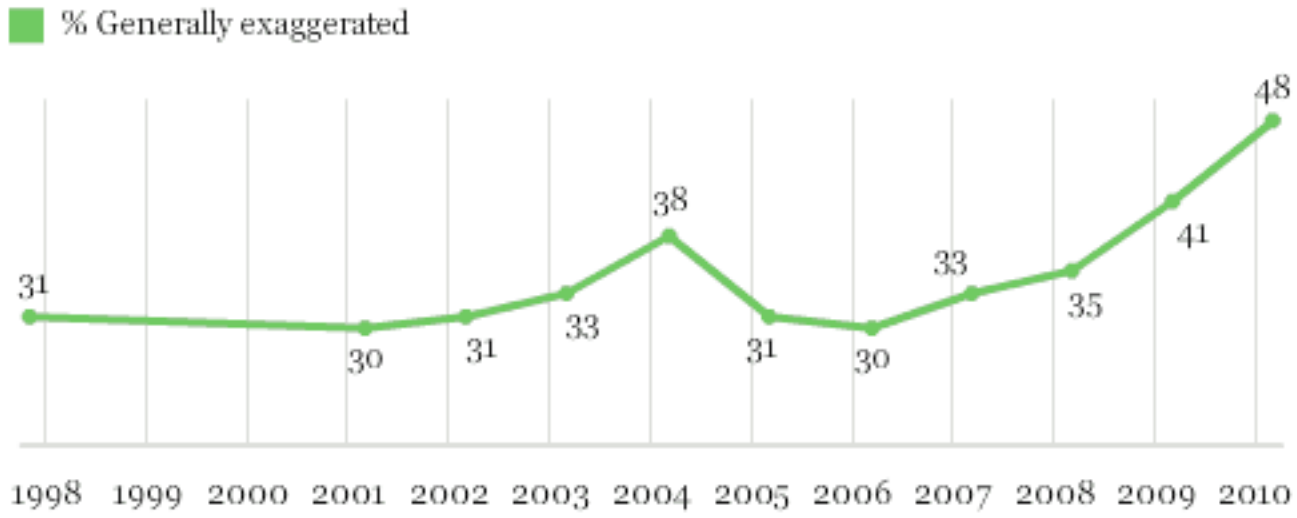
Een land dat leeft, bouwt aan zijn toekomst

Bevindingen van de Deltacommissie 2008


Spatial Planning Key Decision 'Room for the River'
Investing in the safety and vitality of the Dutch river basin region
ruimte voor de rivier


XI
Wilgenrif
vooroever
lagune
vaargeul
nieuwe Oranjesluis
vaargeul
begraafeiland

Thinking about what is said in the news, in your view is the seriousness of global warming -- [ROTATED: generally exaggerated, generally correct, or is it generally underestimated]?



GALLUP

From concern…

to skepticism

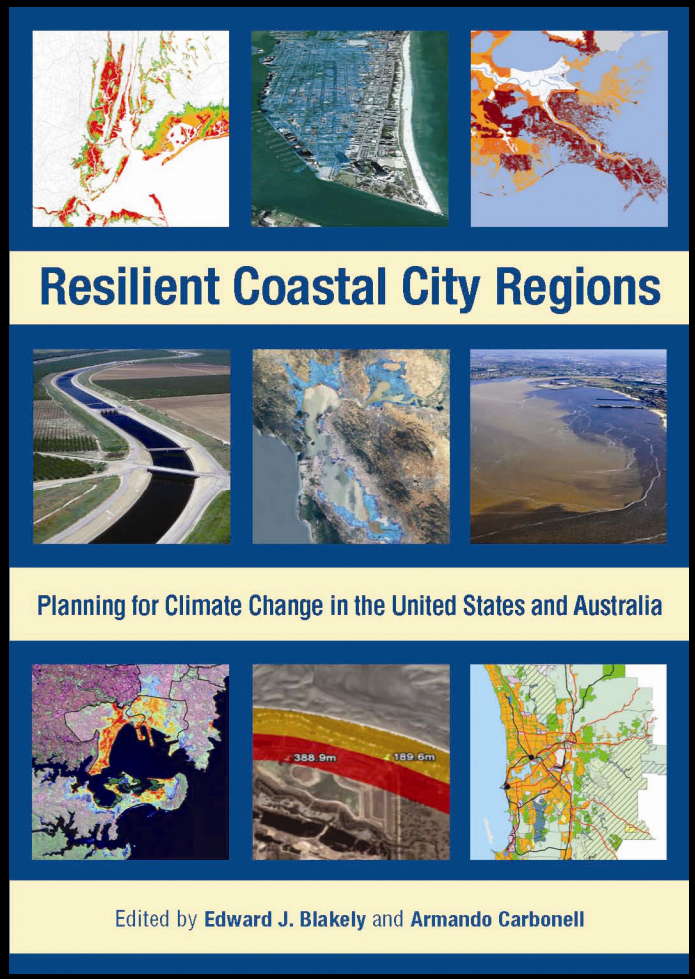
Source: Hyde-Park.si (Slovenija)

... to action

"Australian Senate Passes Carbon Tax"
The Guardian
November 8, 2011

"World headed for irreversible climate change in 5 years, IEA warns"
The Guardian
November 9, 2011

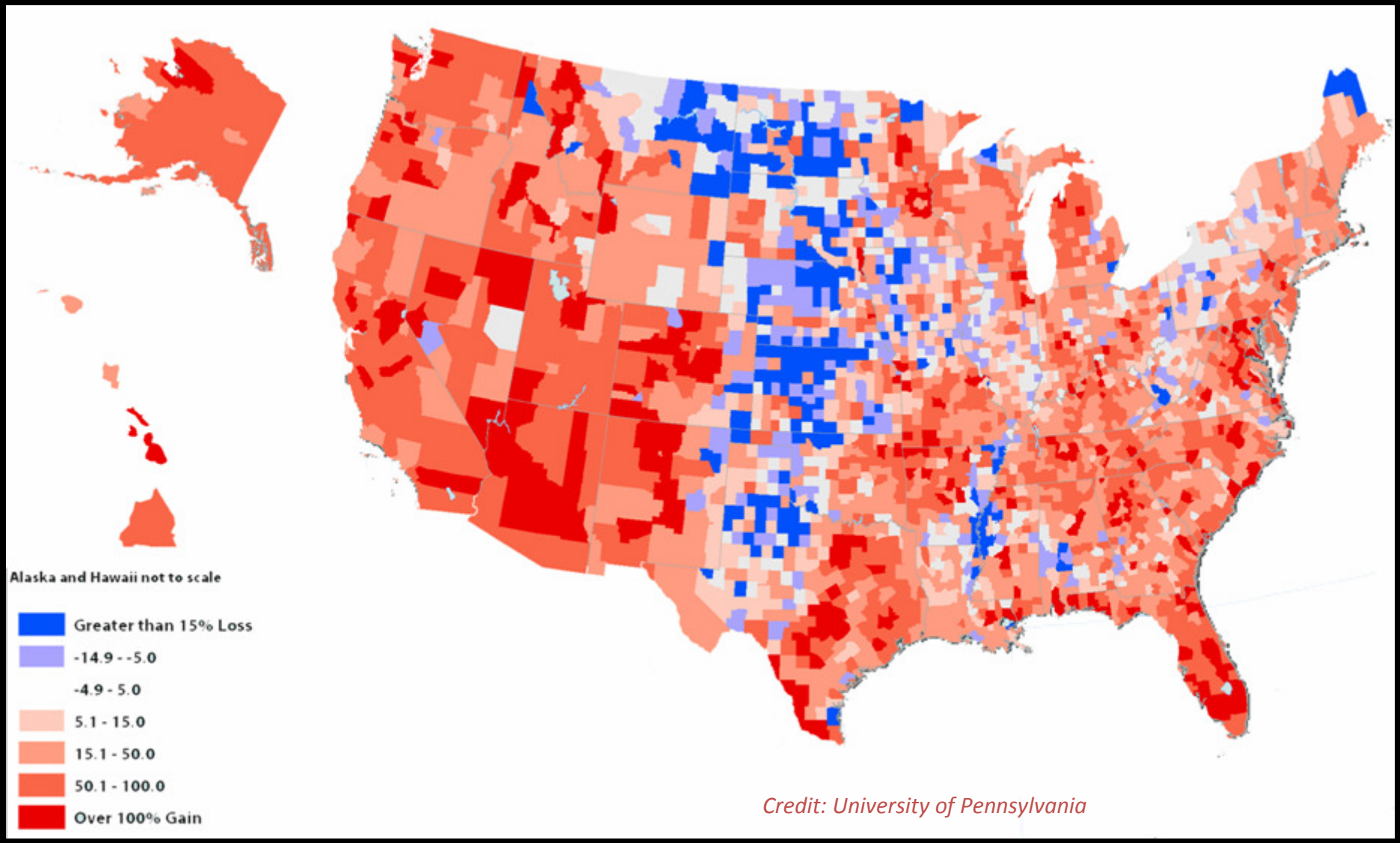
... just in time?


Resilient Coastal City Regions
Planning for Climate Change in the United States and Australia
388.9m
189.6m
Edited by Edward J. Blakely and Armando Carbonell

Scale 2

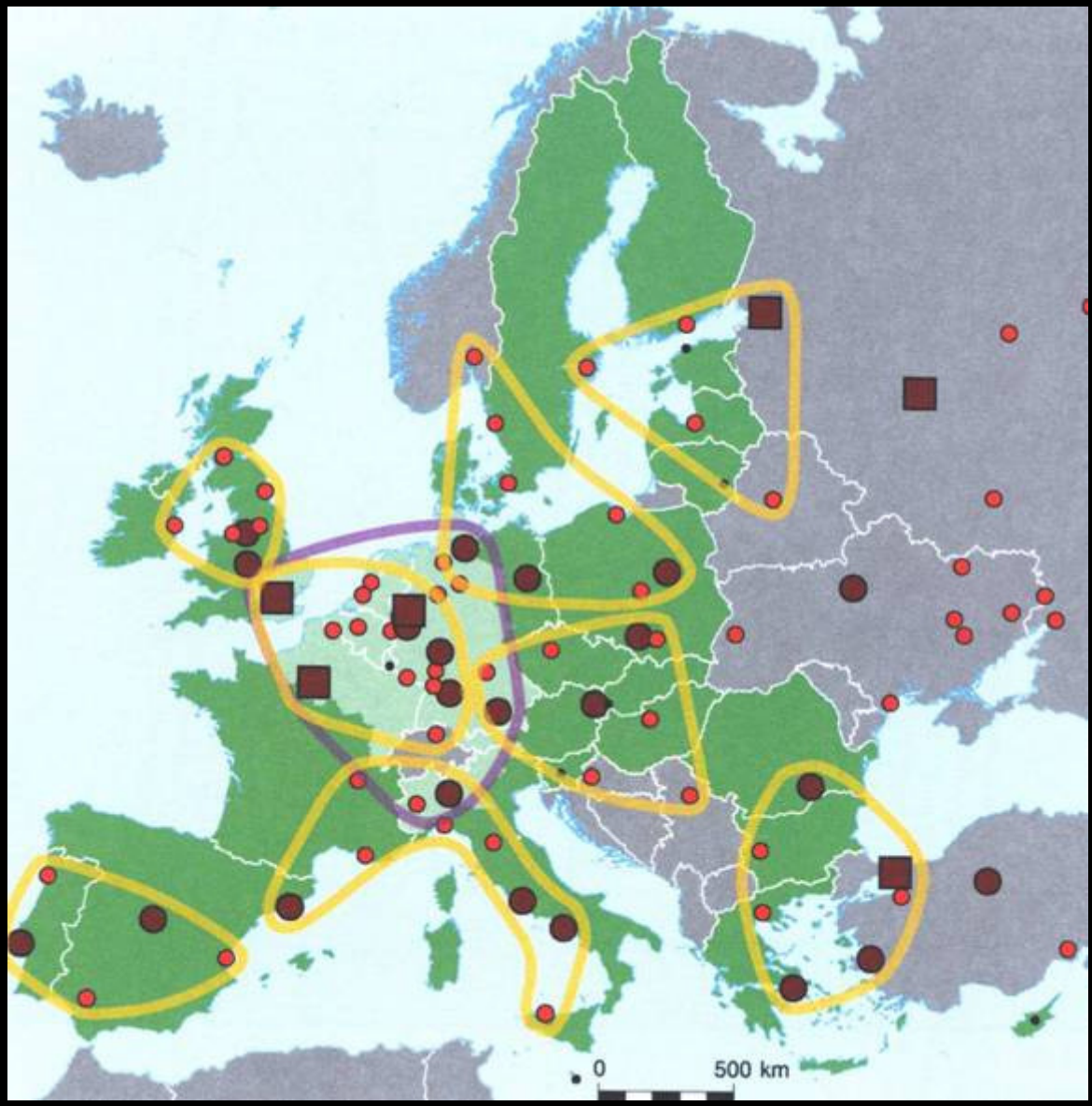
National/Megaregional

U.S. Population Change 2005-2050



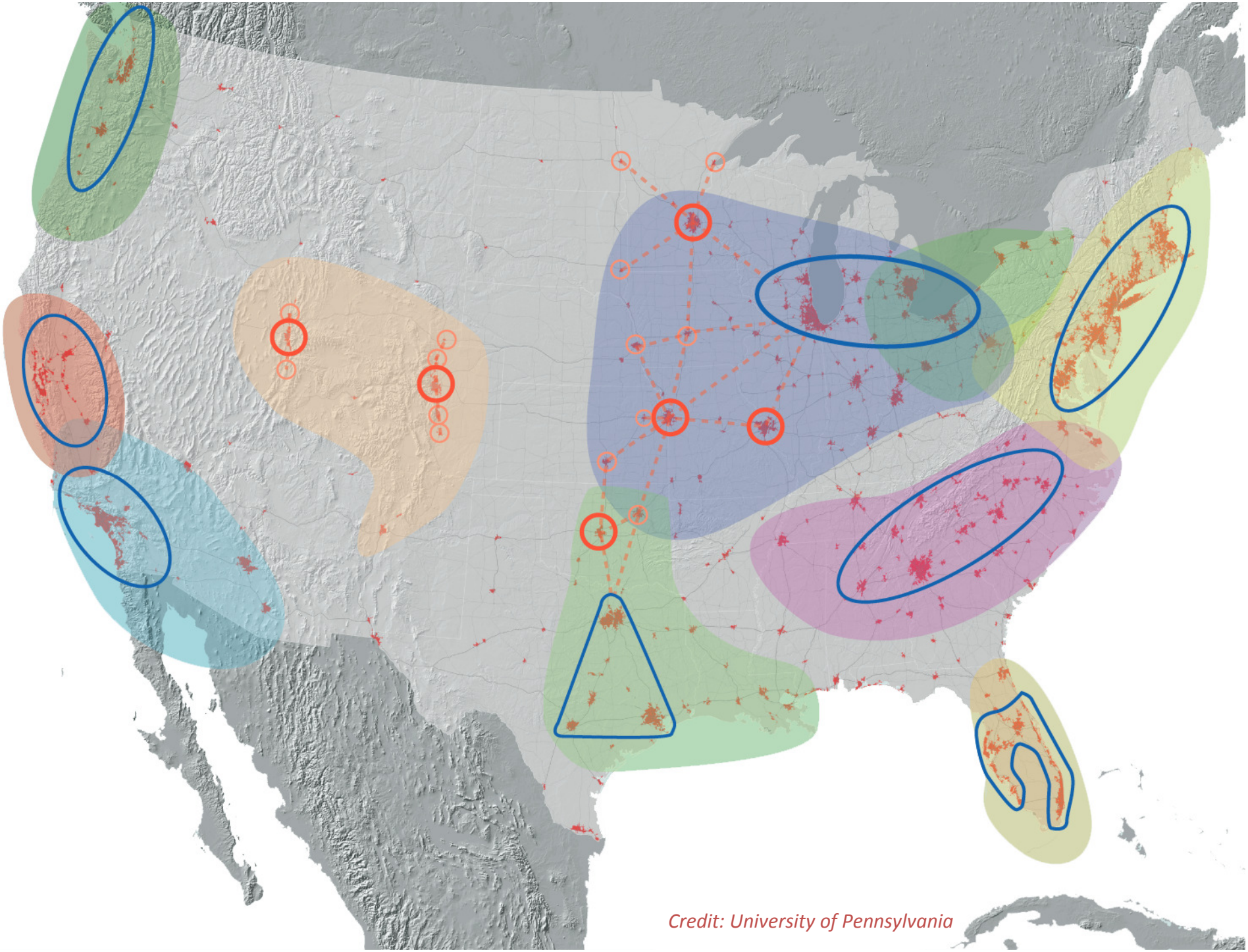
Credit: University of Pennsylvania

European Megaregions



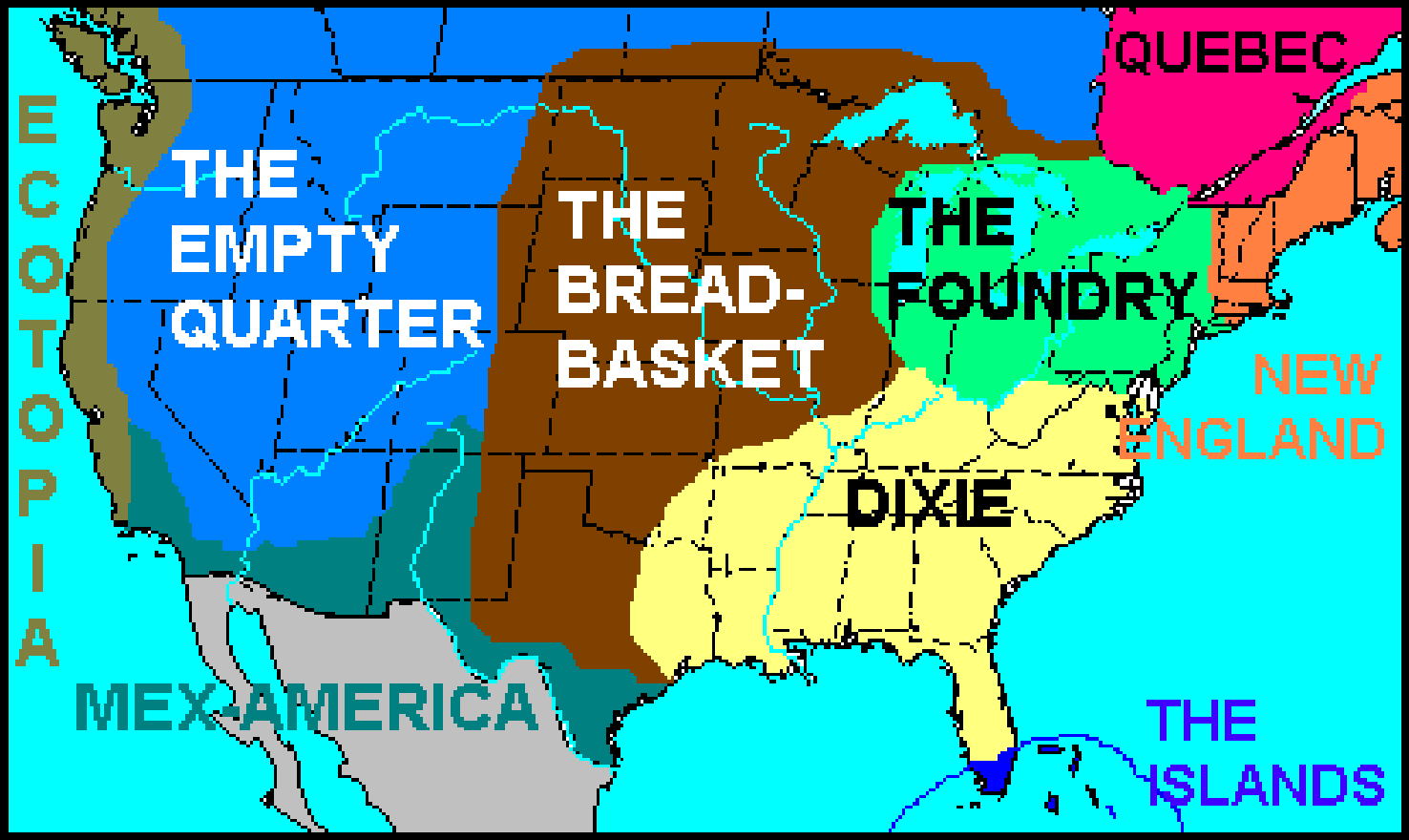
Credit: Lincoln Institute of Land Policy


HSR in the EU: 2020
Upgraded lines
New lines
Umeå
Helsinki
St.Petersburg
Oslo
Stockholm
Tallinn
Göteborg
Riga
Glasgow
Edinburgh
København
Mo
Vilnius
Gdansk
Hamburg
Minsk
Dublin
Amsterdam
Berlin
Hann.
Warszawa
London
Köln
Bruxc.
Fr.
Praha
Kiev
Nürnberg
Katowice
Lviv
Lux.
Paris
München
Wien
Rennes
Bratislava
Budapest
Zürich
Chisinau
Zagreb
Lyon
Genève
Milano
Ljubljana
Beograd
Bordeaux
Bologna
Sarajevo
Bucuresti
Genova
Sofia
Marseille
Skopje
Roma
Istanbul
Porto
Barcelona
Tirana
Napoli
Madrid
Bari
Ankara
Valencia
Lisboa
Reggio di C.
Athinai
Sevilla
Málaga



Credit: University of Pennsylvania

Joel Garreau, *The Nine Nations of North America*



Toward a National Infrastructure Plan for the 21st Century

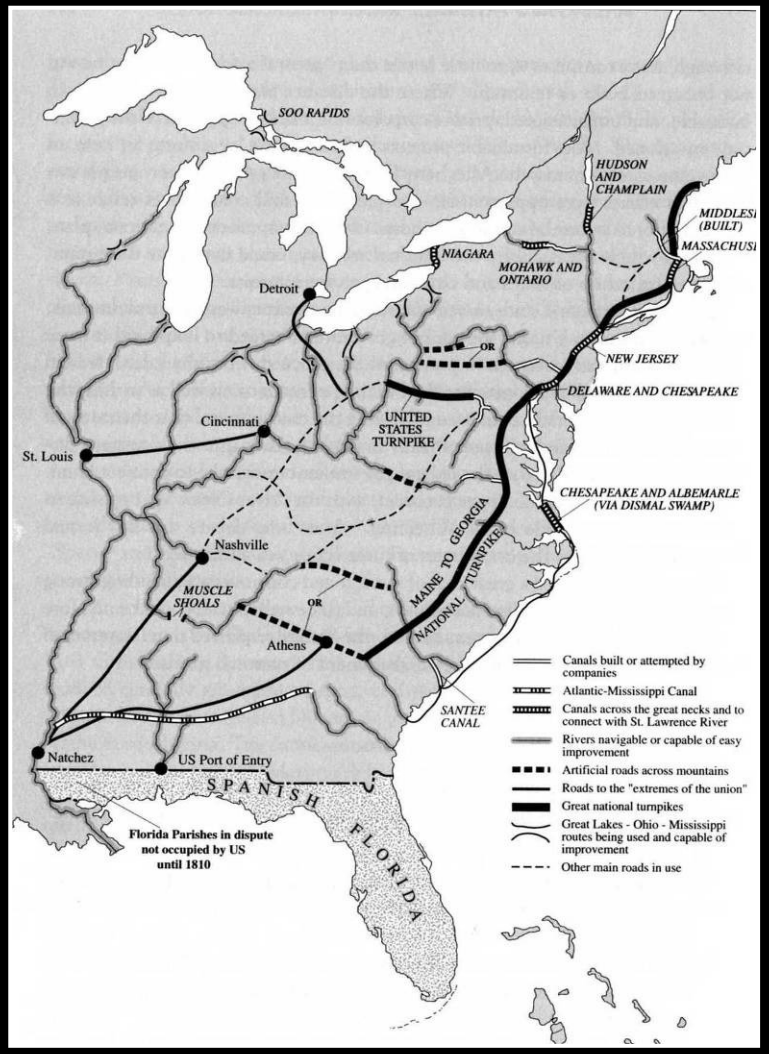
Rapid population growth and demographic change

Threats to global competitiveness

Climate change and foreign oil dependence

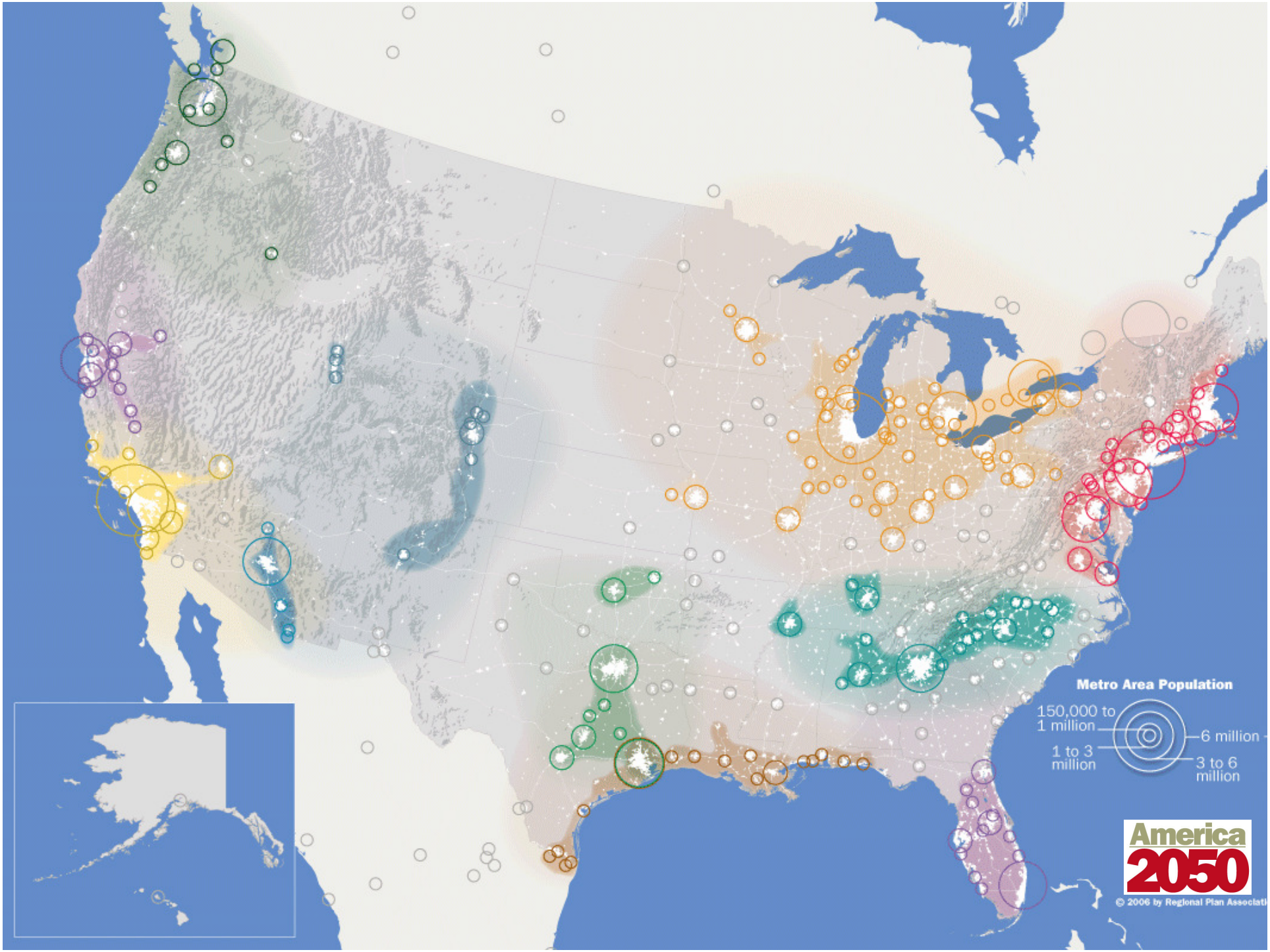
Economic disparities and loss of opportunity

A Tradition of National Planning



Gallatin Plan 1808

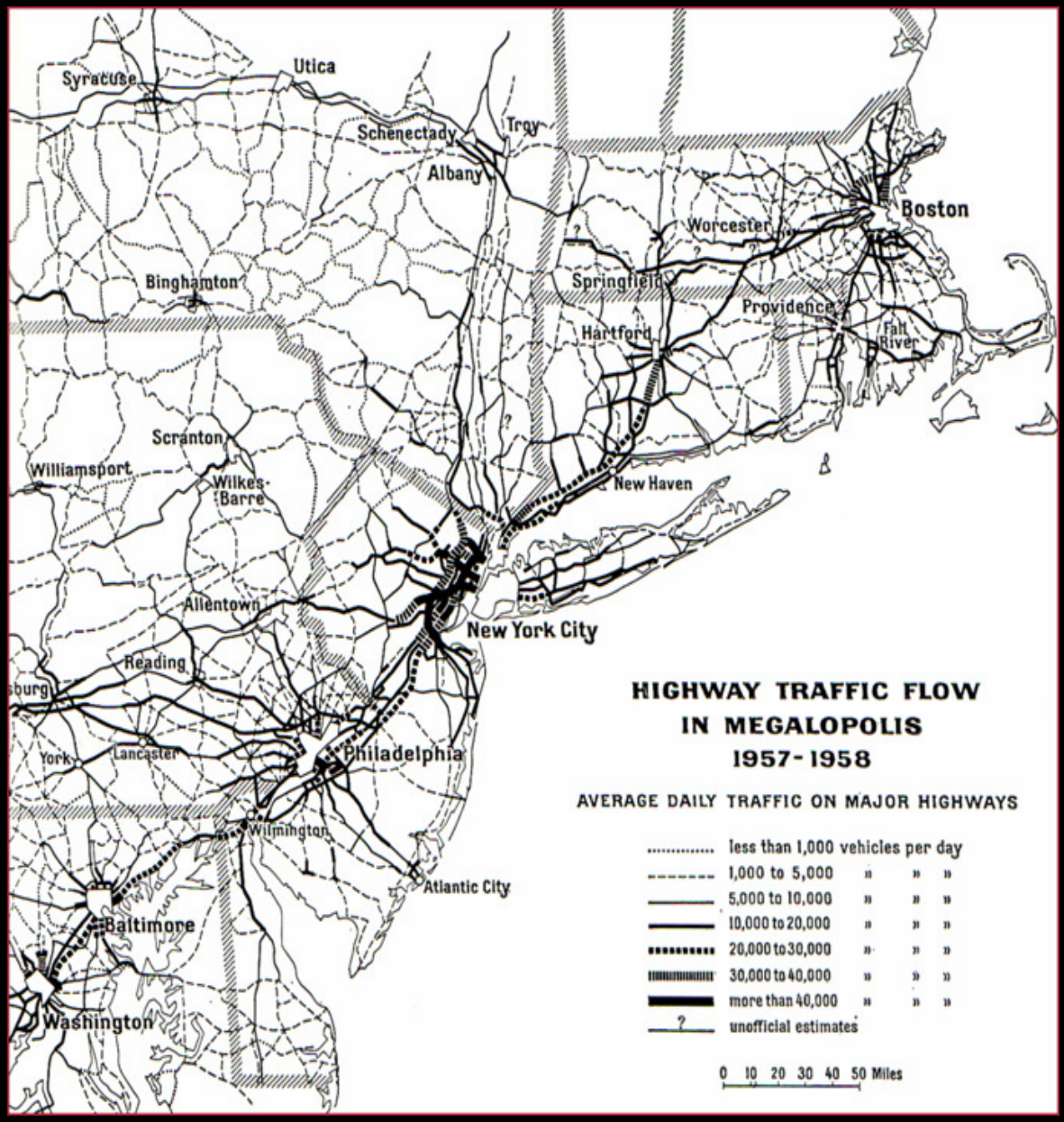
Theodore Roosevelt and Gifford Pinchot 1908


Metro Area Population
150,000 to 1 million
1 to 3 million
3 to 6 million
6 million
America 2050
© 2006 by Regional Plan Associati

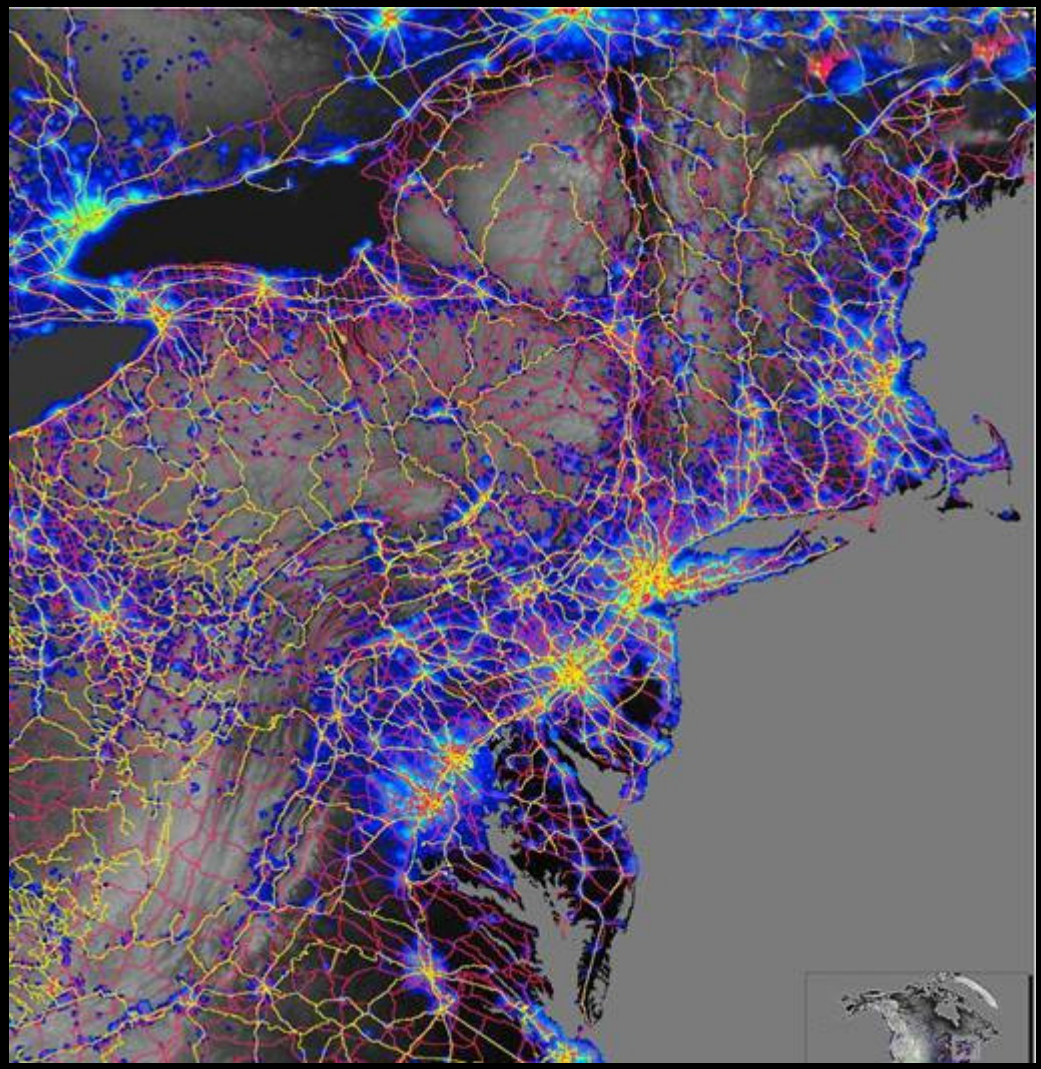
Megaregion Priorities: Building Blocks of a National Plan

- High-speed rail
- Seaports, airports, and goods movement
- Energy transmission and generation
- Water infrastructure and protection

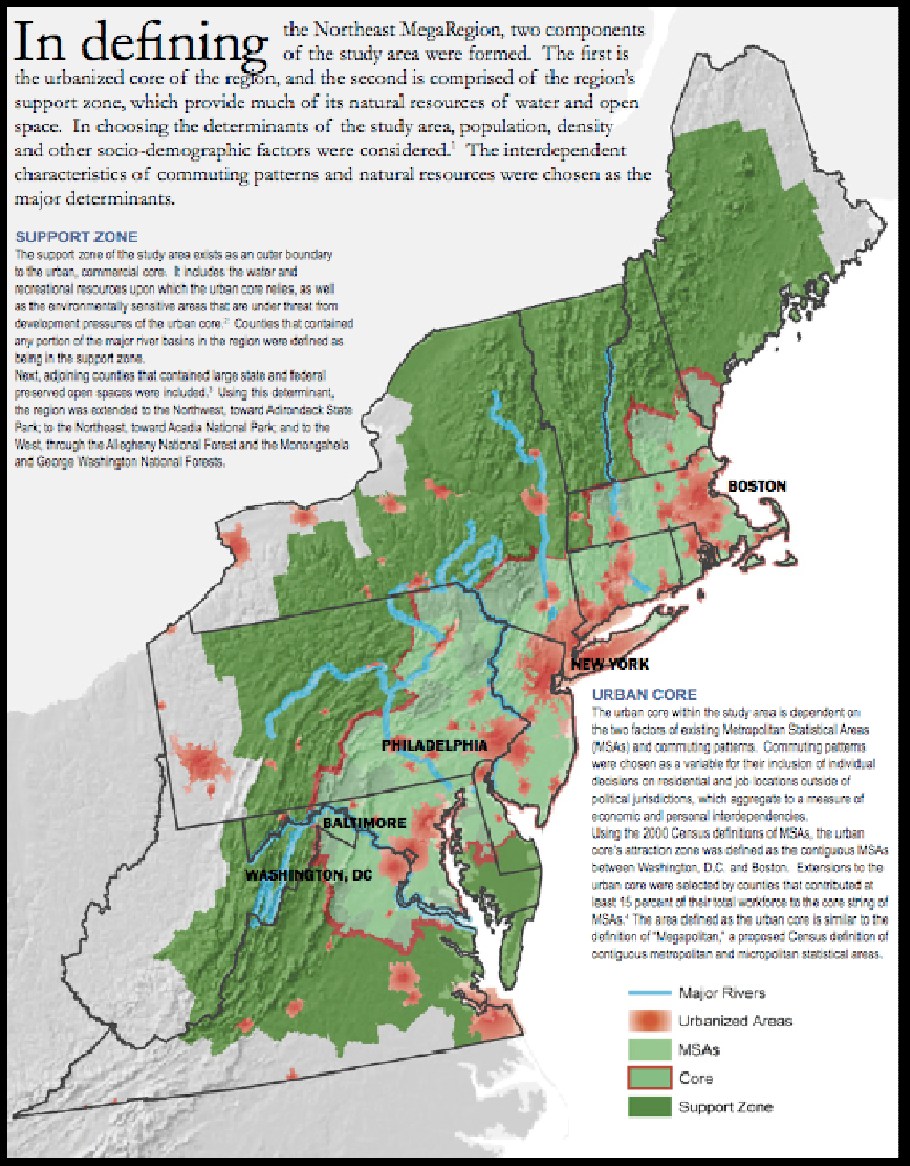
Gottmann's Megalopolis



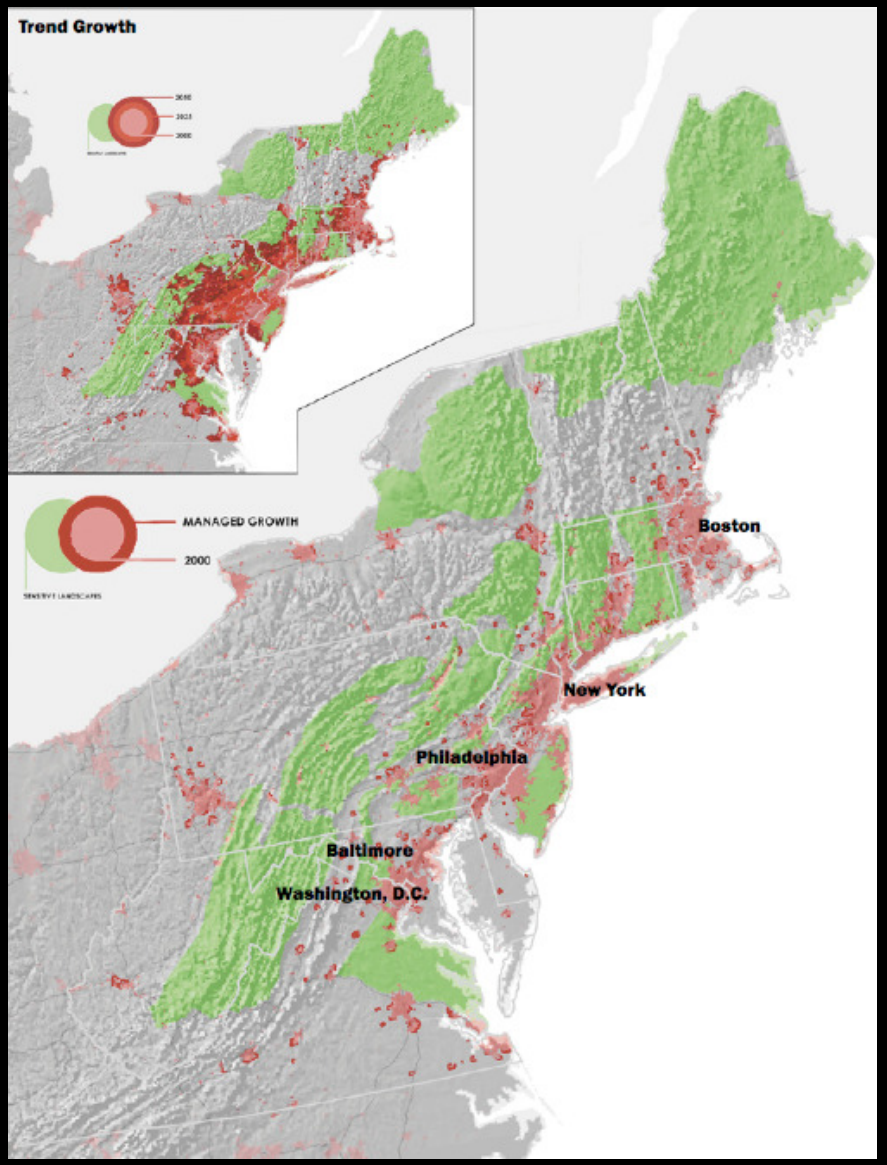
Northeast Megaregion



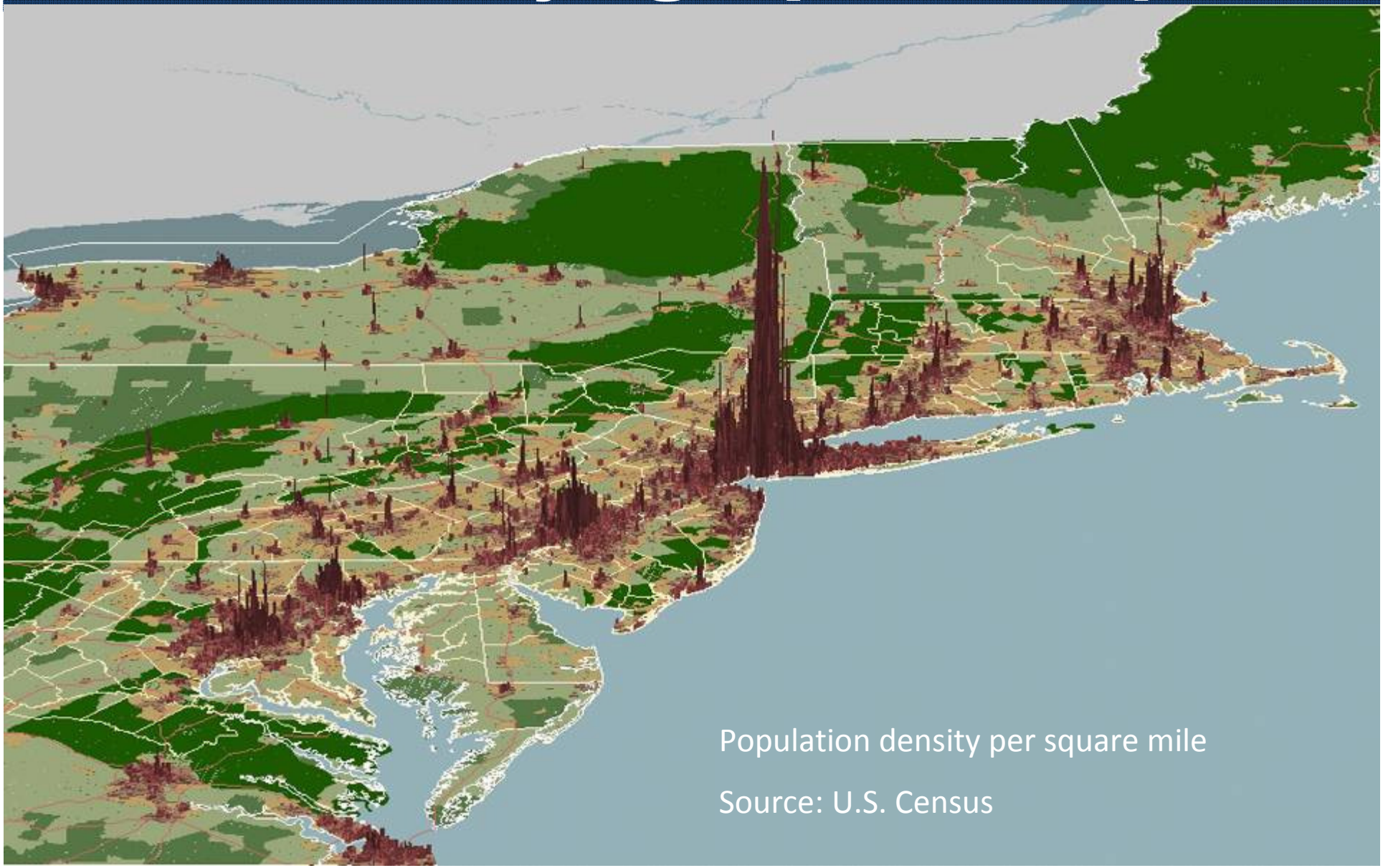
Ecostructure
of the Northeast
Megaregion



Smart Growth vs.
Trend Growth



21st Century Vision : Dense Hubs connected by high-speed transport



High-Speed Rail
International Lessons for U.S. Policy Makers

PETRA TODOROVICH, DANIEL SCHNED, AND ROBERT LANE

Wide open spaces

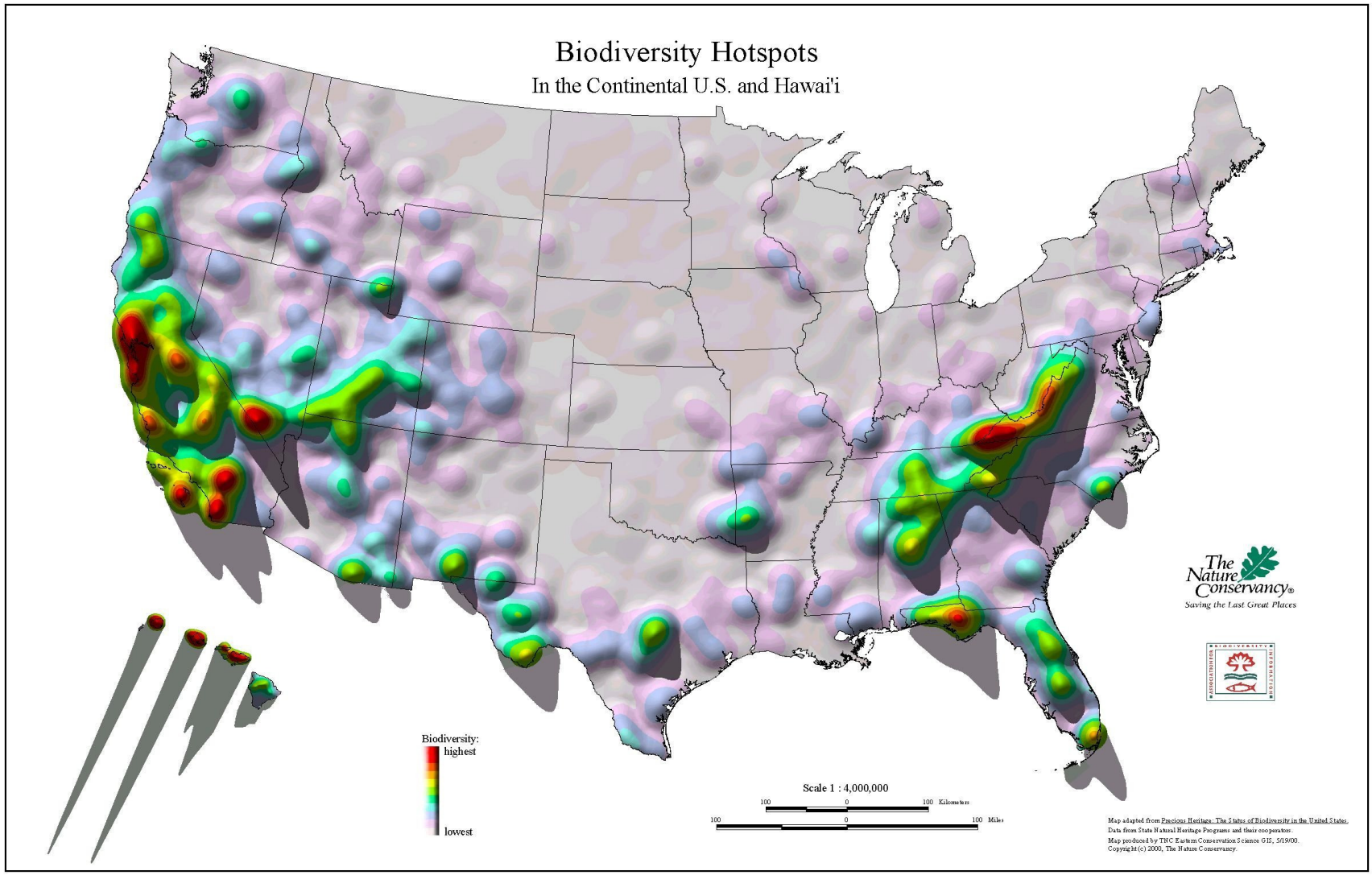
Policy Focus Report • Lincoln Institute of Land Policy

Large Landscape Conservation:
A Strategic Framework for Policy and Action

MATTHEW McKINNEY, LYNN SCARLETT, AND DANIEL KEMMIS

Biodiversity Hotspots
(most species, biggest threats)

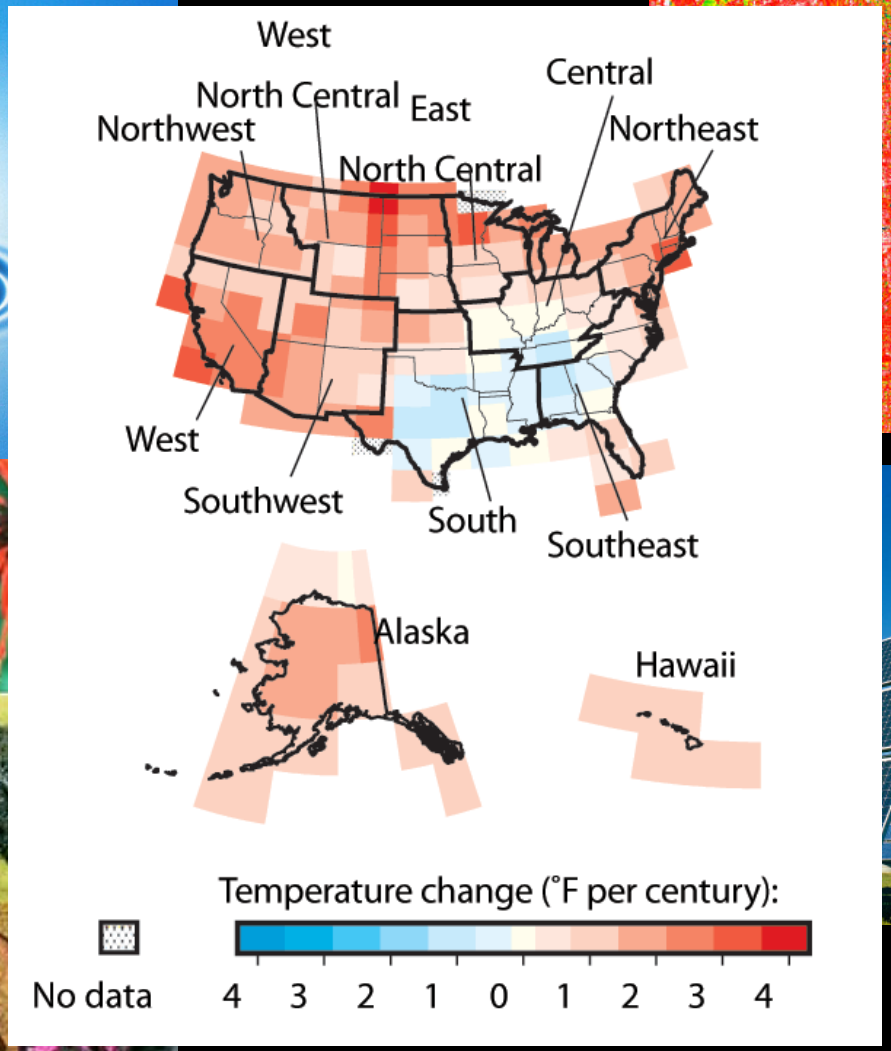
Source: The Nature Conservancy

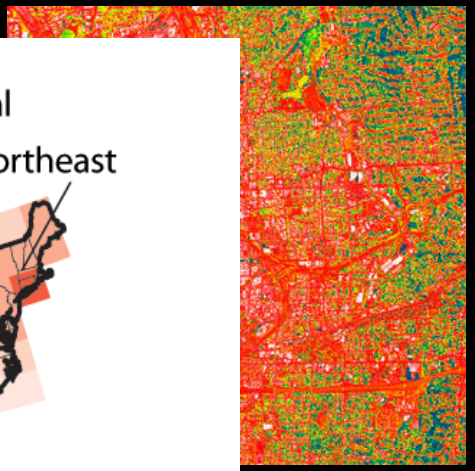


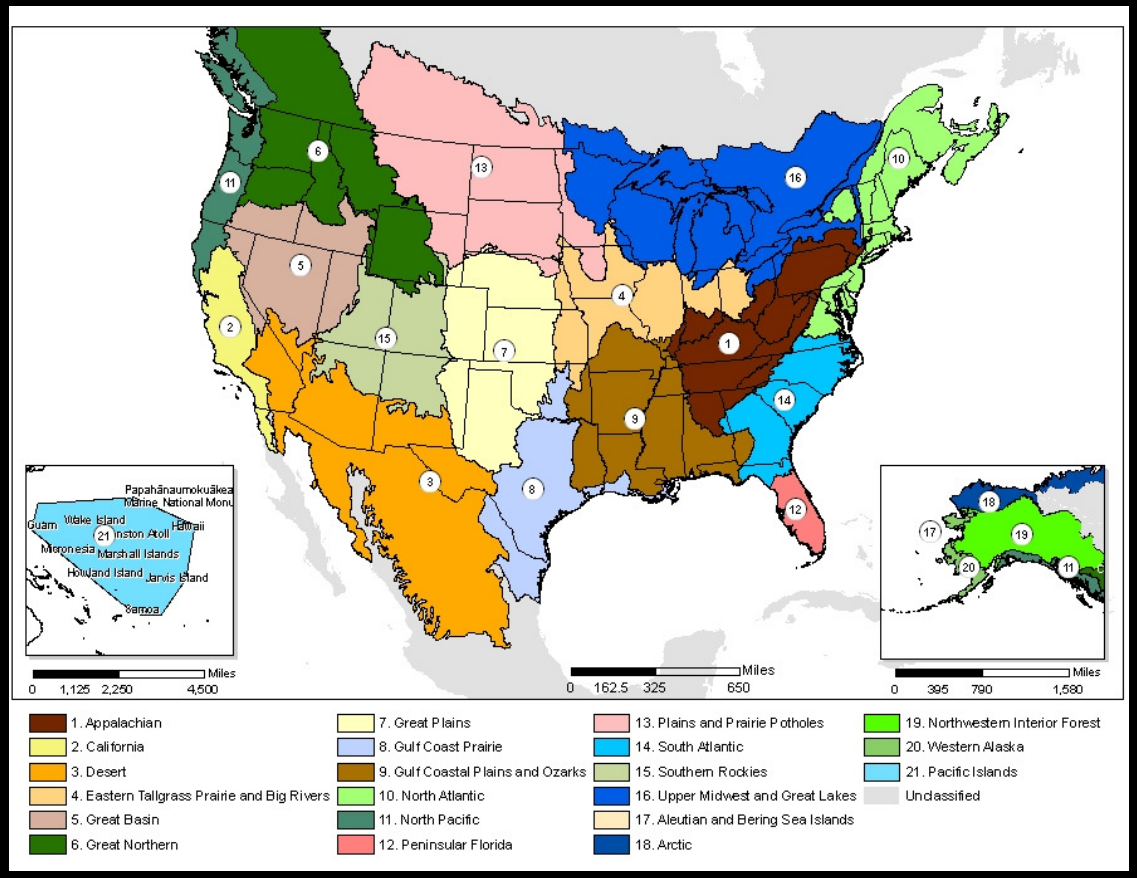
North American Wildlife Corridors

Source: The Wildlands Project

Climate Change







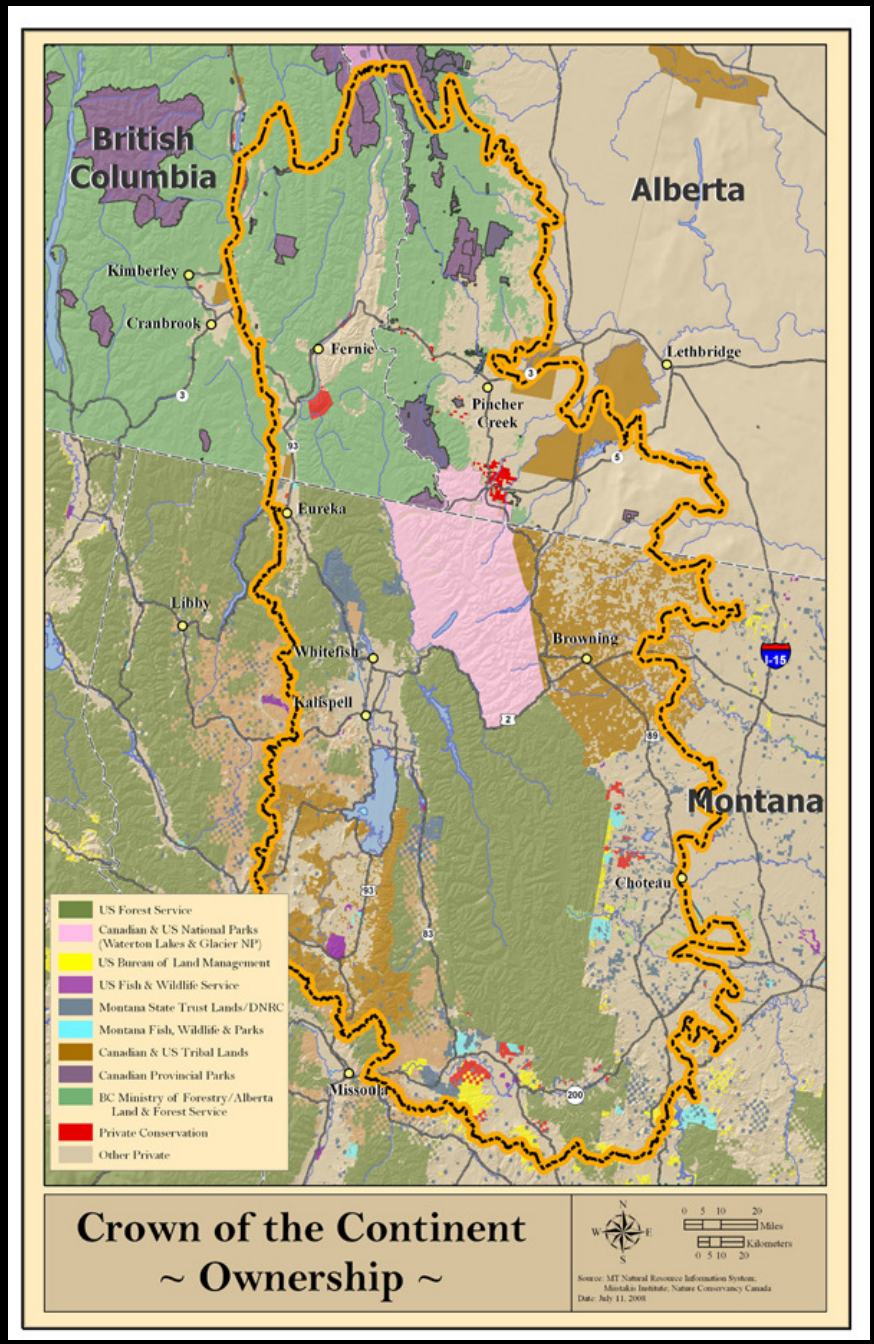
USFWS

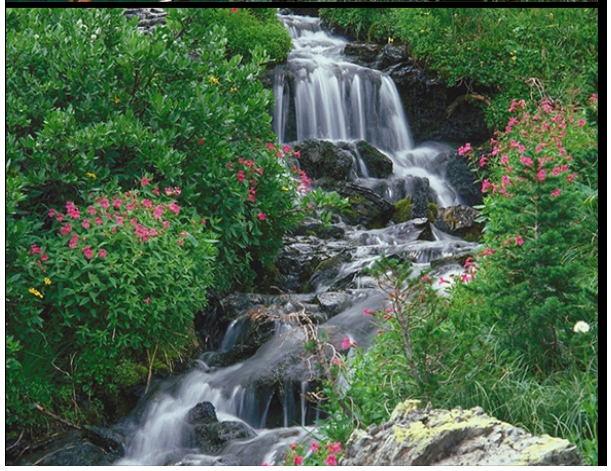
America's Great Outdoors: 21 Landscape Conservation Cooperatives

Roundtable on the Crown of the Continent

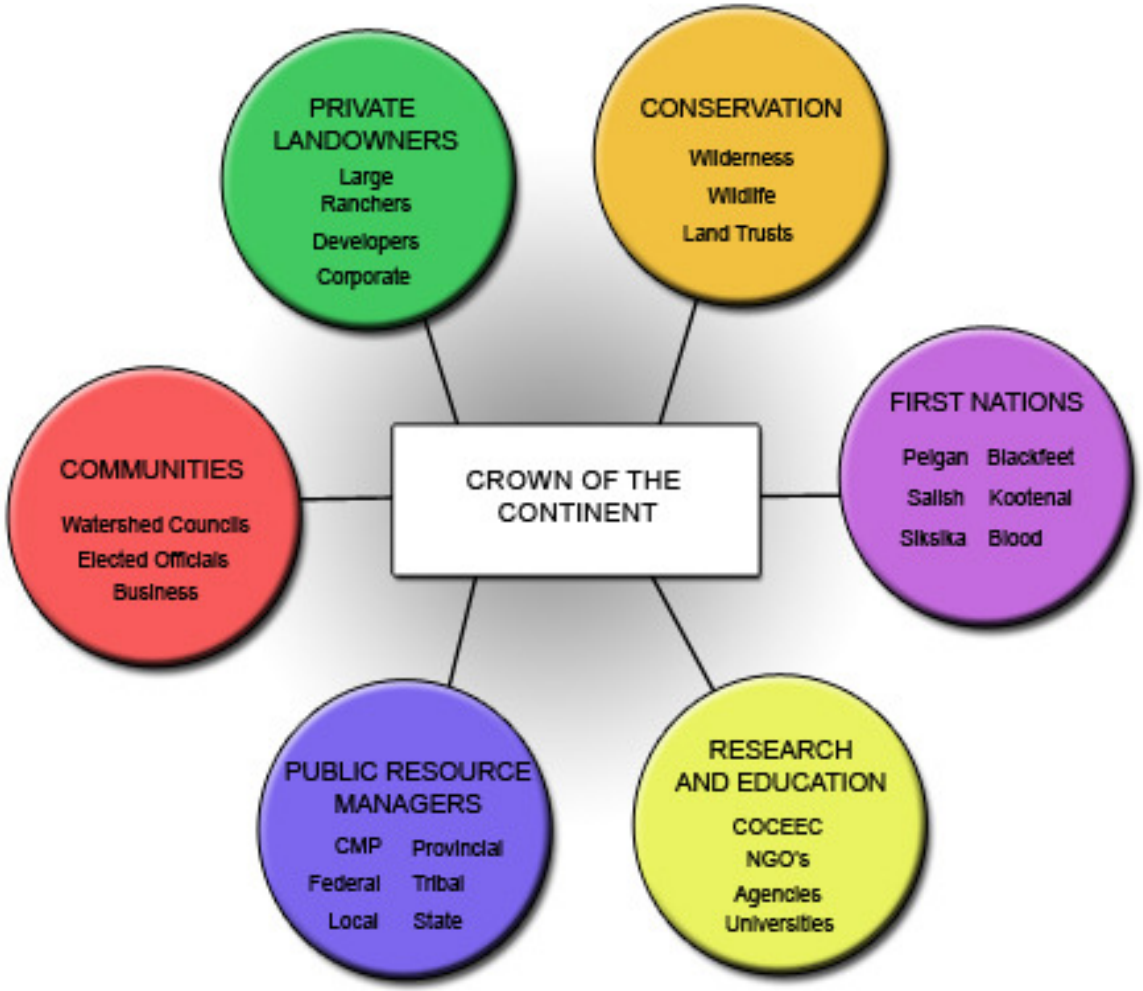
The Place

- 18 million acre intact eco-region
- 83% of the land in public ownership
- Headwaters for 3 oceans
- 4 ecosystems converge
  - Old-growth cedar-hemlock rain forests in the west
  - Native short-grass prairies in the east
  - High alpine meadows
  - Variations north and south

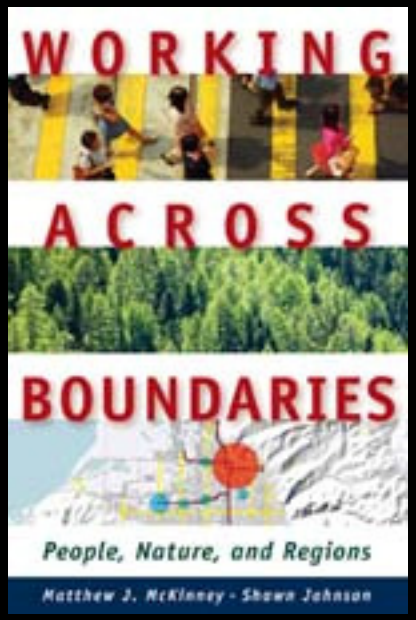




Roundtable on the Crown of the Continent



Working Across Boundaries



Scale 3

Metropolitan/Local

Redesigning Edgeless City

Commercial Strips

Sports complexes

Shopping centers

office and industrial parks

Gated community

Institutional campuses

Highway corridors

Edgeless City

The scale is vast, the capacity enormous

Nassau Hub

Downtown White Plains

Full build-out may not be possible:
2x projected 20 year growth share

The suburban highway

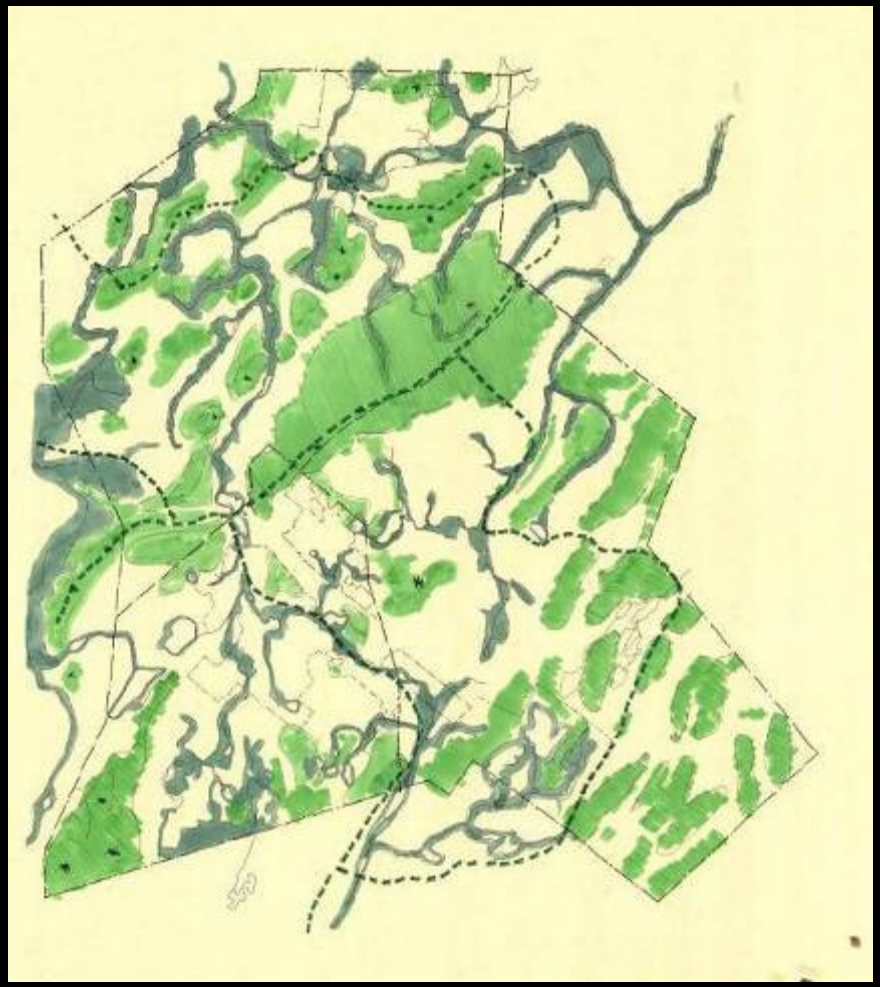
SOMERSET ROUTE 22

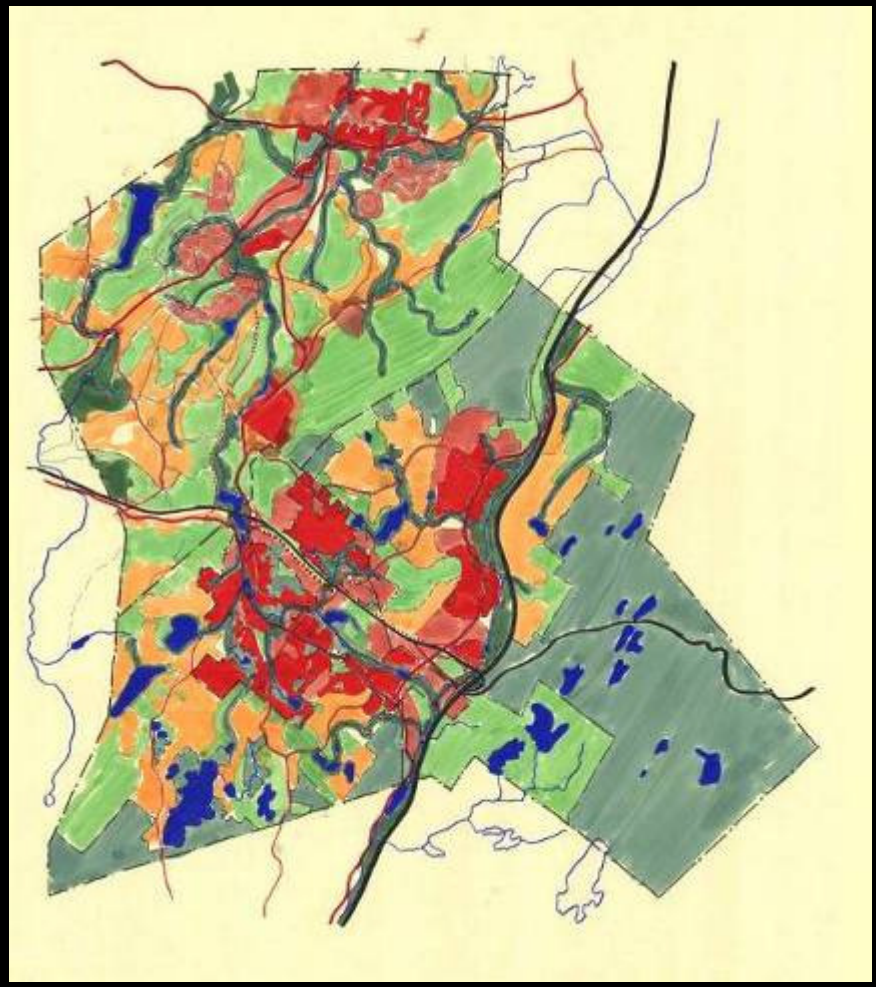
- Strip development
- Small lots
- Shallow lot depth

Creating a broader planning framework

Somerset County Regional Center, NJ

Ecostructure

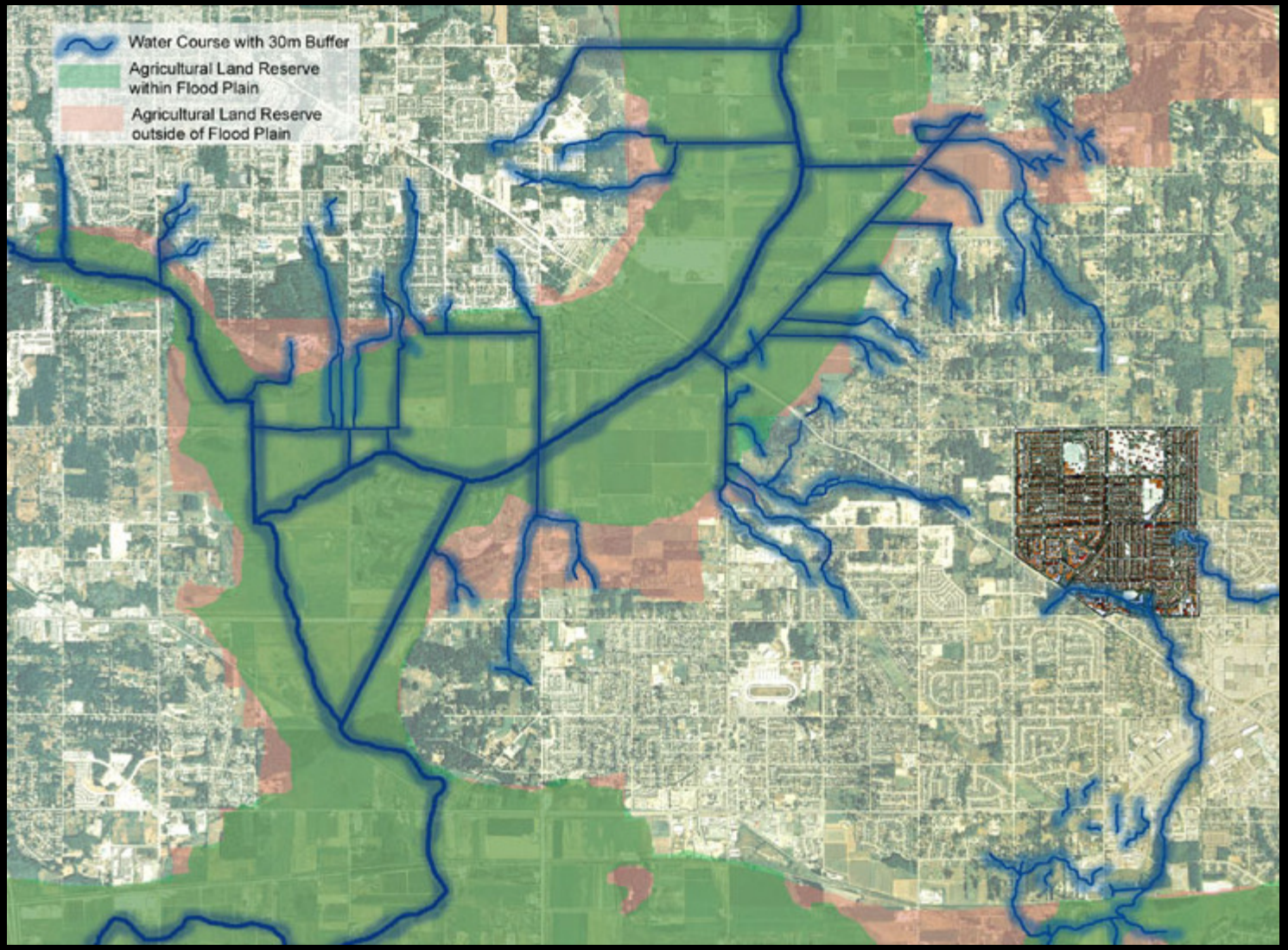




S.E. Orange County, NY

Case Study: Metro Infill

East Clayton - Surrey, BC



The East Clayton Community Plan

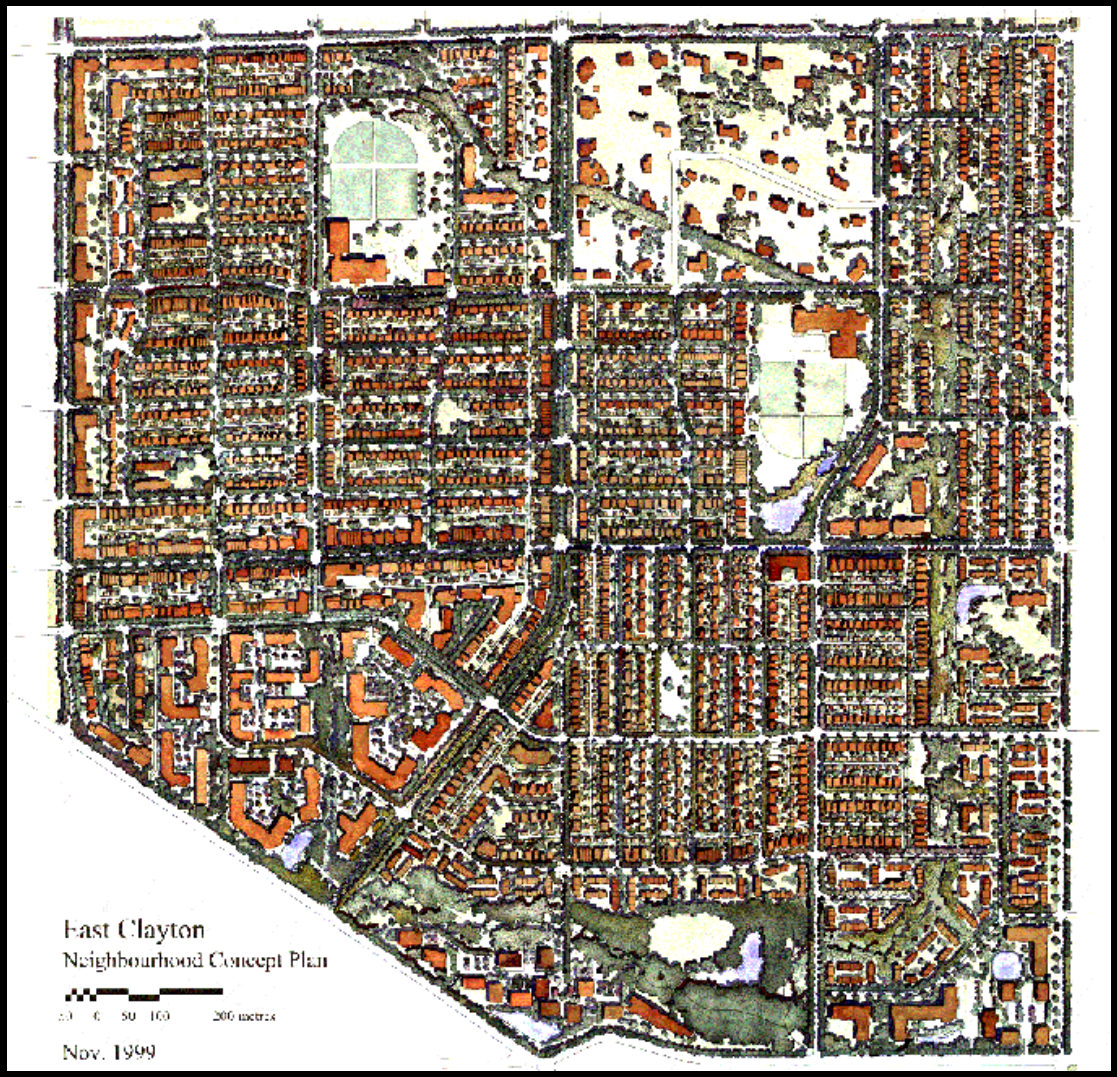
560 acres

5,000 units of housing

Over 5,000 jobs

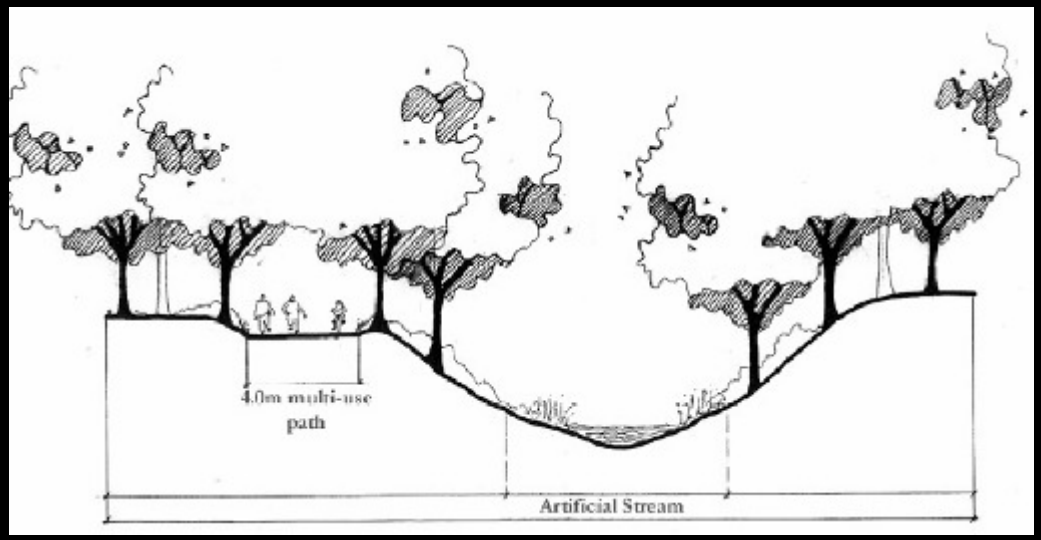
13,000 residents

20 year build out



The East Clayton Green Infrastructure Plan

Car-Free Greenways

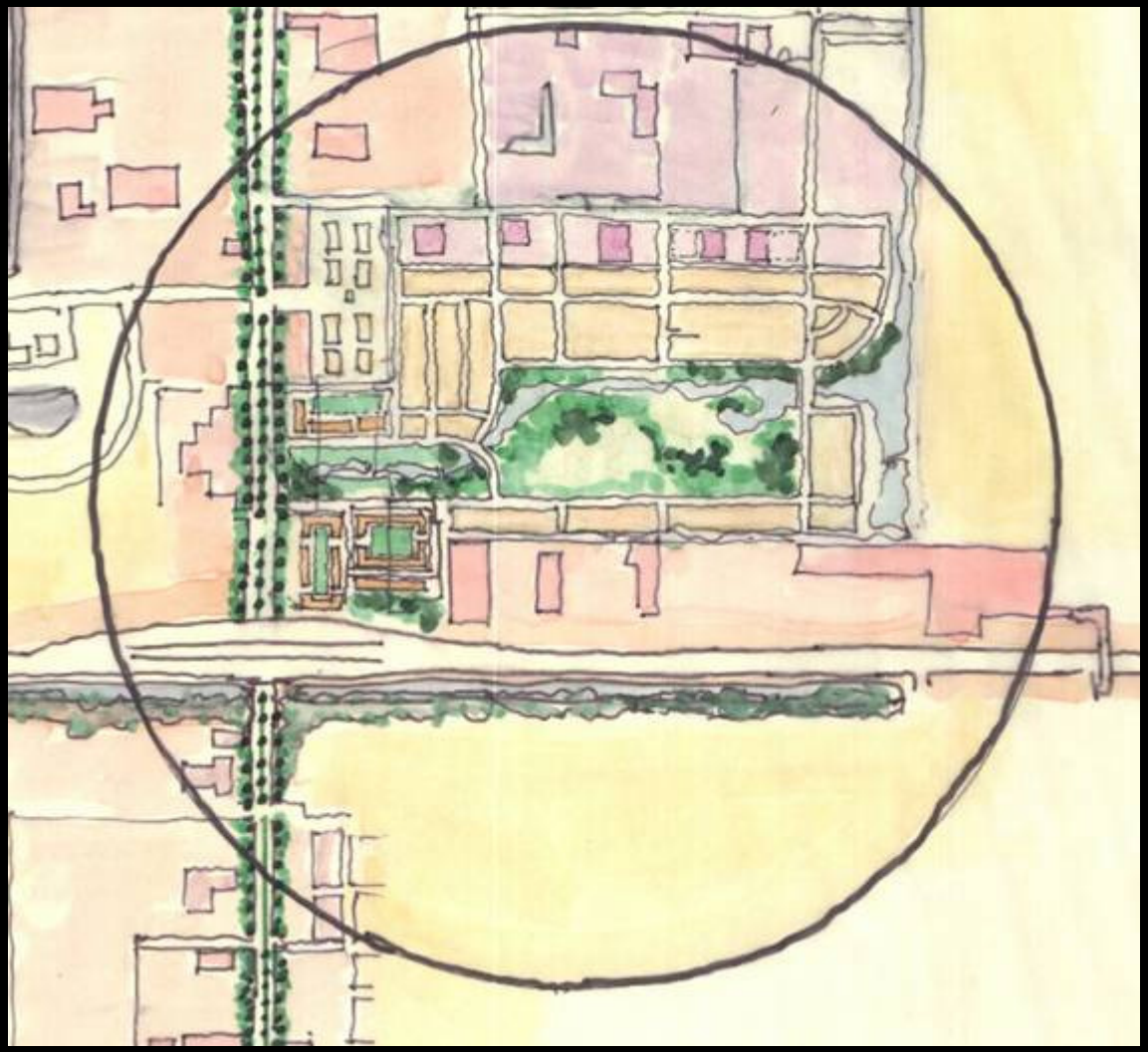


Case Study: Redesigning the Strip

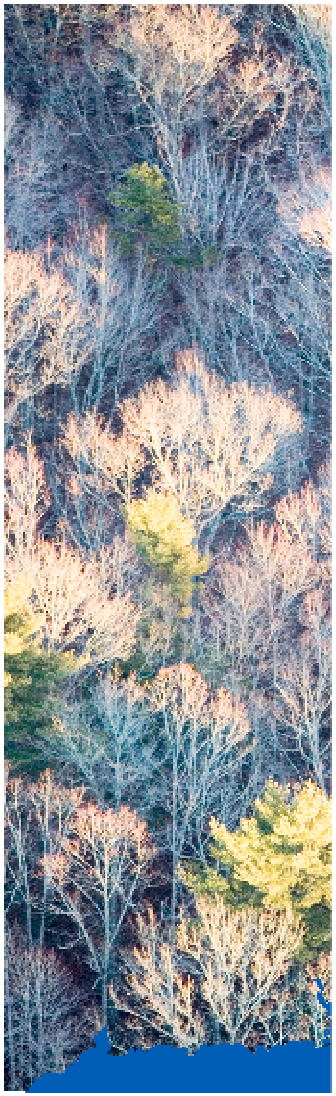
Florida State Road 7

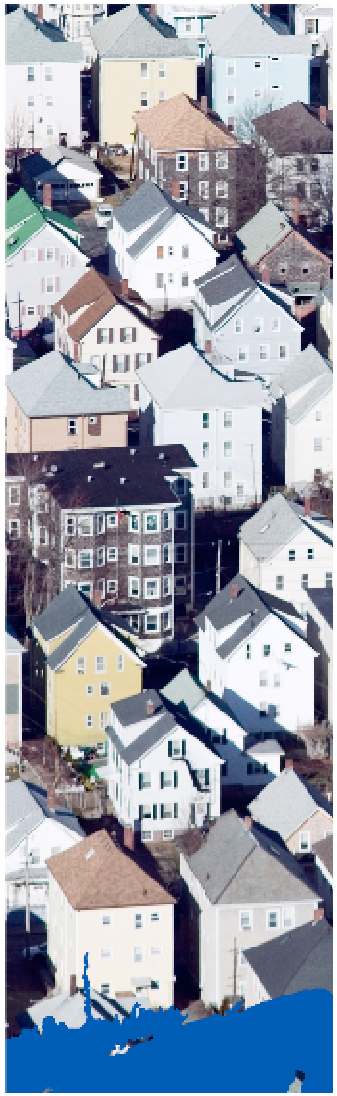
Florida State Road 7

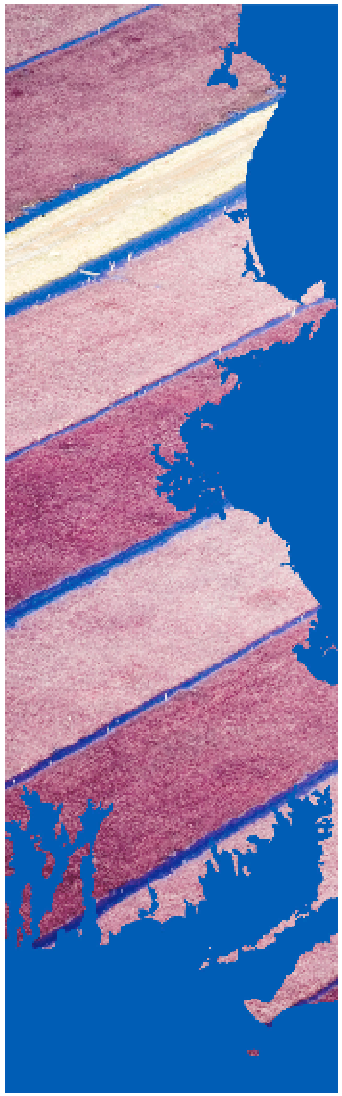
Florida State Road 7



Complete communities







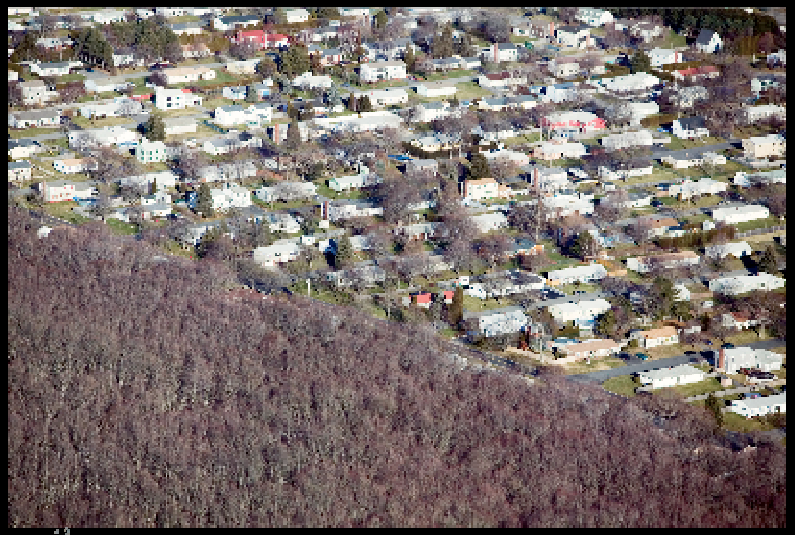
SEMA

Protect + Grow

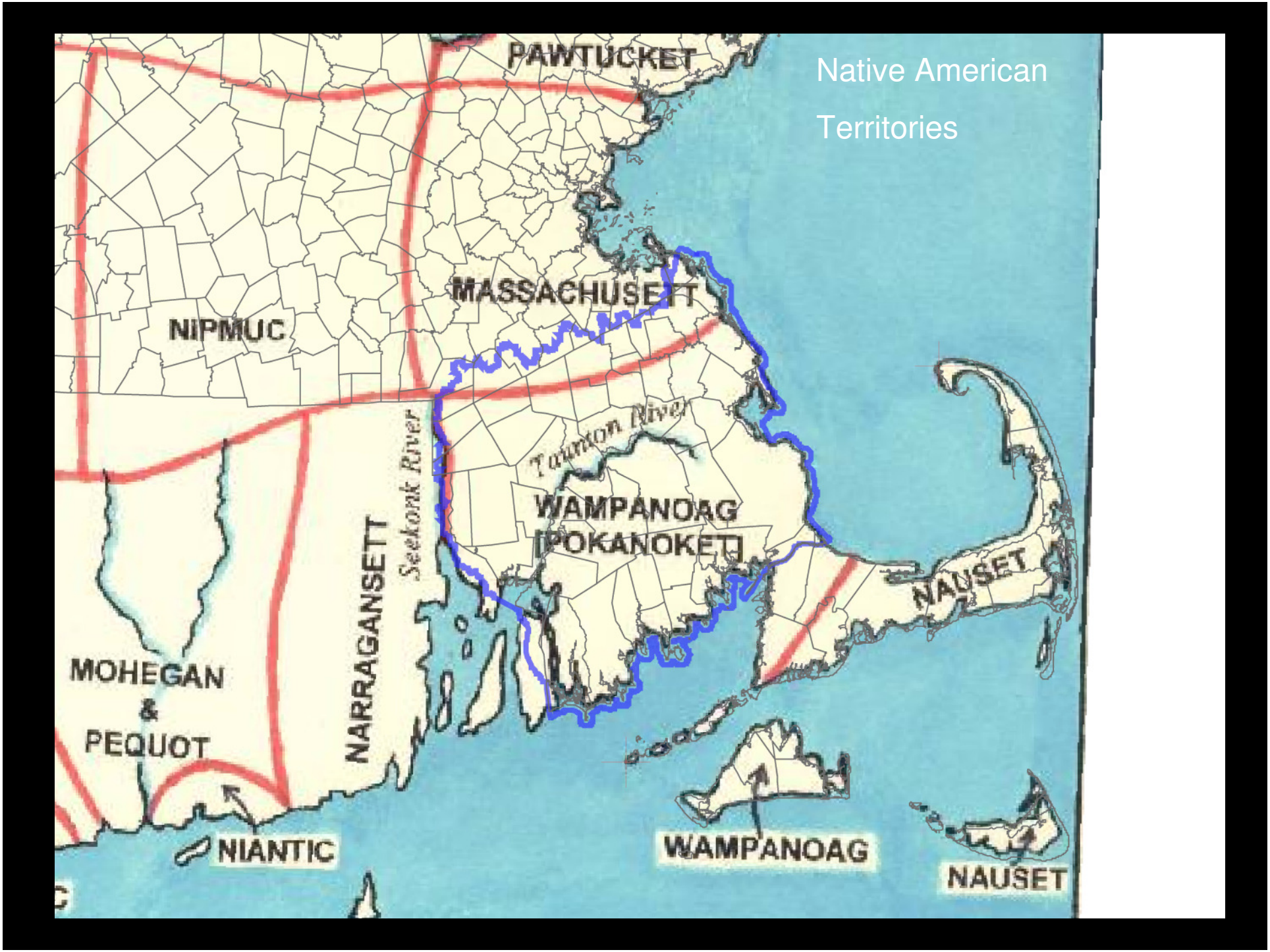
Regional Planning
for
Southeastern Massachusetts

Harvard University
Graduate School of Design
Armando Carbonell, AICP
Design Critic in Urban Planning

Fall 2005



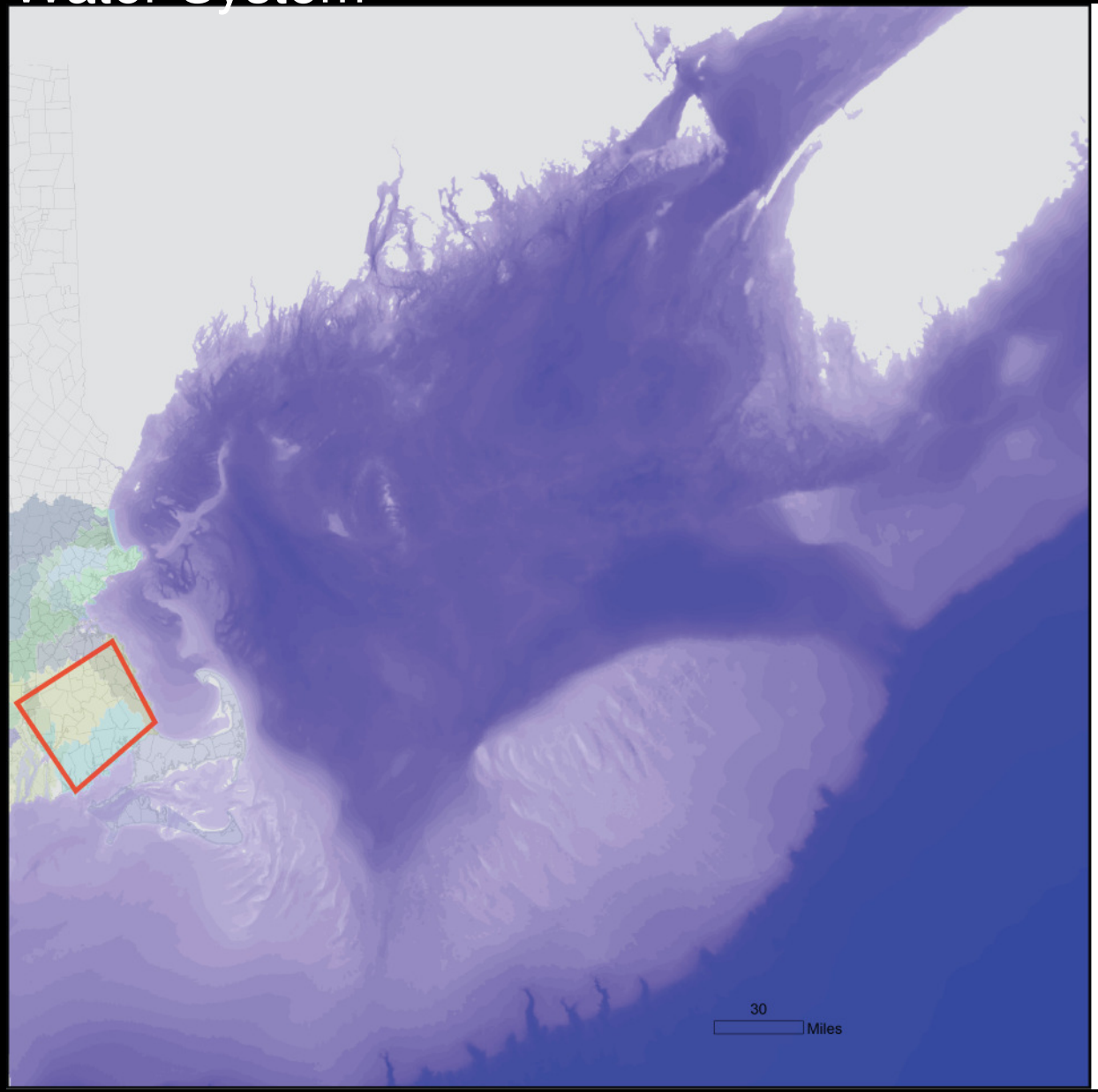
Where is Southeastern Massachusetts?

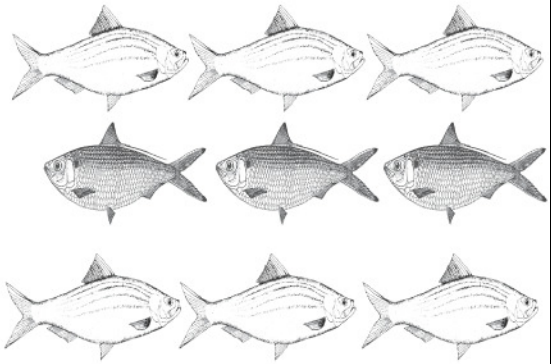

Native American
Territories
PAWTUCKET
MASSACHUSETT
NIPMUC
Taunton River
Seekonk River
NARRAGANSETT
WAMPANOAG
[POKANOKET]
NAUSET
MOHEGAN
&
PEQUOT
NIANTIC
WAMPANOAG
NAUSET

Land lies in water; it is shadowed green.

Elizabeth Bishop, “The Map”

Water System





The Gulf of Maine connects the region to a global system.

Atlantic herring are an important link to the aquatic ecosystem and the regional economy.

Natural Resources Agriculture

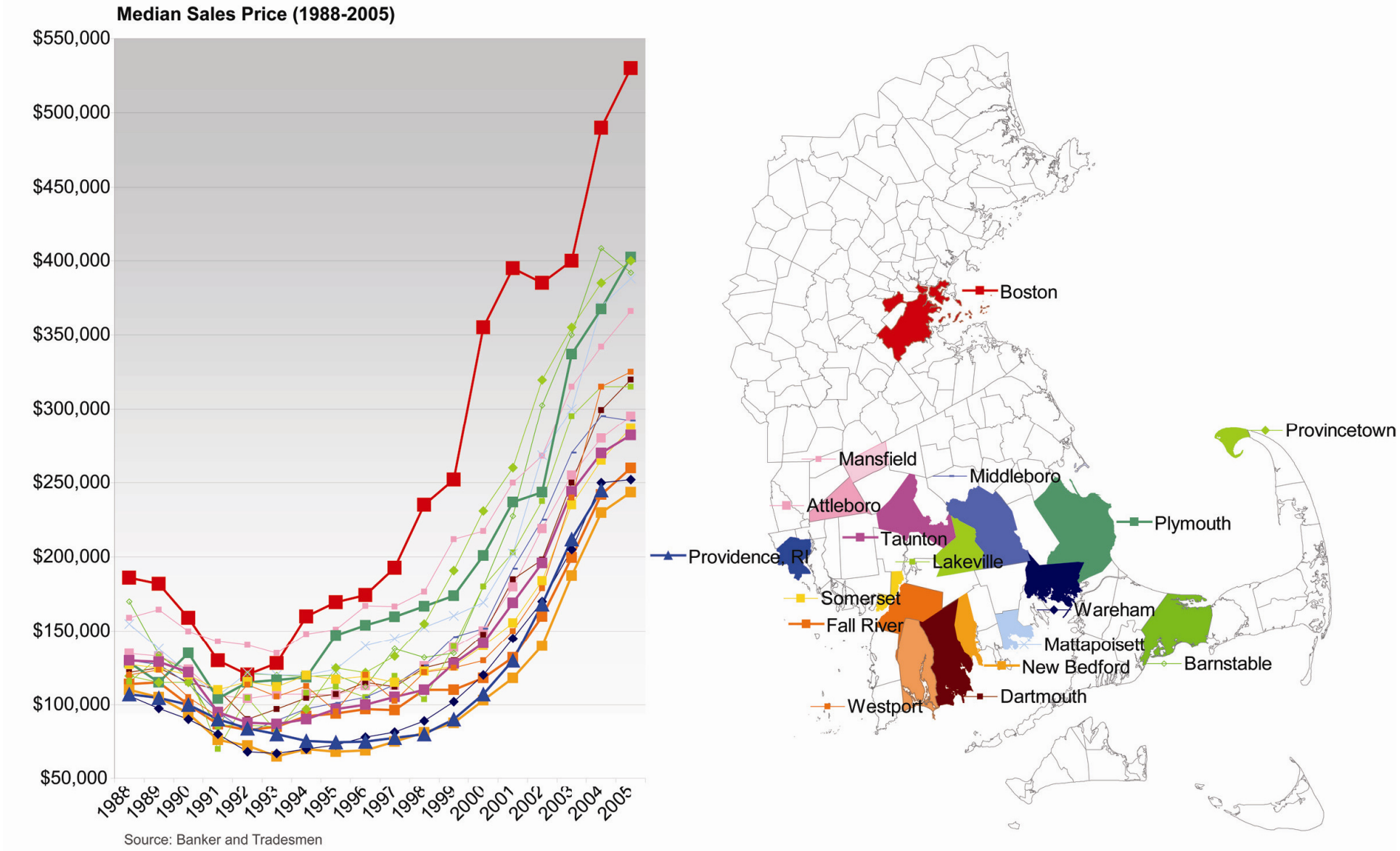
Colchester Farm, Plympton
Noquochoke Orchard, Westport

Natural Resources Cranberries

Carver
Plympton
Plymouth
Kingston

Lifestyle Rural

Noquochoke Orchards, Westport
Colchester Farms, Plympton
Berkley


Median Sales Price (1988-2005)
$550,000
$500,000
$450,000
$400,000
$350,000
$300,000
$250,000
$200,000
$150,000
$100,000
$50,000
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Source: Banker and Tradesmen
Boston
Provincetown
Mansfield
Middleboro
Attleboro
Plymouth
Taunton
Providence, RI
Lakeville
Somerset
Wareham
Fall River
Mattapoisett
New Bedford
Barnstable
Dartmouth
Westport

Kingston

Freetown

New Ruralism

New Ruralism is a smart growth concept that combines ***conservation*** and ***preservation*** ideology with residential development. Its aim is to ***connect people to the land*** in an ***economically viable*** way. This usually means ***clustered housing*** and ***preserving open areas***. Recent new ruralism projects emcompass developments that range from ***real farms*** to ***faux retreats***, and rural communities to private escapes. Demand for these new rural communities are high. In addition, developers are raising value by locating these developments around parks and reserves.

New Ruralism

Real

Colchester Farm
Plympton, MA.

Small family organic farm, run by part-time farmers.
1 dwelling unit.
Income from Community Supported Agriculture & contracts with local restaurants, roadside farmstand.
Bicentennial Farm, financed by MA Dept. of Food & Enhancement Program with 5 year commitment for farming. 10 year land lease from private owners.

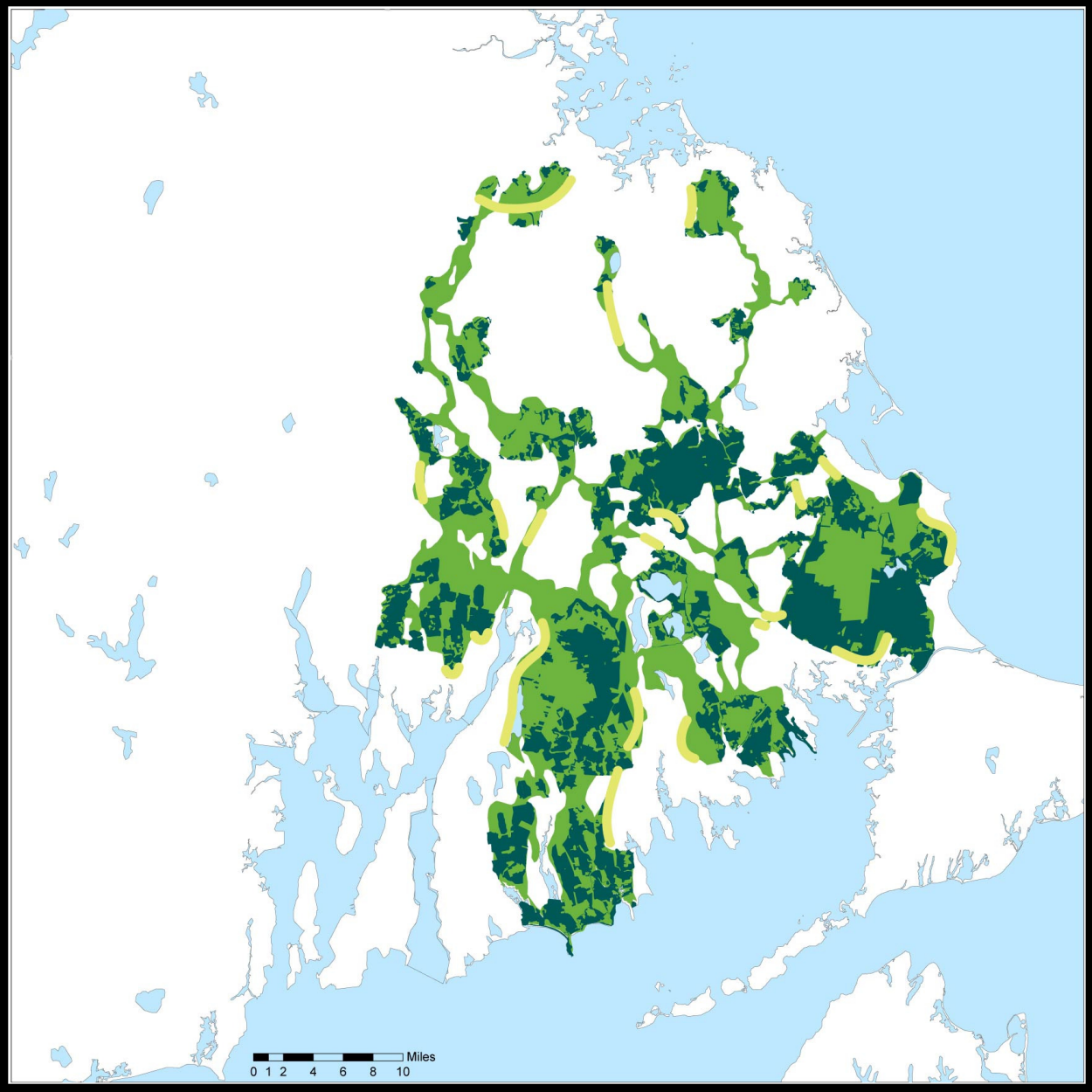
Noquochoke Orchards
Westport, MA.

Family owned century farm.
Produces old-fashioned apples and ciders.
Works with UMass Amhearst.
Invites schools for tours.
Roadside farmstand

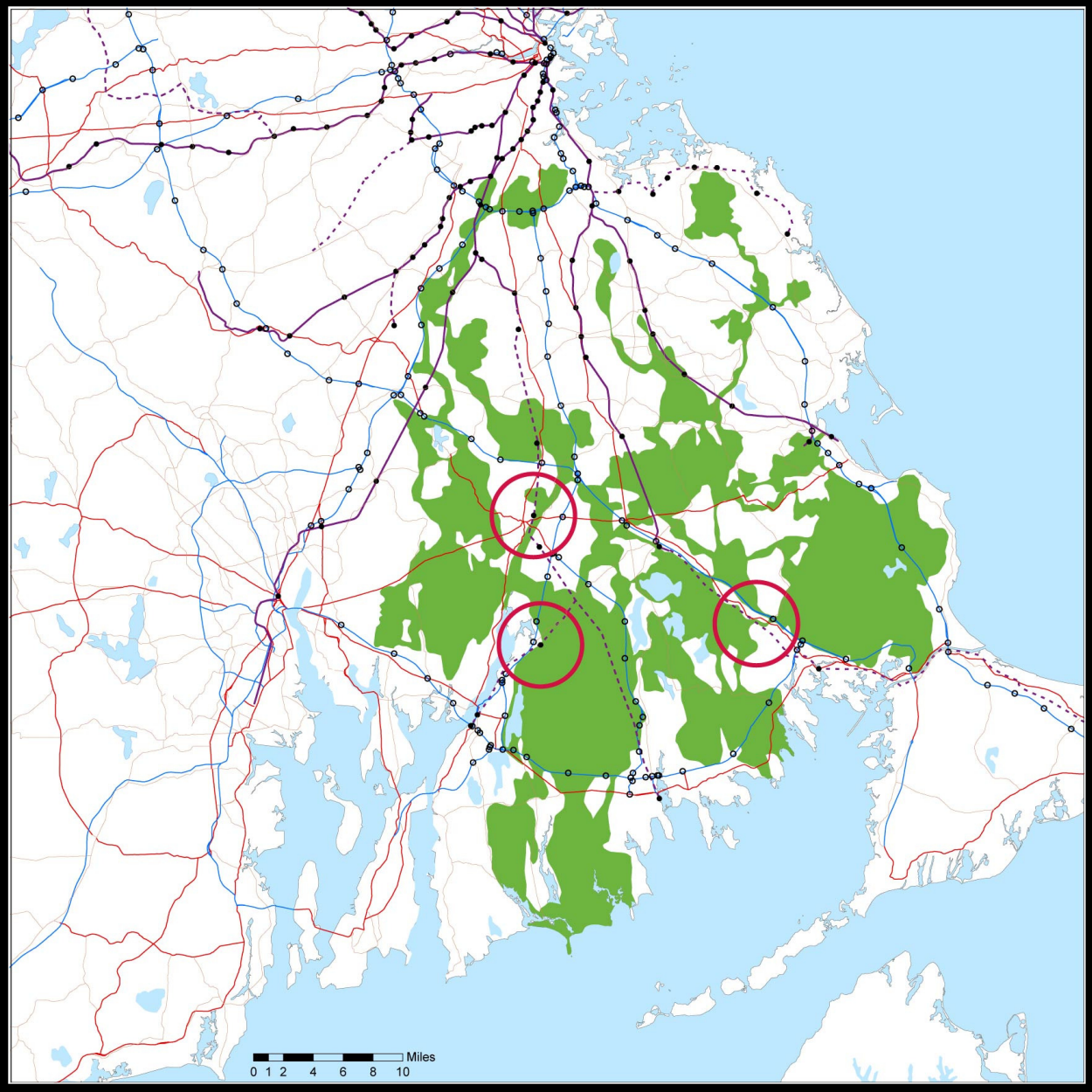
Flax Pond Farm
Carver, MA.

Dry Cranberry Growers.
Member of OceanSpray Co-op.
On-site retail of products.
Roadside farmstand.

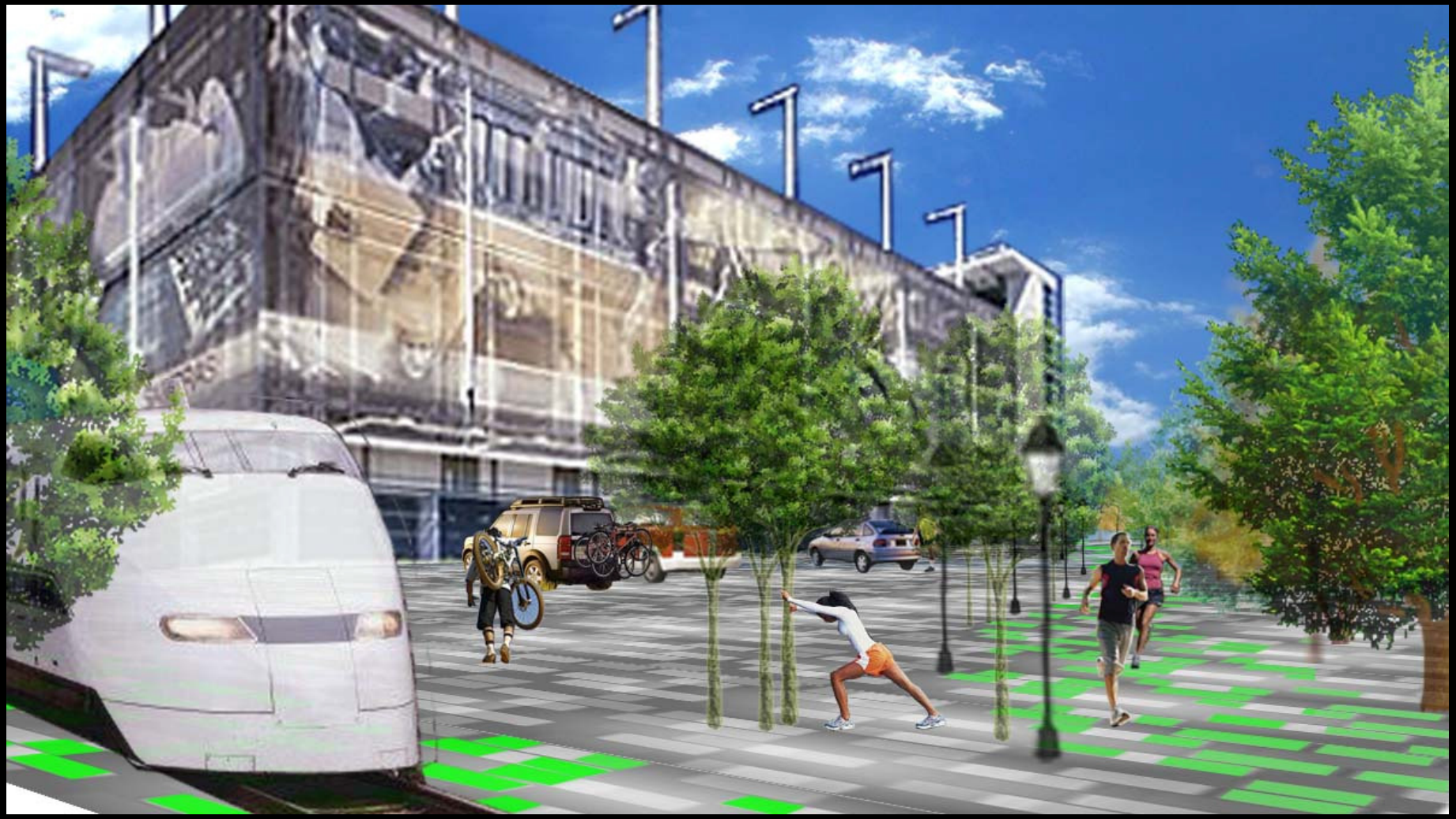
green land uses



access


Miles
0 1 2 4 6 8 10
interstate
highway
commuter rail
proposed commuter rail

regional trail head



edge condition

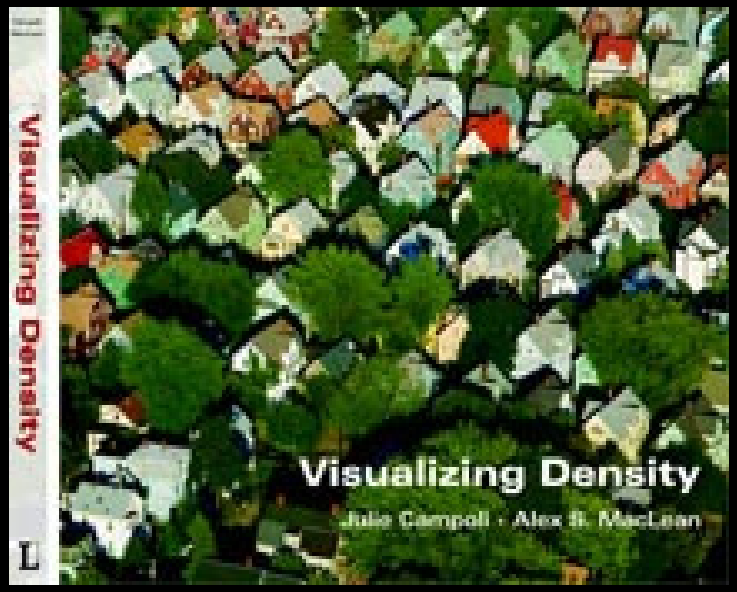
Sustainability =

Density

+ Open Space

(in all the right places)

Visualizing Density



The world is places.

Gary Snyder

"The Place, the Region, and the Commons" in *The Practice of the Wild*

LINCOLN INSTITUTE OF LAND POLICY

Contact:

acarbonell@lincolninst.edu