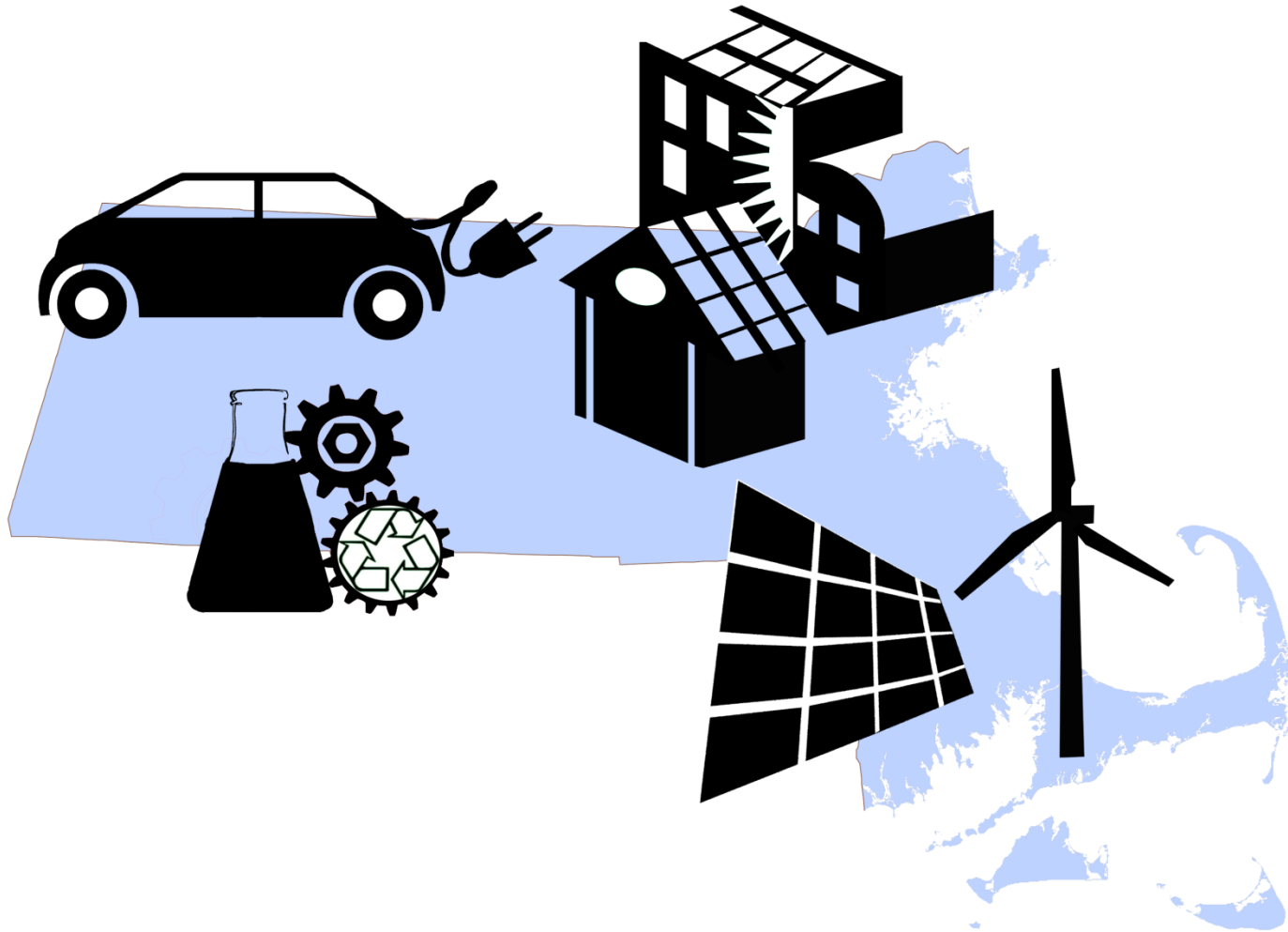


Massachusetts Clean Energy and Climate Plan for 2020



Executive Office of Energy and Environmental Affairs



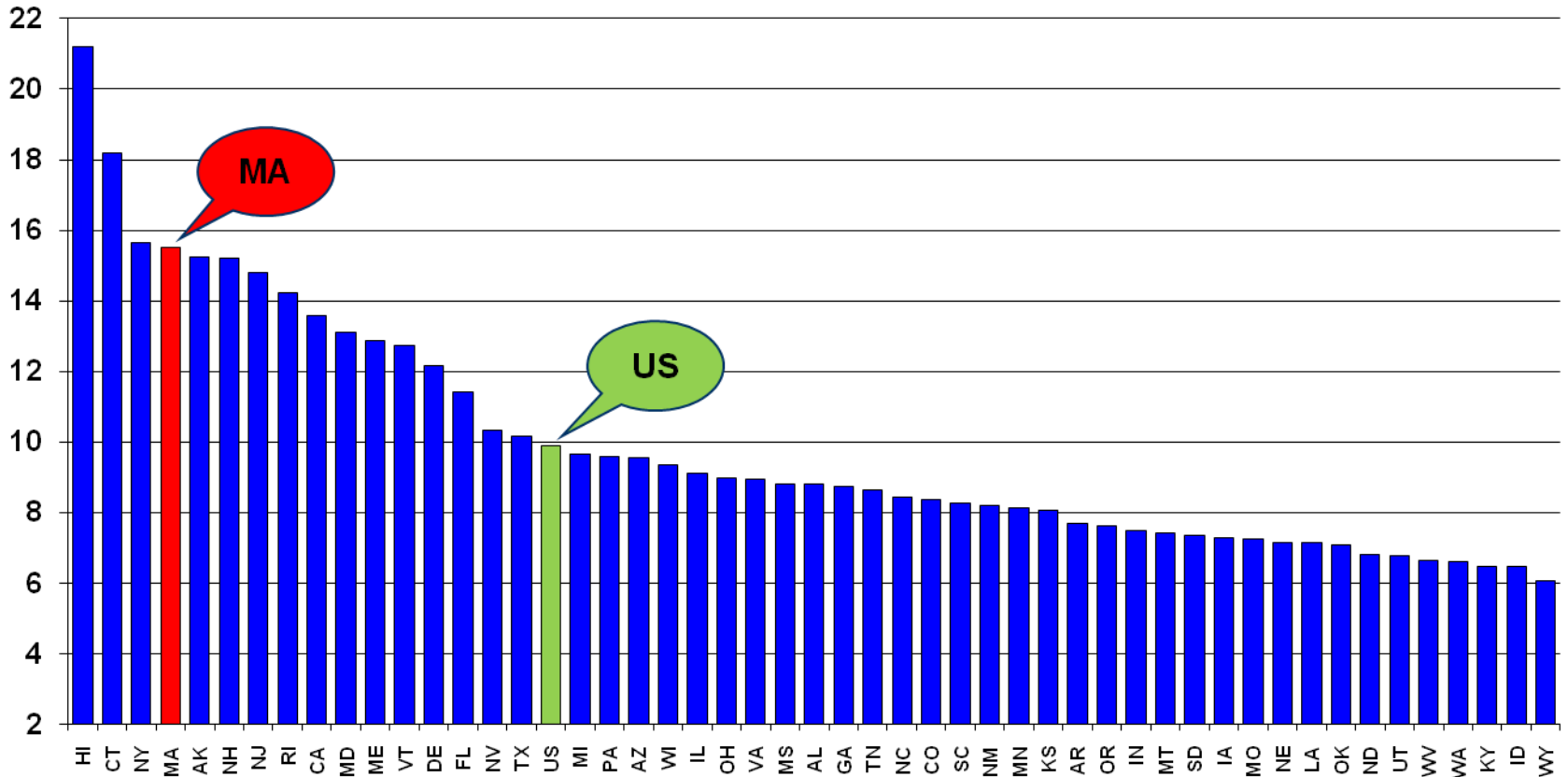
Massachusetts Clean Energy and Climate Plan for 2020

- I. The Rationale: Launching the Clean Energy Revolution
- II. An Integrated Portfolio of Policies
- III. Implementing the Global Warming Solutions Act
- IV. Beyond 2020: The Road to 80% Lower Emissions in 2050



MA has High Electricity Prices ...

2009 Average Retail Electric Price
(Cents per kWh)



Source: EIA Form 826



Executive Office of Energy and Environmental Affairs



Energy Price Increases



IF YOU THINK THESE GAS PRICES ARE STEEP ...

Regular	Plus	V-Power ^o
339 ⁹ / ₁₀	349 ⁹ / ₁₀	361 ⁹ / ₁₀
Taxes Included	Taxes Included	Taxes Included

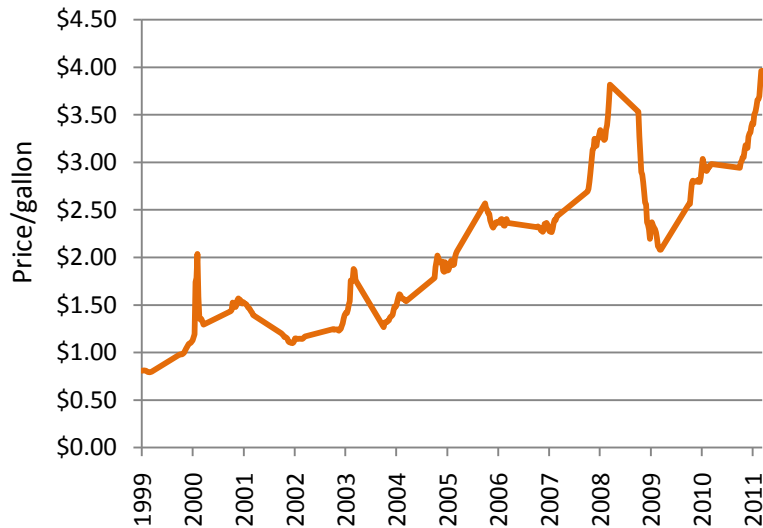
TRY \$5!

ENERGY EXPERTS: HUGE SPIKE AT PUMP POSSIBLE WITHIN WEEKS: PAGE 5

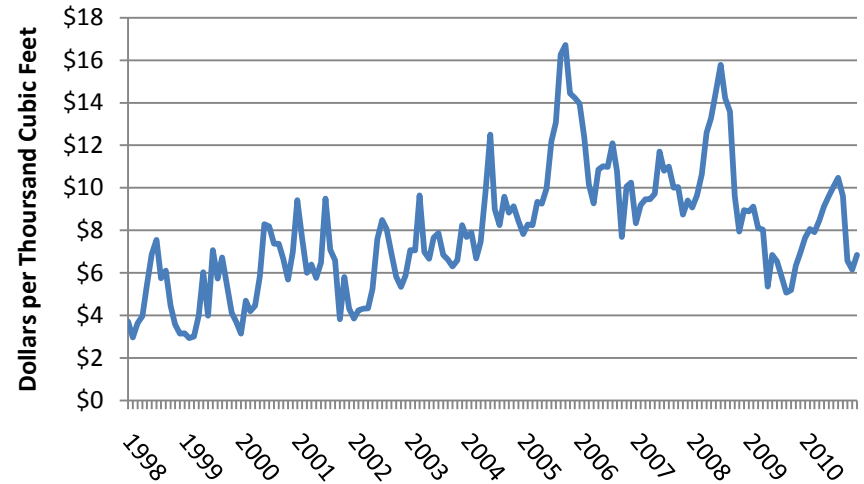


Energy Price Volatility

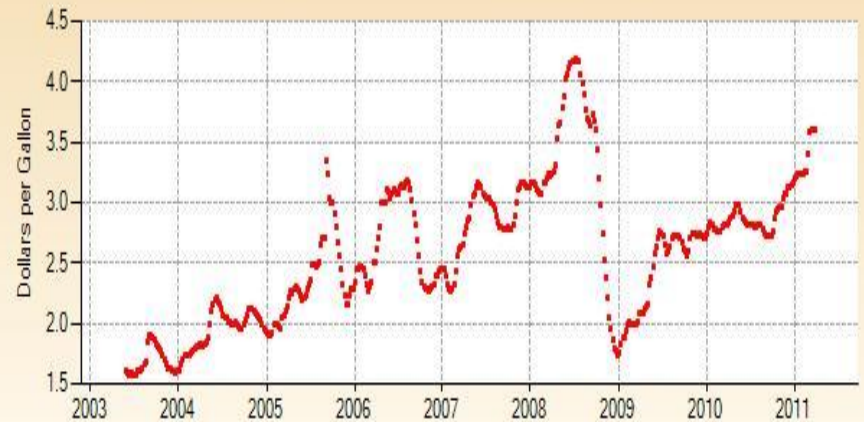
MA Heating Oil Prices, 1999-2011



MA Natural Gas Prices



Weekly Massachusetts Midgrade All Formulations Retail Gasoline Prices



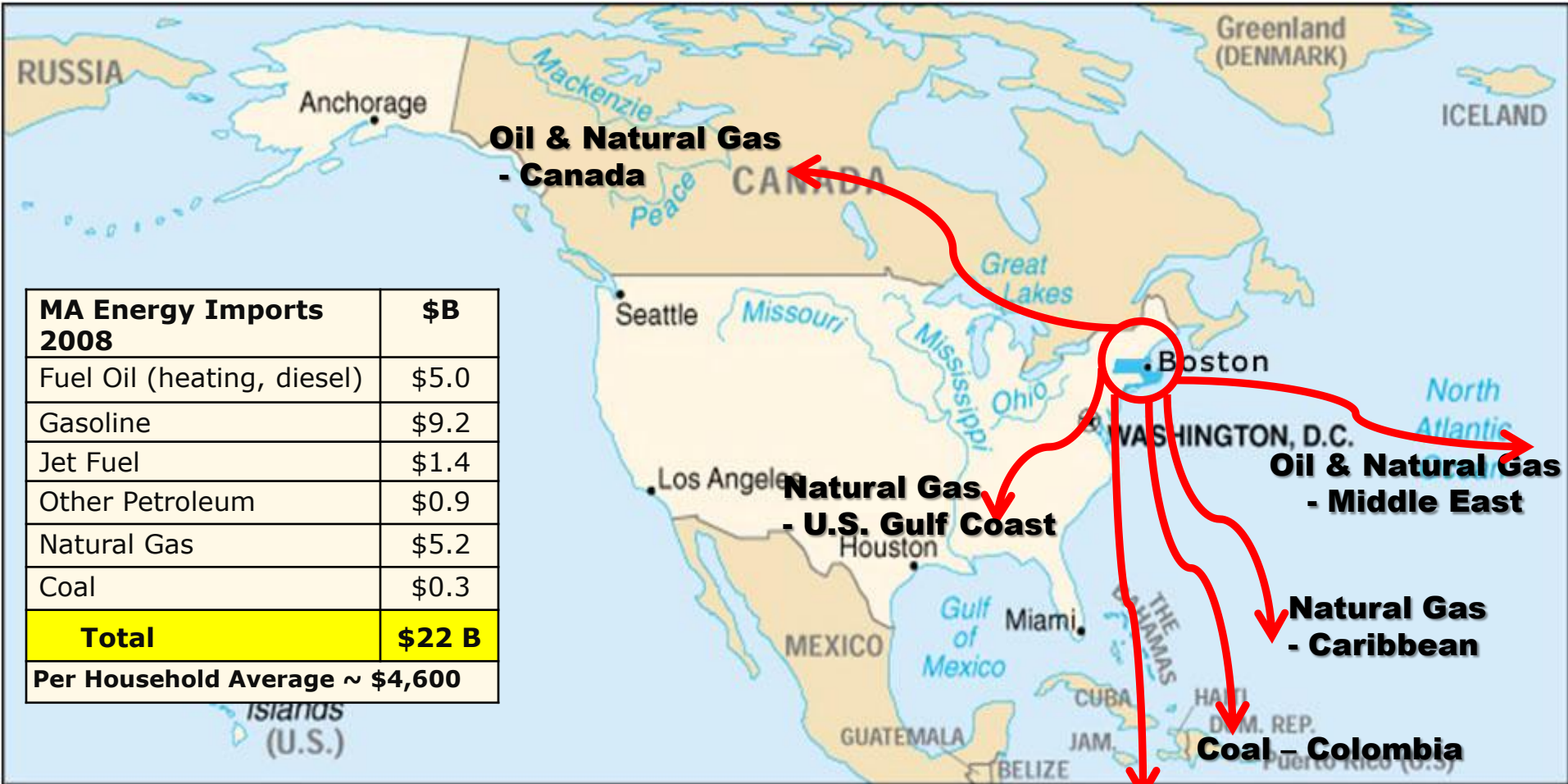
Source: U.S. Energy Information Administration



Energy Dollars Flowing Out of MA

We spend **\$22B** per year on energy; 80% leaves MA -- **\$18B**

MA Energy Imports 2008	\$B
Fuel Oil (heating, diesel)	\$5.0
Gasoline	\$9.2
Jet Fuel	\$1.4
Other Petroleum	\$0.9
Natural Gas	\$5.2
Coal	\$0.3
Total	\$22 B
Per Household Average ~ \$4,600	



Energy Efficiency

- Most ambitious EE program in the country;
 - 3 X California/capita;
- Doubling of employment in EE services since 2007
- \$2 Billion Investment = \$6 Billion Savings
 - Cheapest “new” source of energy;
- By 2020 – 20% electricity through EE;
- ~5% GHG reductions



Solar

- 25-fold increase in solar PV – from 3.5 MW to more than 80 MW by end of 2010;
- 4-fold increase in number of firms involved in solar energy installation (50 >> 200);
- Doubling of employment in solar manufacturing and installation between 2007 to 2009.

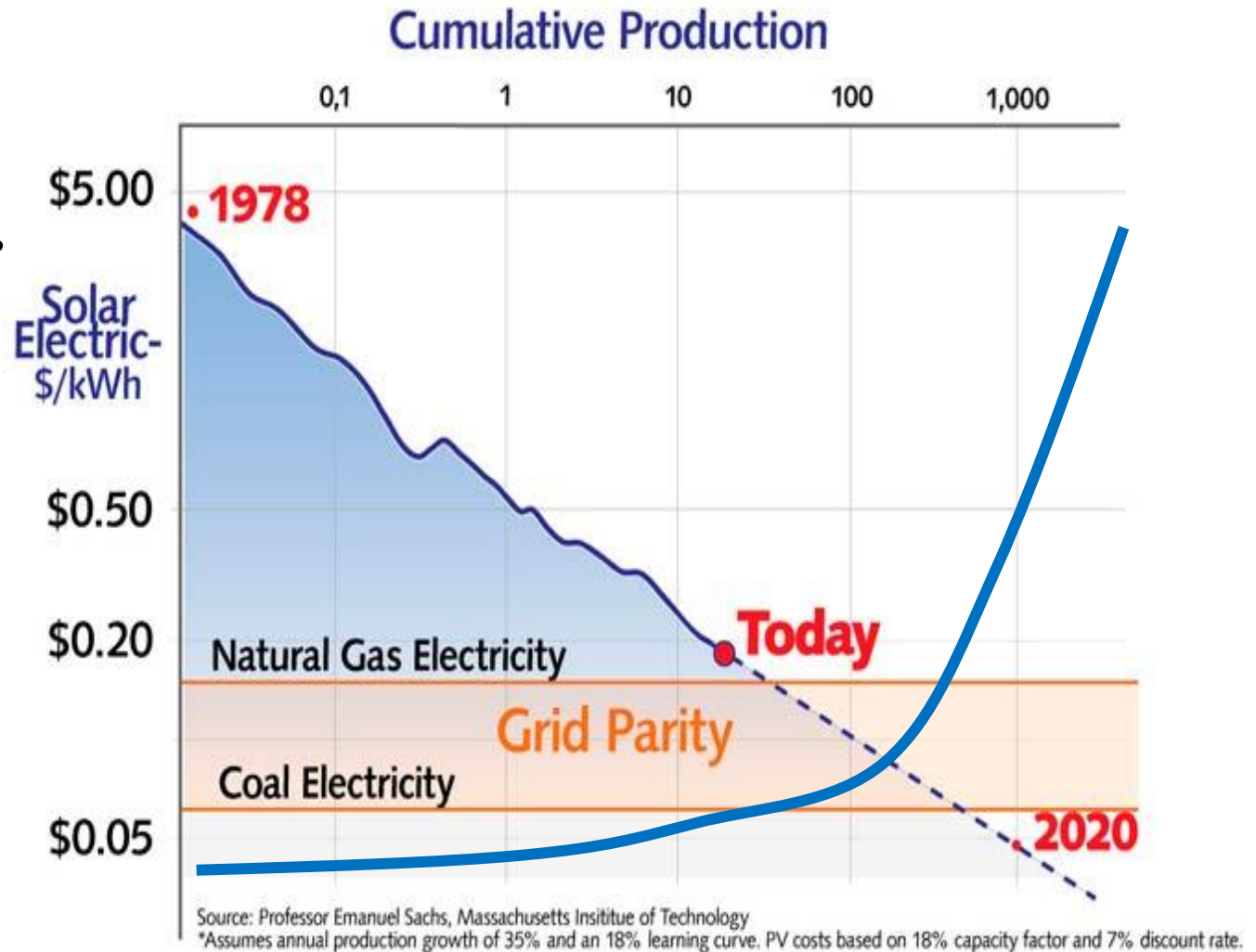


PV Cost Trend

"I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait until oil and coal run out before we tackle that.

*-- Thomas Edison
1931*

- Over last 30 years PV costs have been reduced by 95%



Biomass

Rethinking Biomass Incentives

- Commissioned a study by the Manomet Center for Conservation Sciences, released June 10, 2010;
- New DOER regulations that go beyond what any state and the US EPA is doing;
- MEPA GHG policy; new regulations.



Wind

- 10-fold increase in wind – from 3.1 MW to more than 30 MW by end of 2010;
- Building the wind cluster:
 - Wind Blade Test Facility;
 - Cape Wind
 - Vestas R&D
 - Siemens Offshore
 - MasTank/EEW
 - New Bedford Port;
 - FloDesign
 - American Superconductor
 - First Wind



New Bedford Marine Commerce Terminal



“By a range of different measures, Massachusetts stands out as a clean-energy leader among states in the U.S....with strong results to date in leading-edge policies, industry expansion, job creation, and increased investment and deployment.”

A Future of Innovation and Growth:
Advancing
Massachusetts' Clean-Energy Leadership,
Clean Edge, Inc., April 22, 2010.



Executive Office of Energy and Environmental Affairs



Economic Opportunity: Energy Cost Savings and Projected Job Growth in 2020

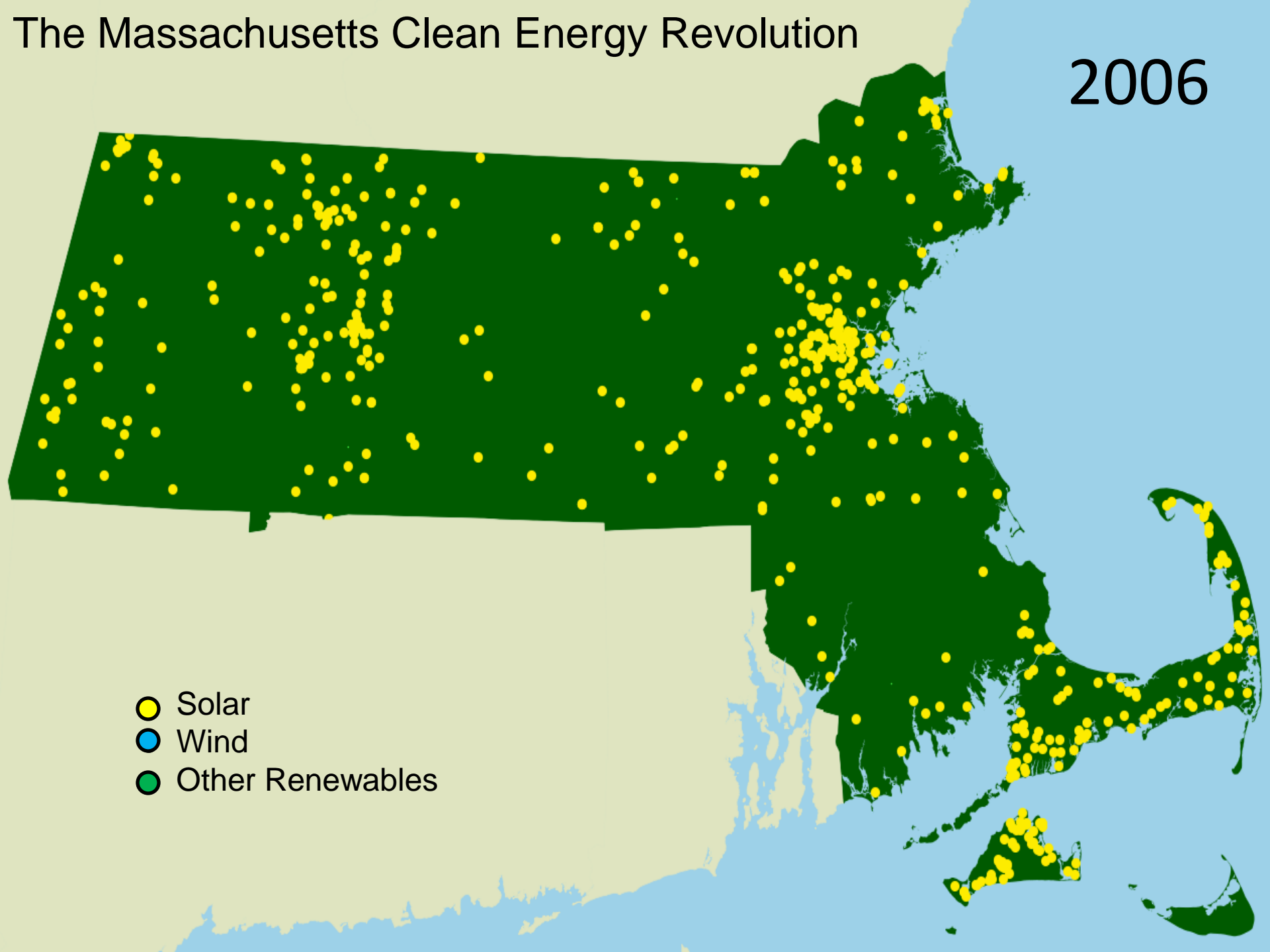
Annual Energy Cost Savings for Residential, Business, Municipal Customers	
Total	\$6.3B

Job growth potential	
Induced or indirect job growth	39,000
Clean energy sector job growth	3,000-9,000
Total	42,000-48,000



The Massachusetts Clean Energy Revolution

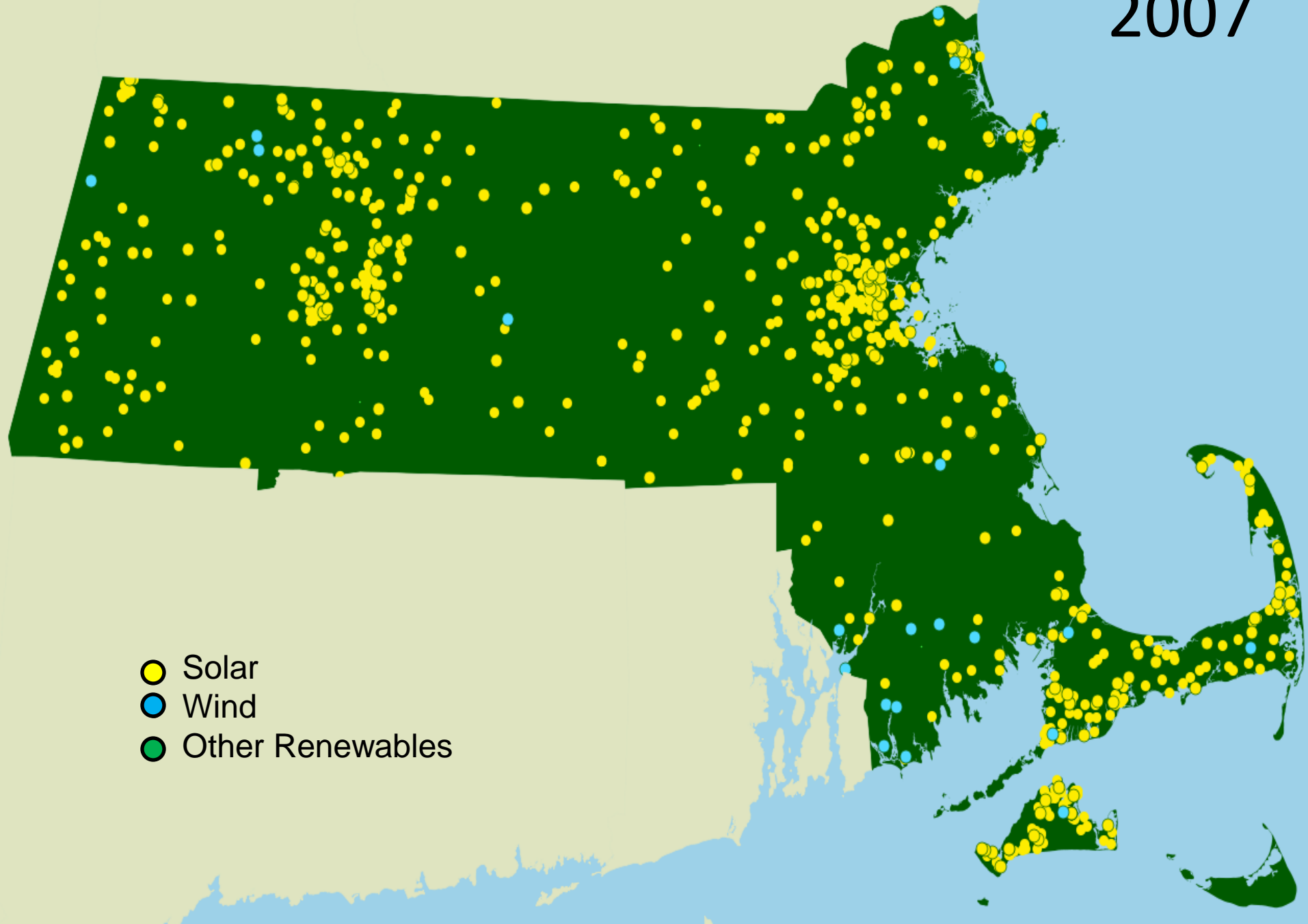
2006



- Solar
- Wind
- Other Renewables

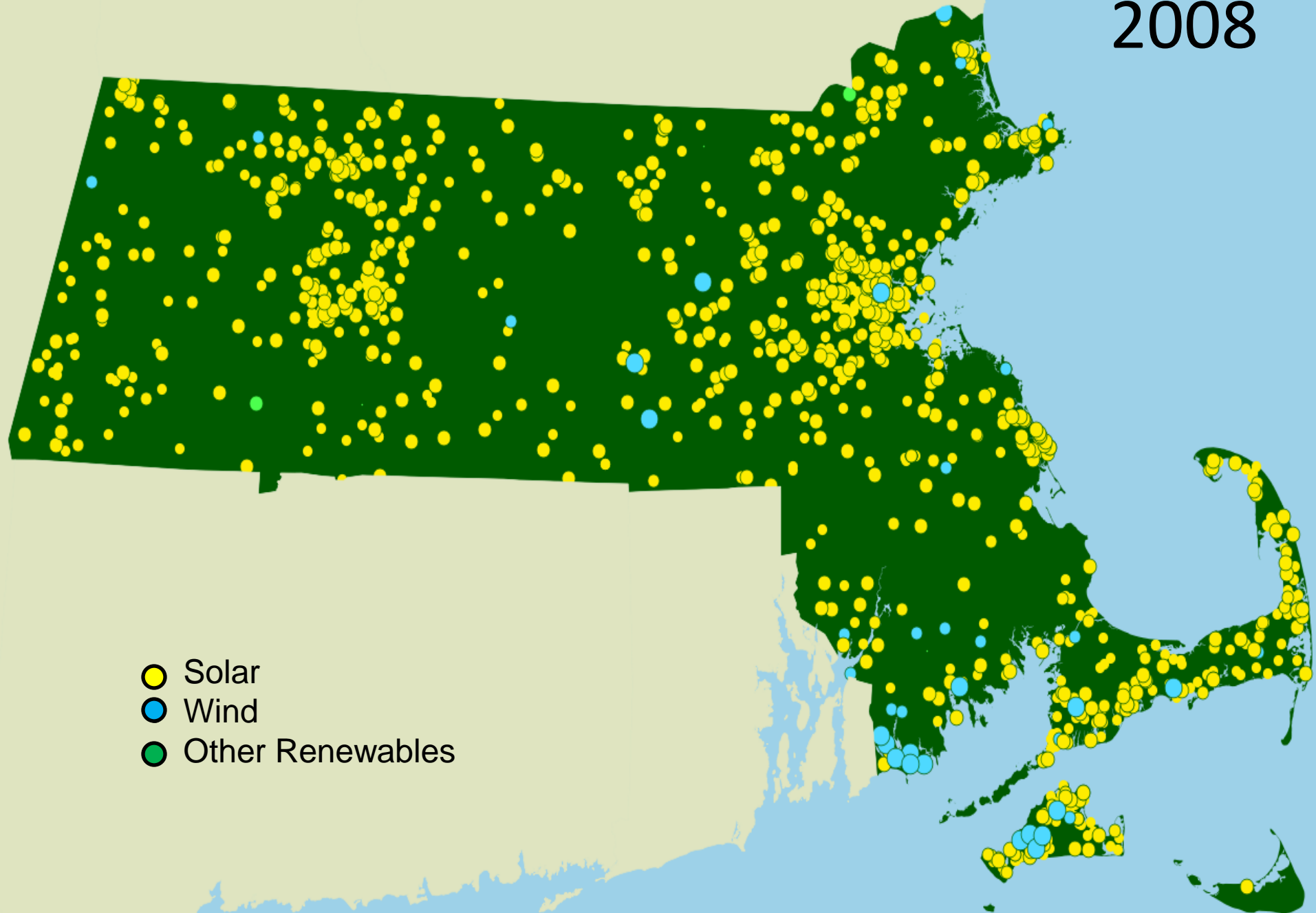
The Massachusetts Clean Energy Revolution

2007



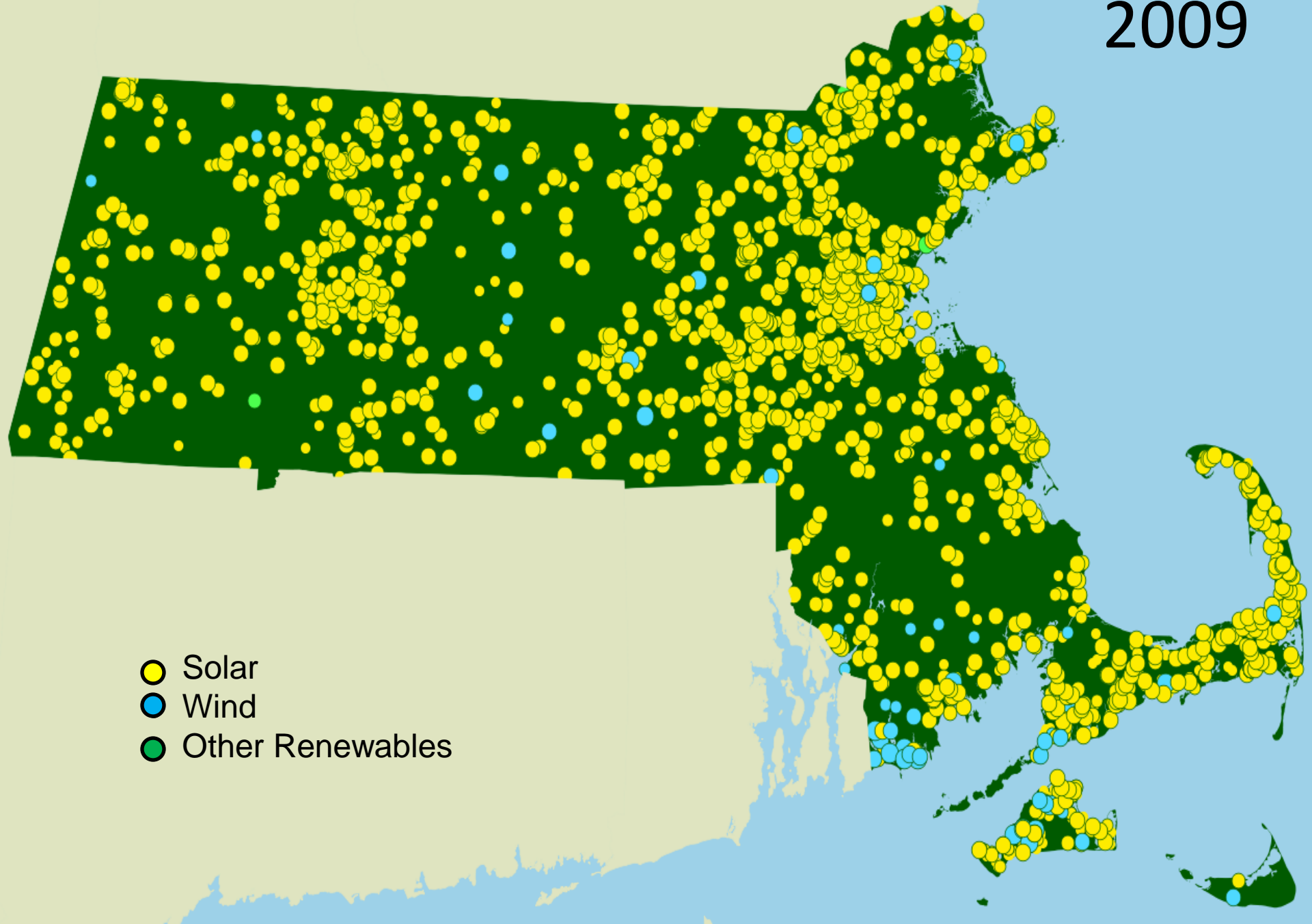
The Massachusetts Clean Energy Revolution

2008



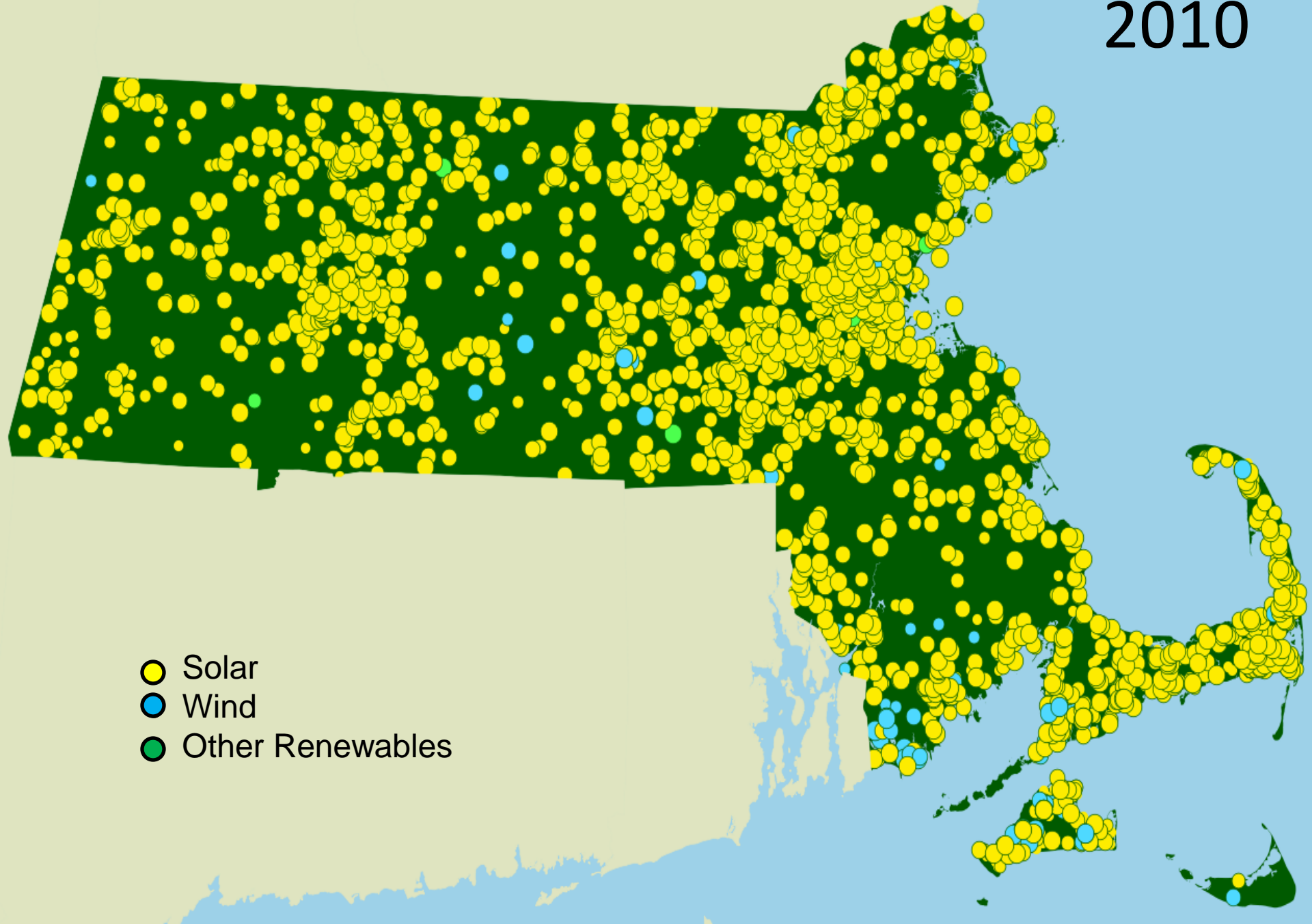
The Massachusetts Clean Energy Revolution

2009



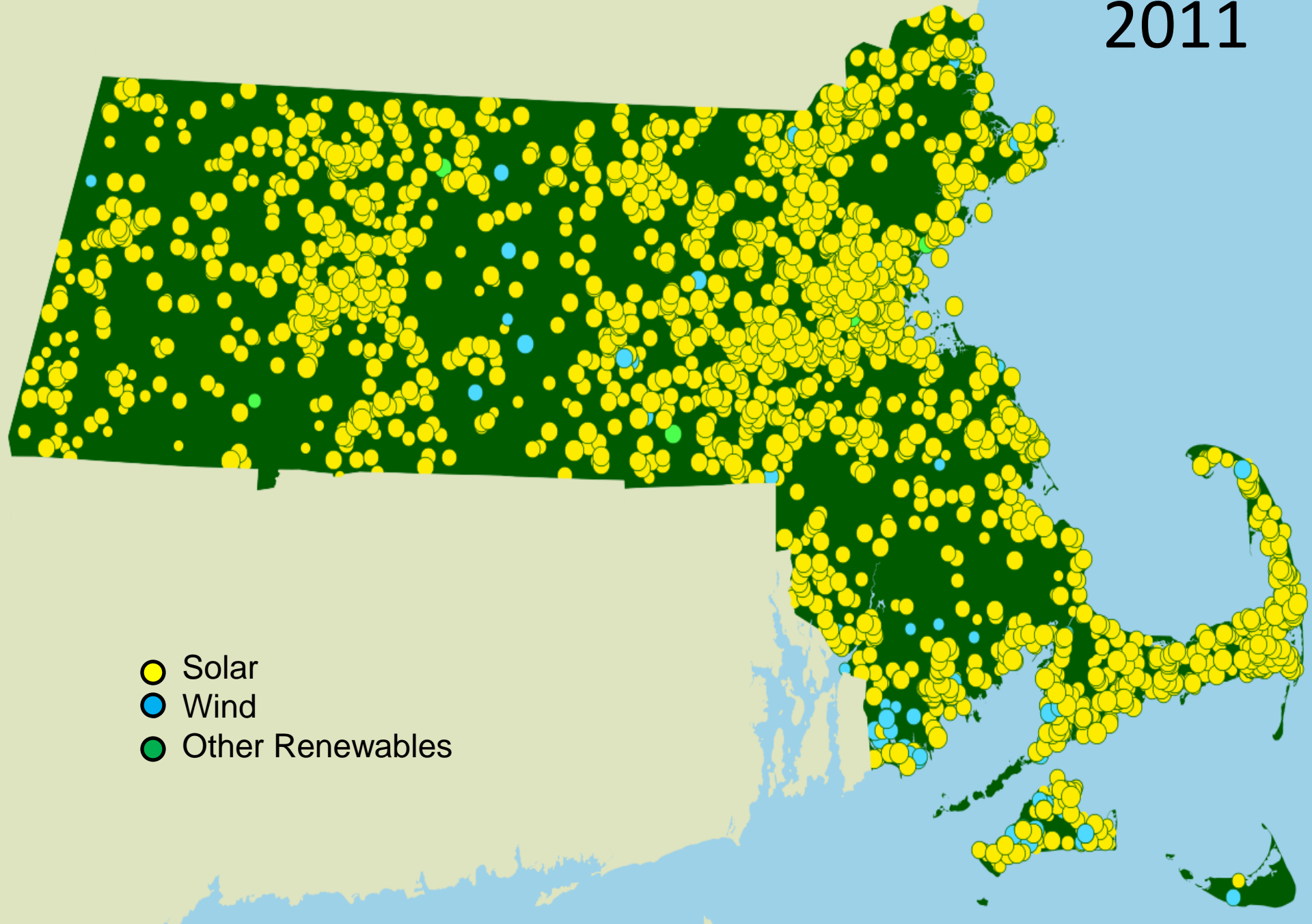
The Massachusetts Clean Energy Revolution

2010

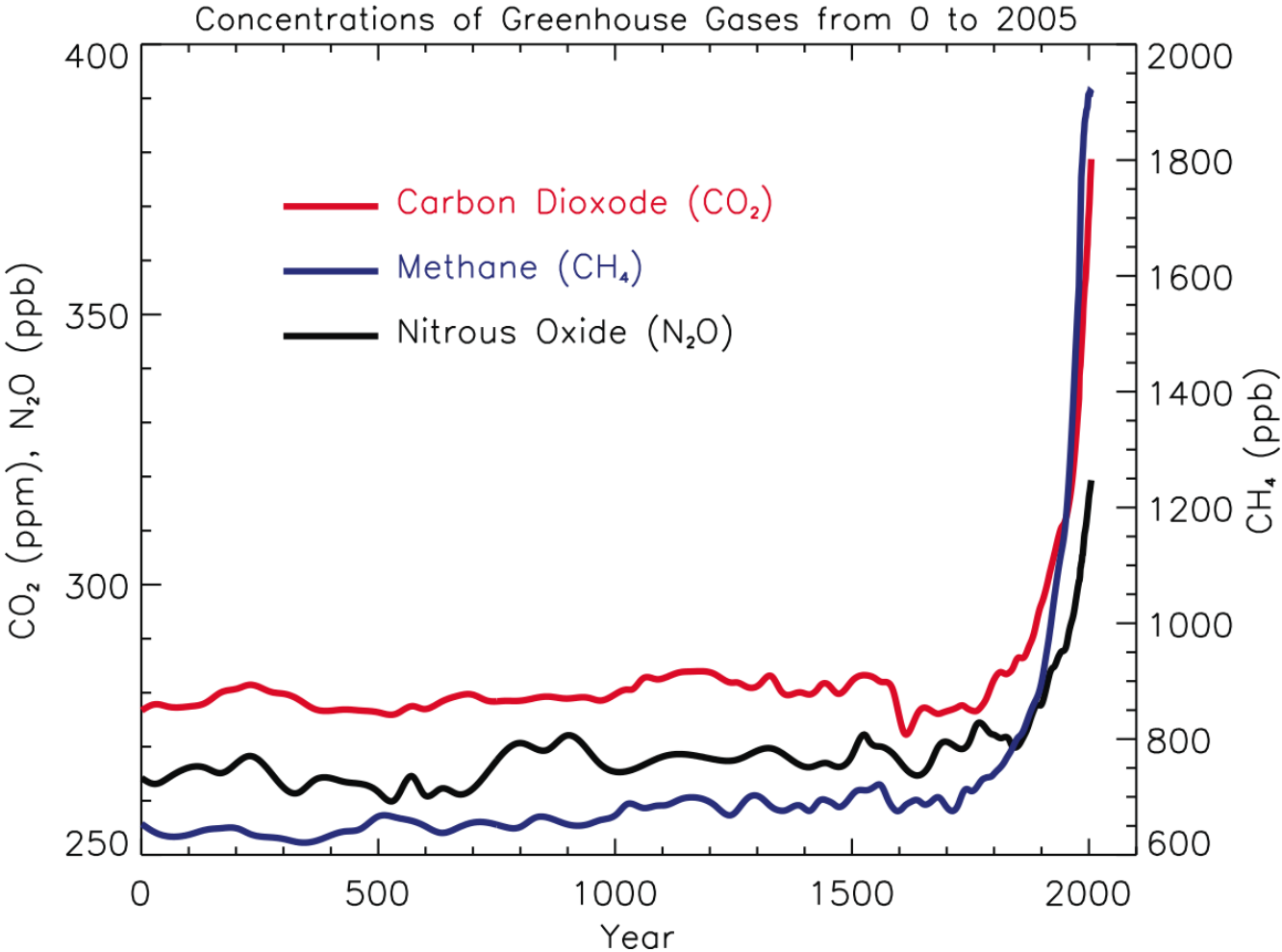


The Massachusetts Clean Energy Revolution

2011



Global Increase of GHG Concentrations



An Integrated Portfolio of Policies



Executive Office of Energy and Environmental Affairs



An Integrated Portfolio of Policies

Buildings (9.8%)

Energy Supply (7.6%)

Transportation (7.8%)

Non-energy Emissions (2.0%)

Cross-Cutting Policies



Buildings (9.8%)

All cost-effective energy efficiency/RGGI (7.1%)

Advanced building energy codes (1.6%)

Building energy rating and labeling

“Deep” energy efficiency improvements for buildings (0.2%)

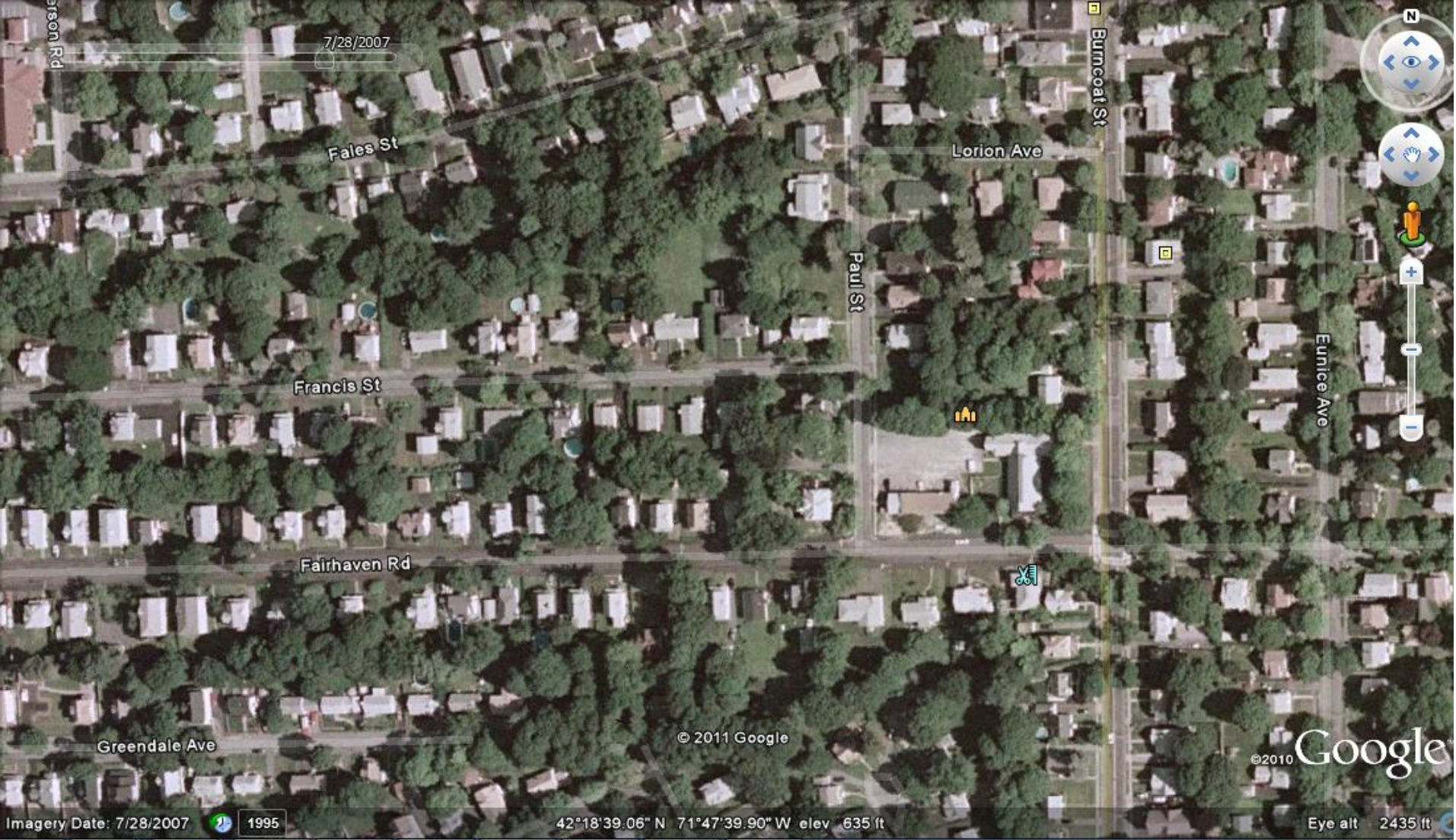
Expanding energy efficiency programs to C/I heating oil (0.1%)

Developing a mature market for solar thermal water/space heating (0.1%)

Tree retention and planting to reduce heating and cooling loads (0.1%)

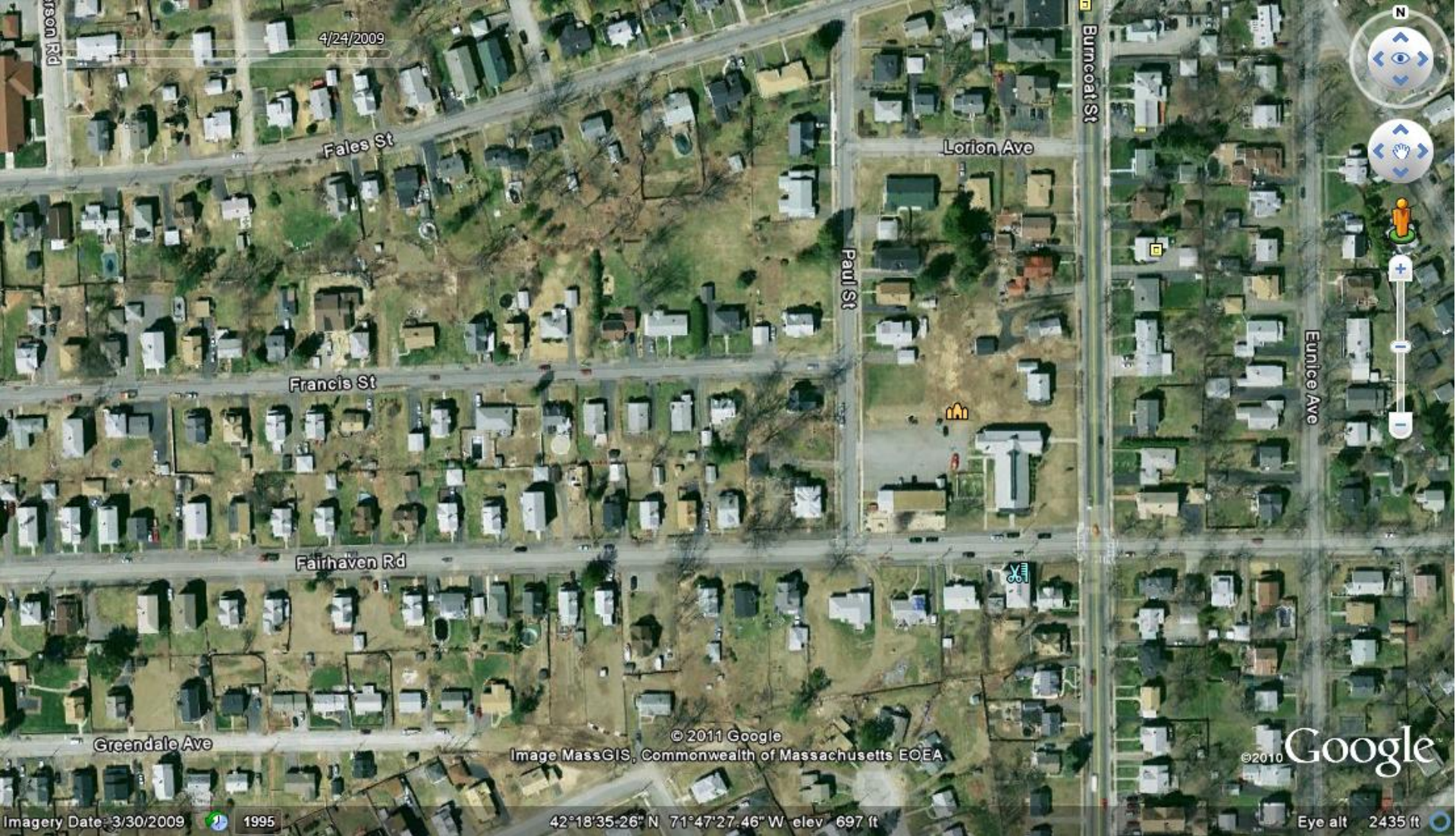
Federal appliance and product standards (0.6%)





Executive Office of Energy and Environmental Affairs





Executive Office of Energy and Environmental Affairs



Electricity (7.7%)

Renewable Portfolio Standard (1.2%)

More stringent EPA power plant rules (1.2%)

Clean energy imports (5.4%)

Clean energy performance standard (CPS)



Transportation (7.6%)

Federal and California vehicle efficiency and GHG standards (2.6%)

Federal emissions and fuel efficiency standards for medium and heavy duty vehicles (0.3%)

Federal renewable fuel standard and regional low carbon fuel standard (1.6%)

Clean car consumer incentives (0.5%)

Pay As You Drive (PAYD) auto insurance (pilot program, possible expansion later) (1.1%)

Sustainable Development Principles (0.1%)

GreenDOT (1.2%)

Smart growth policy package (0.4%)



Non-Energy Emissions (2.0%)

Reducing GHG emissions from motor vehicle air conditioning (0.3%)

Stationary equipment refrigerant management (1.3%)

Reducing SF6 emissions from gas-insulated switchgear (0.2%)

Reducing GHG emissions from plastics (0.3%)



Cross-cutting Policies

MEPA GHG policy and protocol

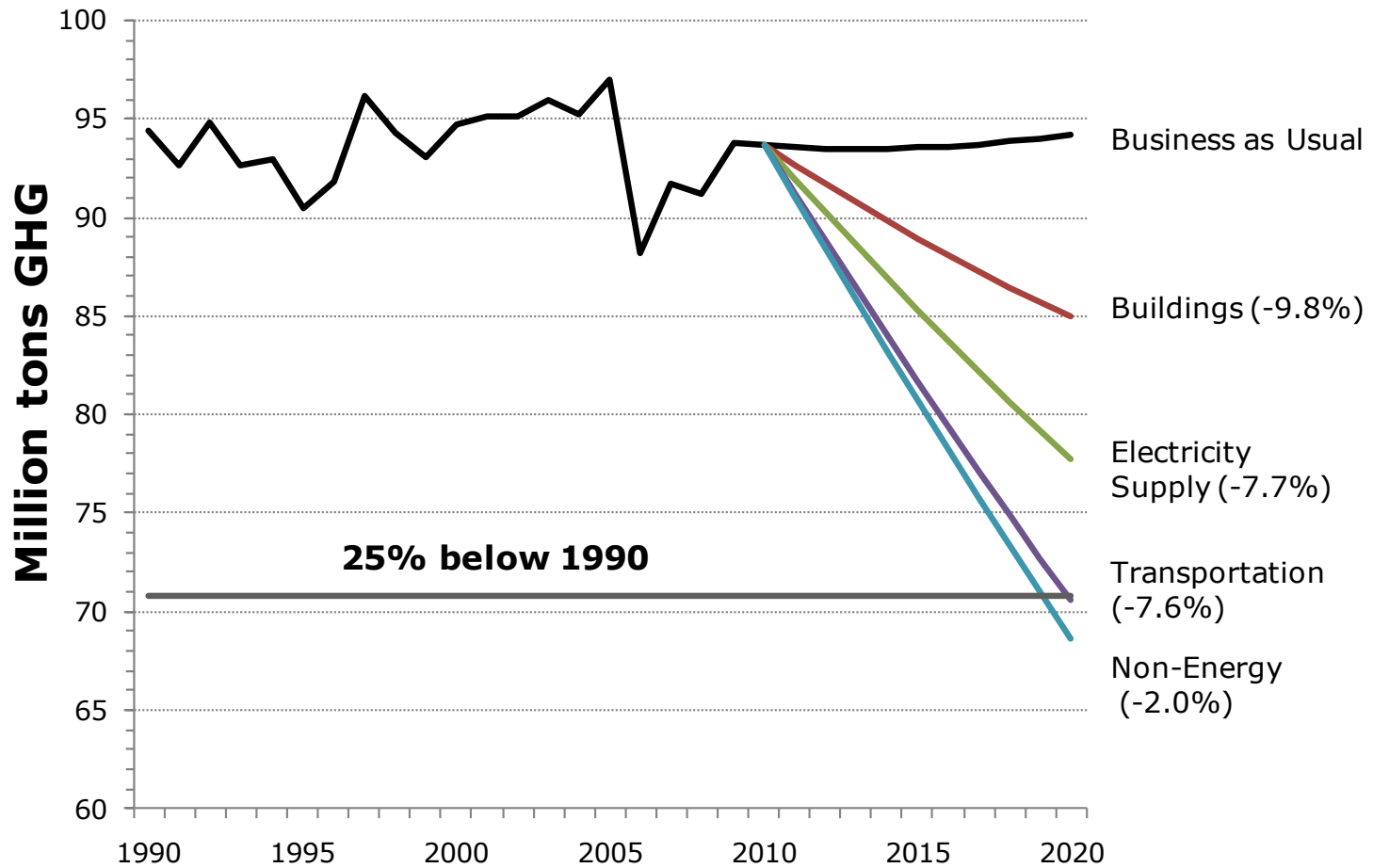
Leading by Example

Green Communities Division

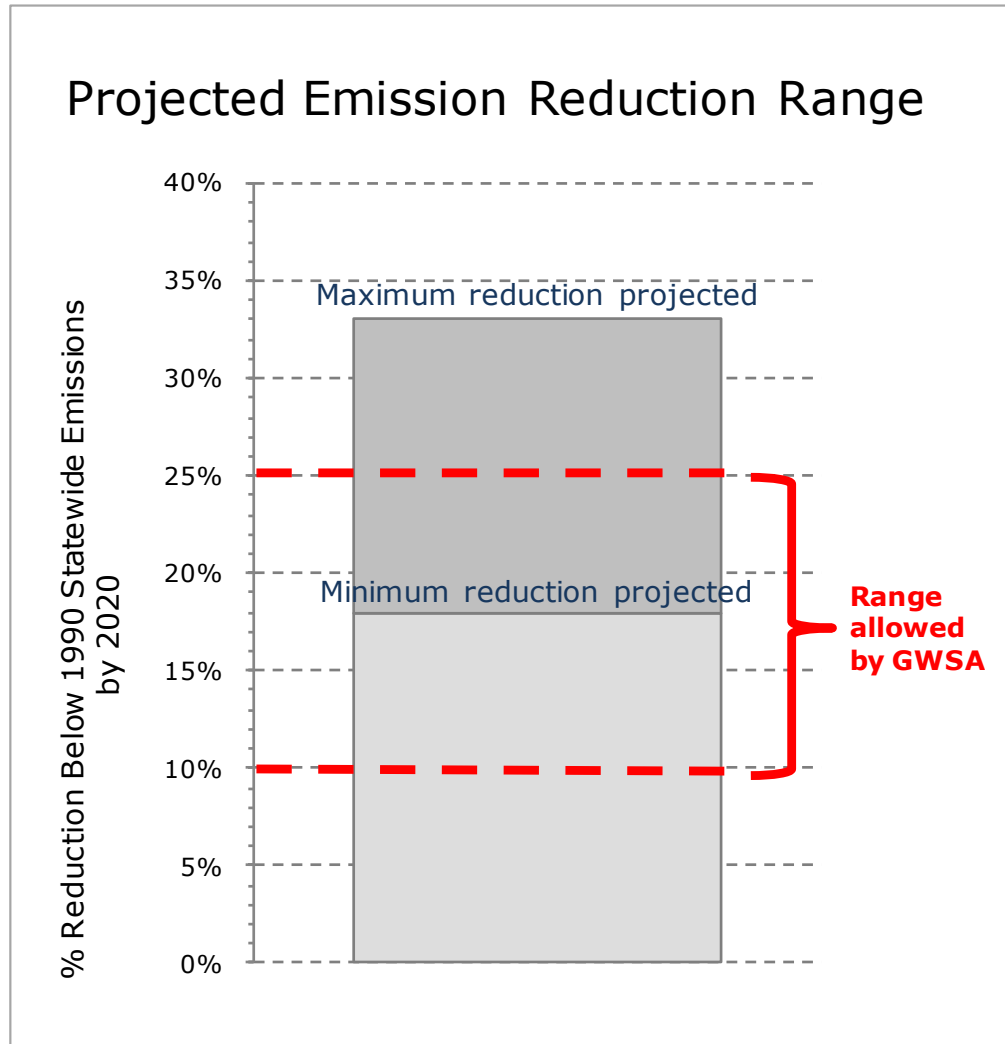
Consideration of GHG emissions in State permitting, licensing
and administrative approvals



Clean Energy and Climate Portfolio Impacts vs. Business as Usual



Setting the Limit



Putting the Plan into Action

Launch Clean Energy and Climate Advisory Committee

In 2011, state agencies responsible for each new measure will complete program development and consultative processes with stakeholders

Next four years – annual status reports to the Clean Energy and Climate Advisory Committee

Increased public, City/Town, regional groups, NGO, business community, engagement

5-year reviews



END

