



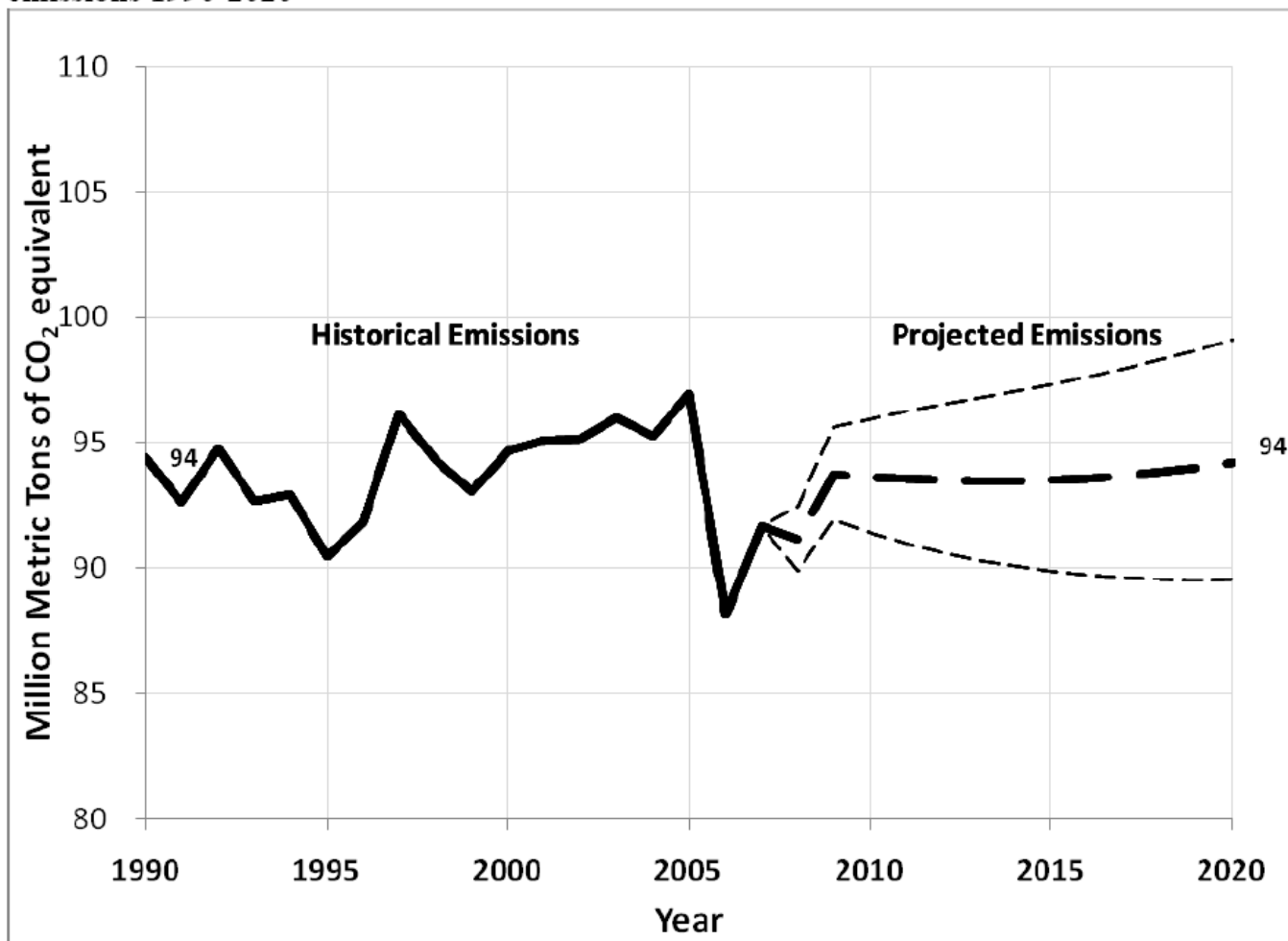
Boston Climate Leadership Committee: GHG Inventory and 2020/2050 Targets

July 21, 2009

Jonathan Raab,
Raab Associates, Ltd.

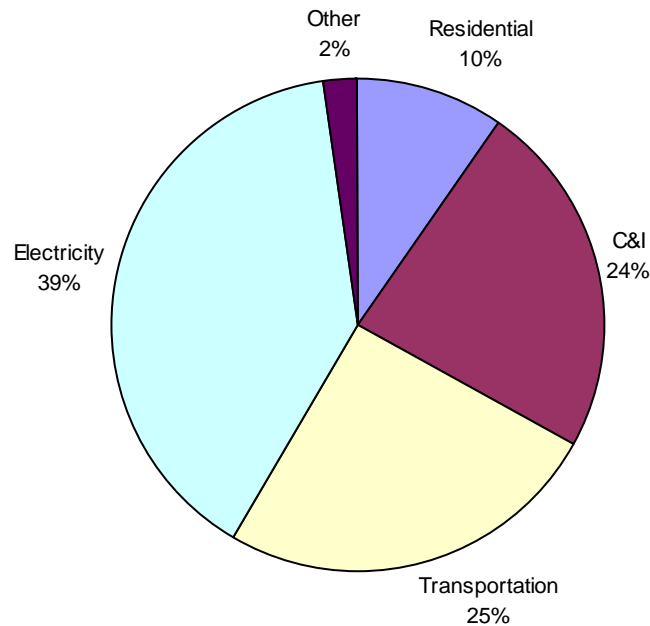
MA: Baseline and Business as Usual Projection of GHG emissions

Figure 1: Massachusetts Baseline and Business as Usual (BAU) Projection of GHG emissions 1990-2020

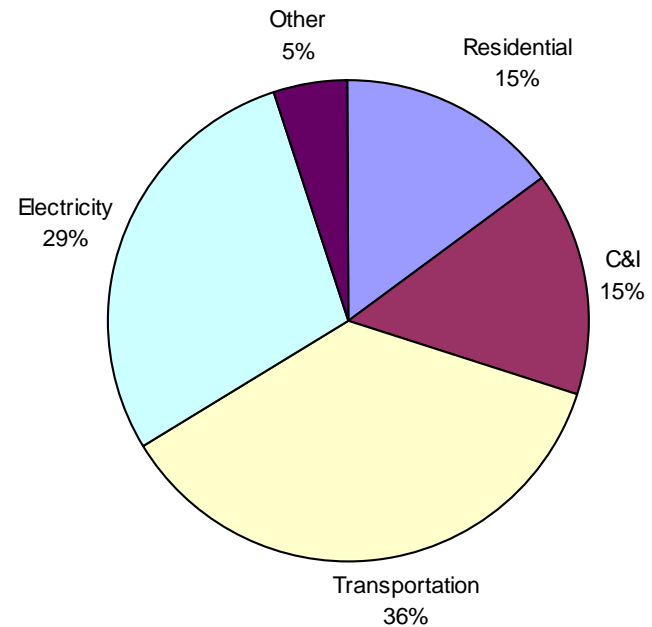


Boston vs. MA GHG Inventory

Boston 2005 GHG Emissions



Massachusetts 2005 GHG Emissions

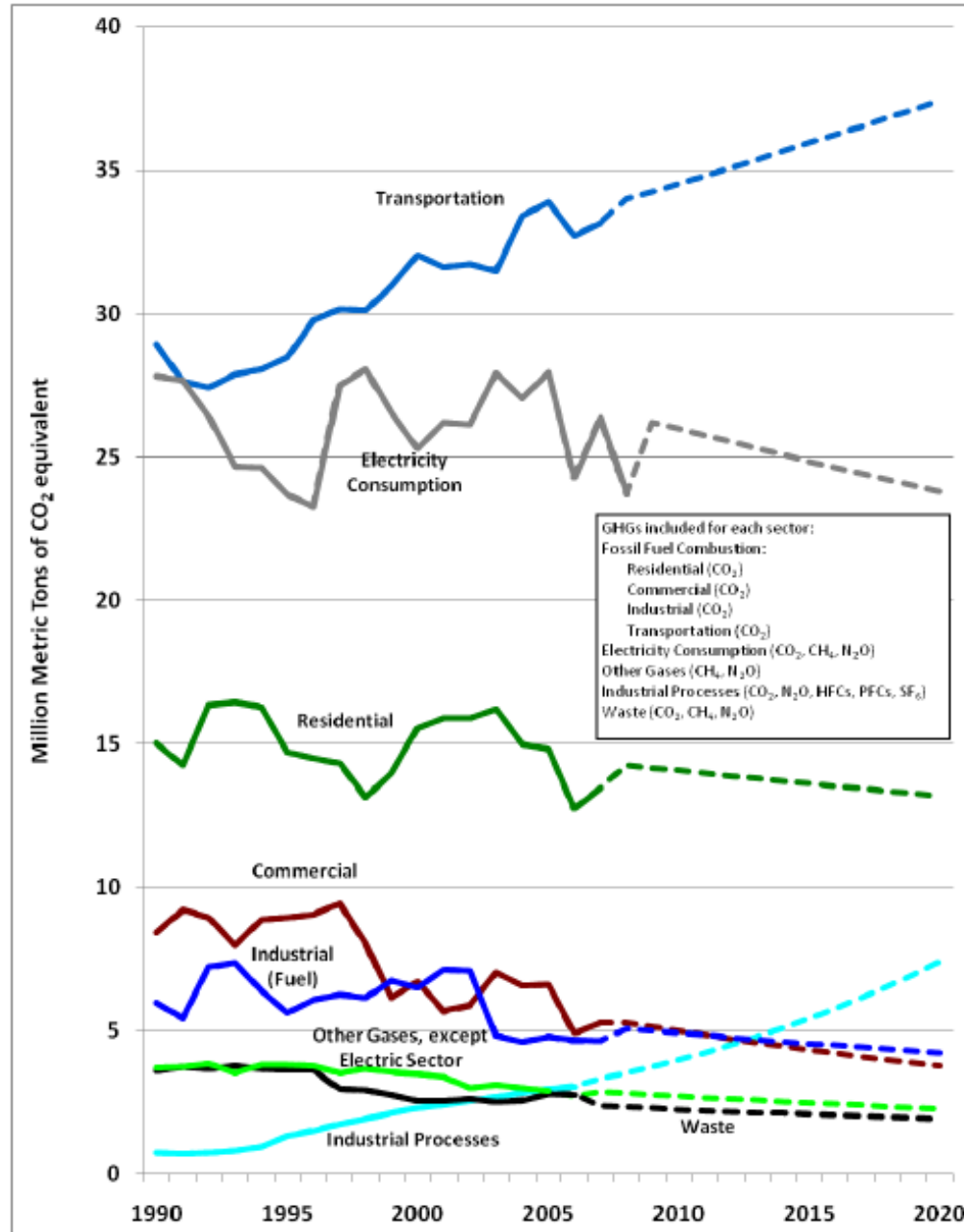


GHG Emissions per Capita Comparison

■ U.S	24	■ NYC	7
■ MA	15	■ Chicago	12
■ Boston	12	■ Copenhagen	5

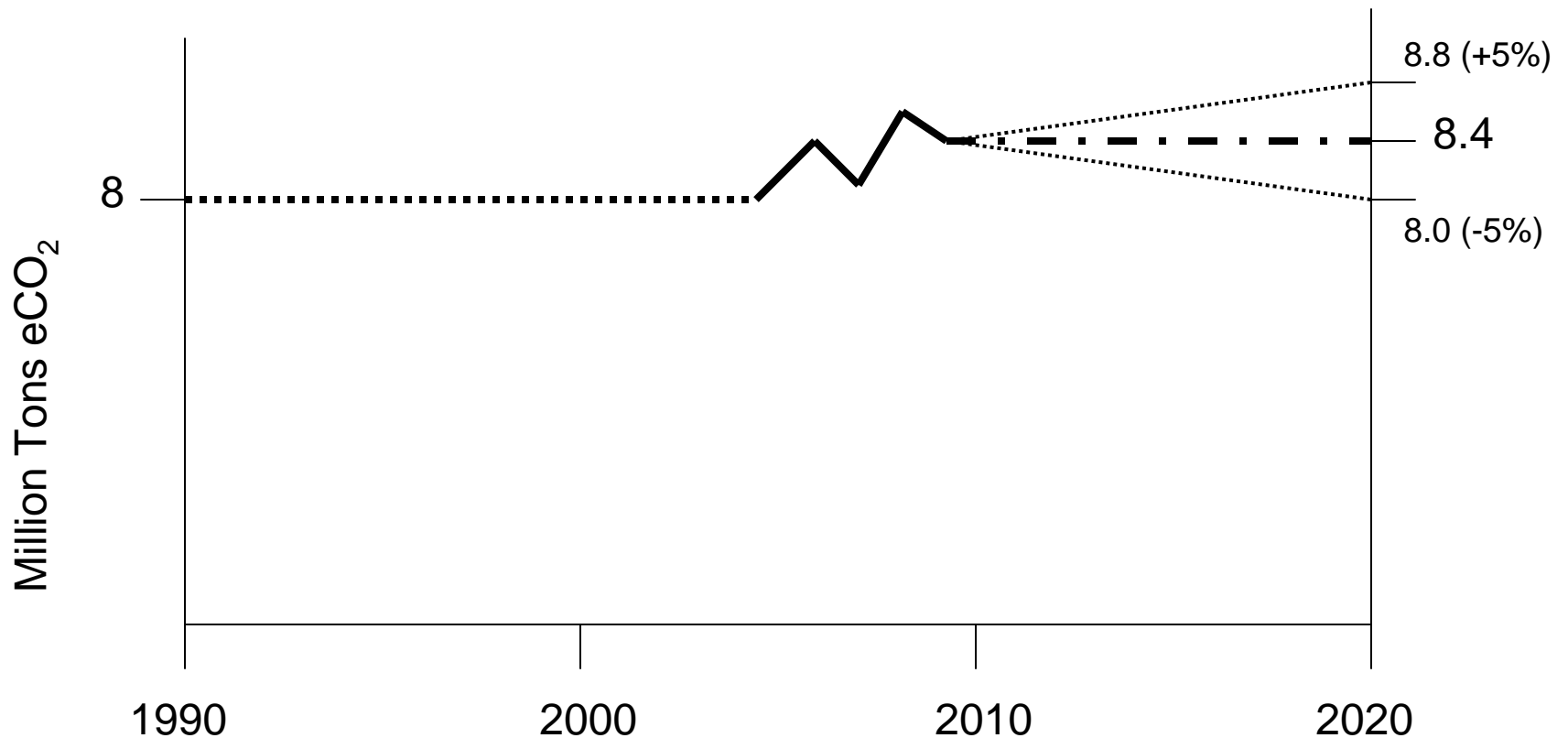


Figure 2: Massachusetts Baseline and BAU Projection of GHG emissions 1990-2020 by sector



MA Baseline Projections of GHG emissions by Sector

Boston Business As Usual to 2020





Goal Setting: 2050 and 2020

2050 Goal

- MA target 80% below 1990 level by 2050
 - MA Global Warming Solutions Act
- Mayor Menino goal: Also 80% below 1990 by 2050 for municipal operations
 - 2007 Executive Order
 - US Mayors Climate Agreement
- Should Leadership Advisory Committee recommend same goal for all of Boston?

Why 80% by 2050?

“To avoid the worst effects of global warming, there is broad scientific agreement that we must limit additional warming to no more than 2 degrees Celsius over pre-industrial levels. According to the IPCC, we have a reasonable chance of meeting this objective if developed countries as a whole cut their emissions by 25-40 percent below 1990 levels by 2020 and by 80-95 percent below 1990 levels by 2050.”

- National Call to Action on Global Warming

<http://www.environmentamerica.org/uploads/PQ/-9/PQ-92epXVXR6kjcmrBZwgQ/National_Call_to_Action.pdf>

Boston: 80% Reduction by 2050





Boston 2020 Goal



Boston: What is a reasonably aggressive goal for the City?

From the ICLEI Mayor's Climate Action Handbook:

“Setting a reduction target for global warming pollutants creates a tangible goal and metric to guide the planning and implementation of your community’s action...

...Almost all of the local governments participating in ICLEI’s CCP Campaign establish reduction targets of global warming pollution at 15 percent or higher to be met within a 10 year period.”



Boston: What is a reasonably aggressive goal for the City?

ICLEI Milestone 2 (of 5):

Adopt an emissions reduction target for the forecast year

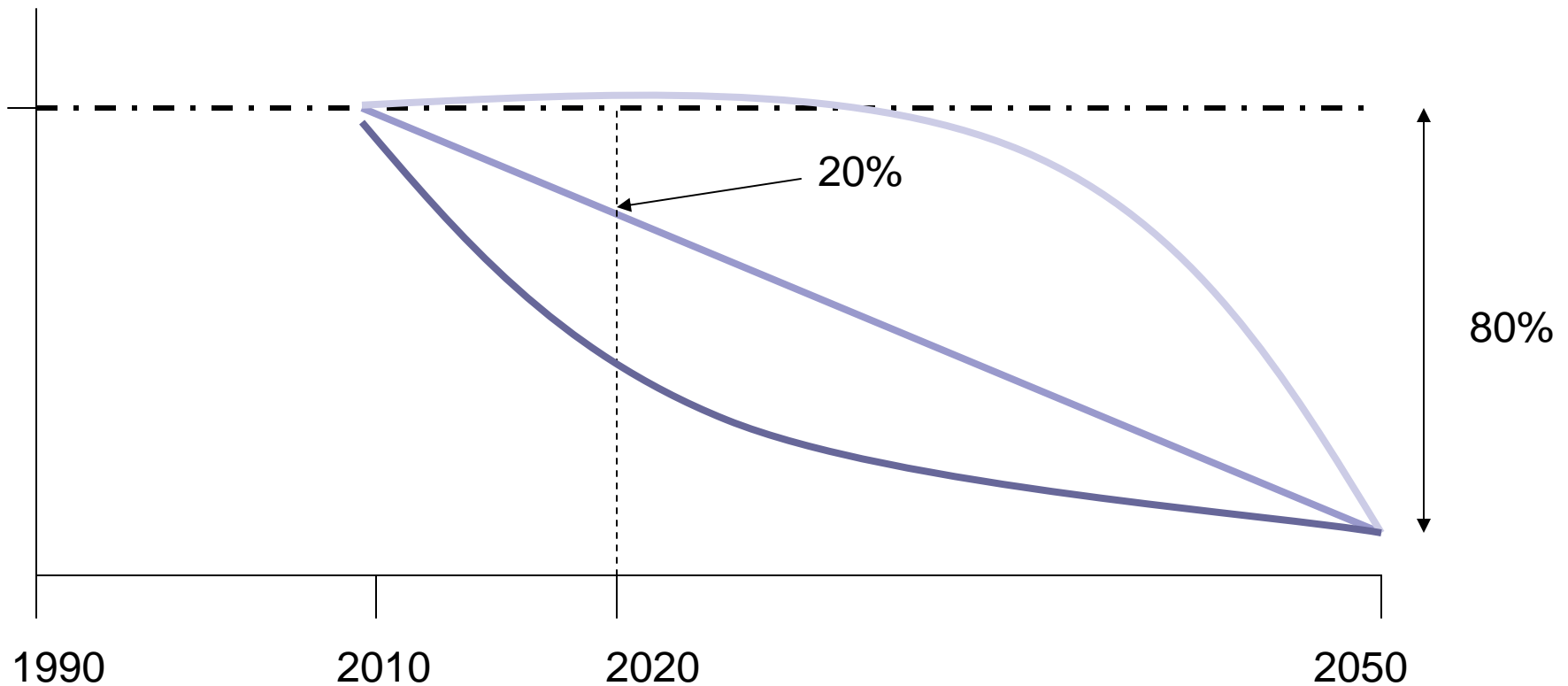
The local government adopts an official reduction target defined as a percent reduction in annual emissions rate below the level reported in the base year (i.e. 20% reduction in emissions from 2005 baseline by 2020). The target fosters political will and creates a framework that guides the planning and implementation of measures.



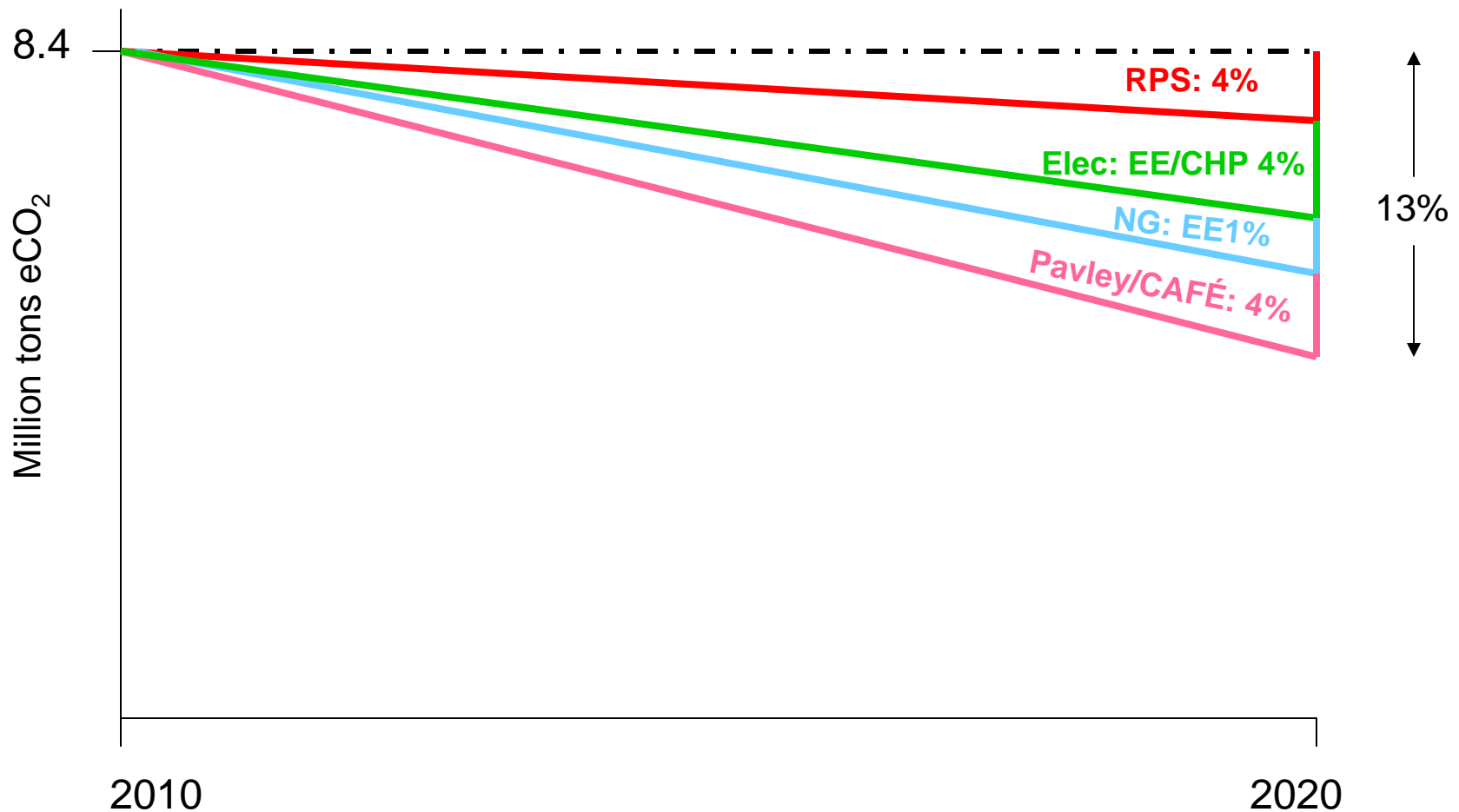
2020 Goals proposed by others

- Chicago: 25% below 1990 by 2020
- NYC: 30% below 2005 by 2030
- Denver: 20% below 2005 by 2020
- New England Governors: 10% below 1990 by 2020
- Copenhagen: carbon neutral by 2025
- **Massachusetts: 10% - 25% below 1990 by 2020**

Optional Pathways to a 2020 Goal



First Cut Reduction Potential of New Major Programs and Policies: RPS, EE/CHP, NG, Pavley/CAFÉ





Appendix: Calculation Assumptions

RPS Calculation

- Electricity is 40% of emissions
- RPS target in 2010 = 5%
- RPS target in 2020 = 15%
- Assume all new RPS eligible resources are incremental = 10% incremental
- **RPS overall reduction = 4%**
 - 10% of 40%

Electric Efficiency Calculation

- Electricity emissions = 40%
- All cost-effective EE = 3% per year for 10 years (includes 0.5% CHP)
 - Existing EE = 0.8% per year
 - Assume 2/3 CHP is incremental = 0.3
 - Assume realistically achieve 2x efficiency
 - Incremental EE = 1.1% per year or 11% of electricity over 10 years (0.8 + 0.3)
- **EE = 4.4% overall reduction by 2020**
 - 11% of 40%

Natural Gas Efficiency Calculation

- Natural gas = 21% of emissions
- EEAC assumption = 2% per year for 10 years
 - Assume incremental = about 1/3, or 0.7%
 - Realistic achievable minus existing
 - Incremental = 0.7% per year or 7%
- Overall reduction of NG = 1.47%
 - 7% of 21%

Pavley/CAFÉ Calculation

- Transportation = 28% of Boston emissions
- Pavley = 30% reduction for MA new car emissions by 2016
 - Assume 30% constant through 2020
- Fleet turnover = 10 years
 - 2016 through 2020 = 5 years
 - Assume impact on entire fleet is 1/2 of 30% or 15%
- Pavley overall reduction = 4.2% (15% of 28%)
- Minus Rebound/Income effect of driving more with more efficient car of 10%
- Net savings from Pavley/CAFÉ in 2020 is 3.8%