

# Energy Efficiency as a Resource and Carbon Compliance Strategy

Observations from Massachusetts,  
Applicability To Other States

Paul Horowitz, PAH Associates  
Tim Woolf, Synapse Energy Economics, Inc.  
Jeff Schlegel, Schlegel & Associates

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# Introduction

- In many states the cost-effectiveness test applied to energy efficiency resources permits the inclusion of the cost of carbon abatement as an avoided cost component.
- In practice these benefits are often not included in the benefit-cost analysis of energy efficiency programs.
- This means that energy efficiency resources are under-valued in comparison with other climate change abatement strategies.

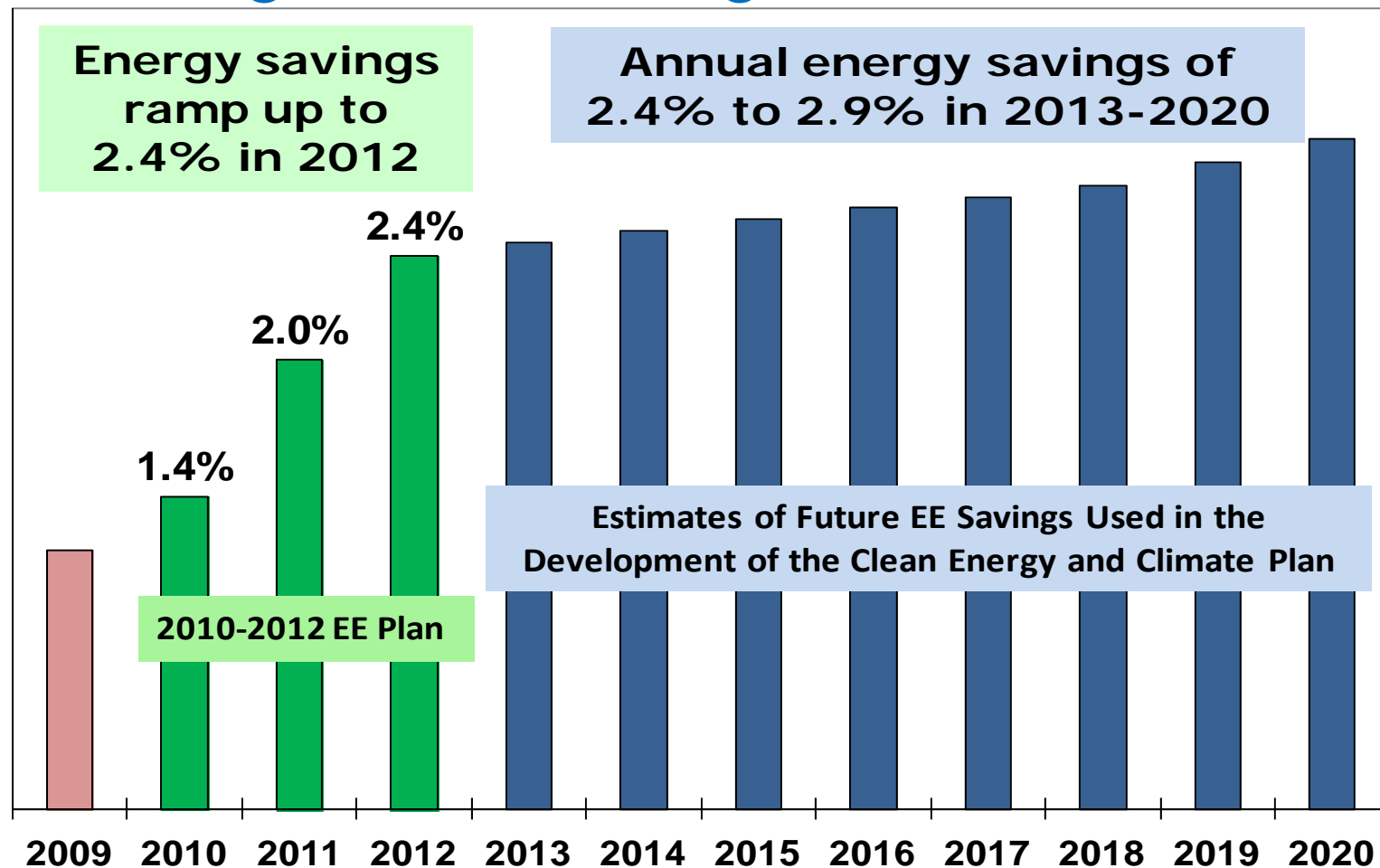
Following are experiences and options from Massachusetts

# MA Energy Efficiency and Climate Policy – On Parallel Paths for Over a Decade

EE has been delivered by electric and gas Program Administrators since the early 1990s.

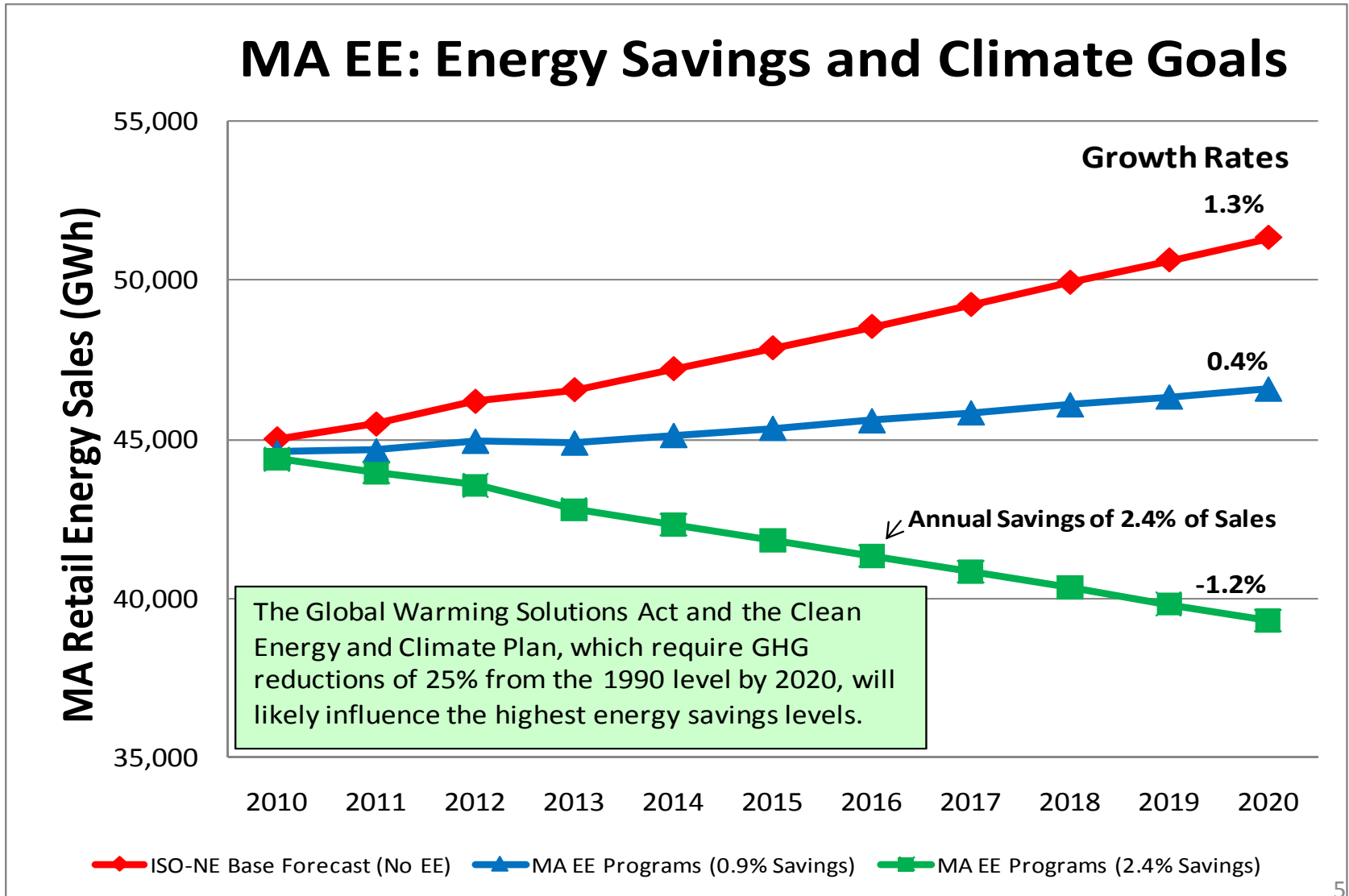
- 1990-2000: negotiated budget levels by PA, totaling ~\$100M annually.
- 2000-2009: Statutory system benefit charge for electric PAs (2.5 mils/kWh) and small negotiated budget for gas utilities (~\$125M annually).
- 2010-present: Statutory mandate for electric and gas program administrators to acquire all available cost-effective efficiency.

# EE Savings Contributing to GHG Reductions



With this level of near term planned EE savings acquisition and estimates of longer term available EE, under an “acquire all cost-effective EE” statute, the associated emissions reductions become the primary climate mitigation strategy.

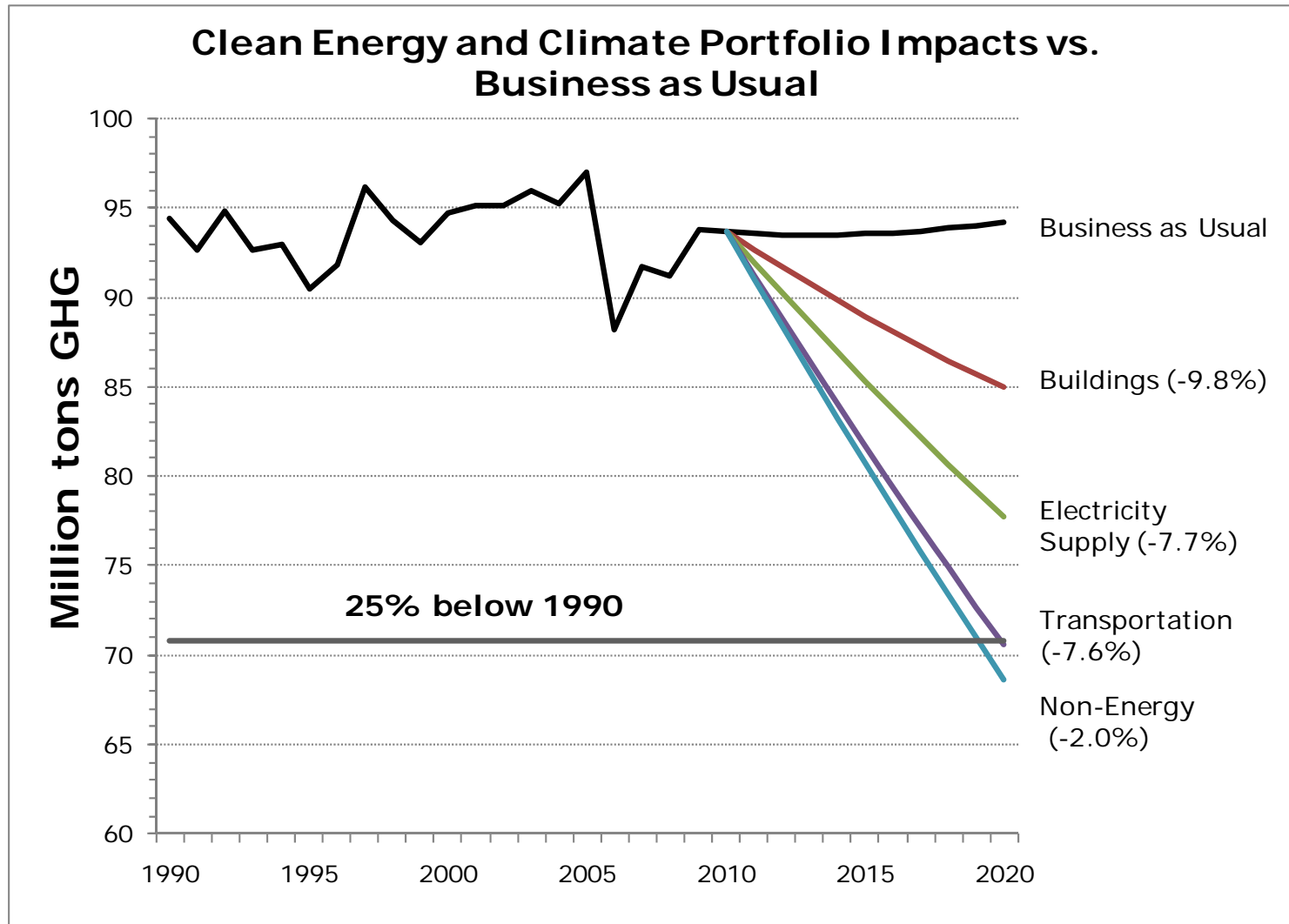
# The Link I – The Scale of Energy Efficiency 2010-2020



# MA Energy Efficiency and **Climate Policy** – On Parallel Paths for Over a Decade

- In 2001 the New England Governors and Eastern Canadian premiers approved a regional Climate Plan, later adopted by individual states, which targeted 10% reduction of 1990 GHG levels by 2020.
- In 2008 Massachusetts adopted a law requiring the adoption of an emission limit for 2020 between 10% and 25% below 1990 levels, and 80% by 2050. In late 2010 the target was established as 25% below 1990 levels and a 2010 Clean Energy and Climate Plan adopted to achieve that emission limit.

# The Link II - 2010 Clean Energy and Climate Plan

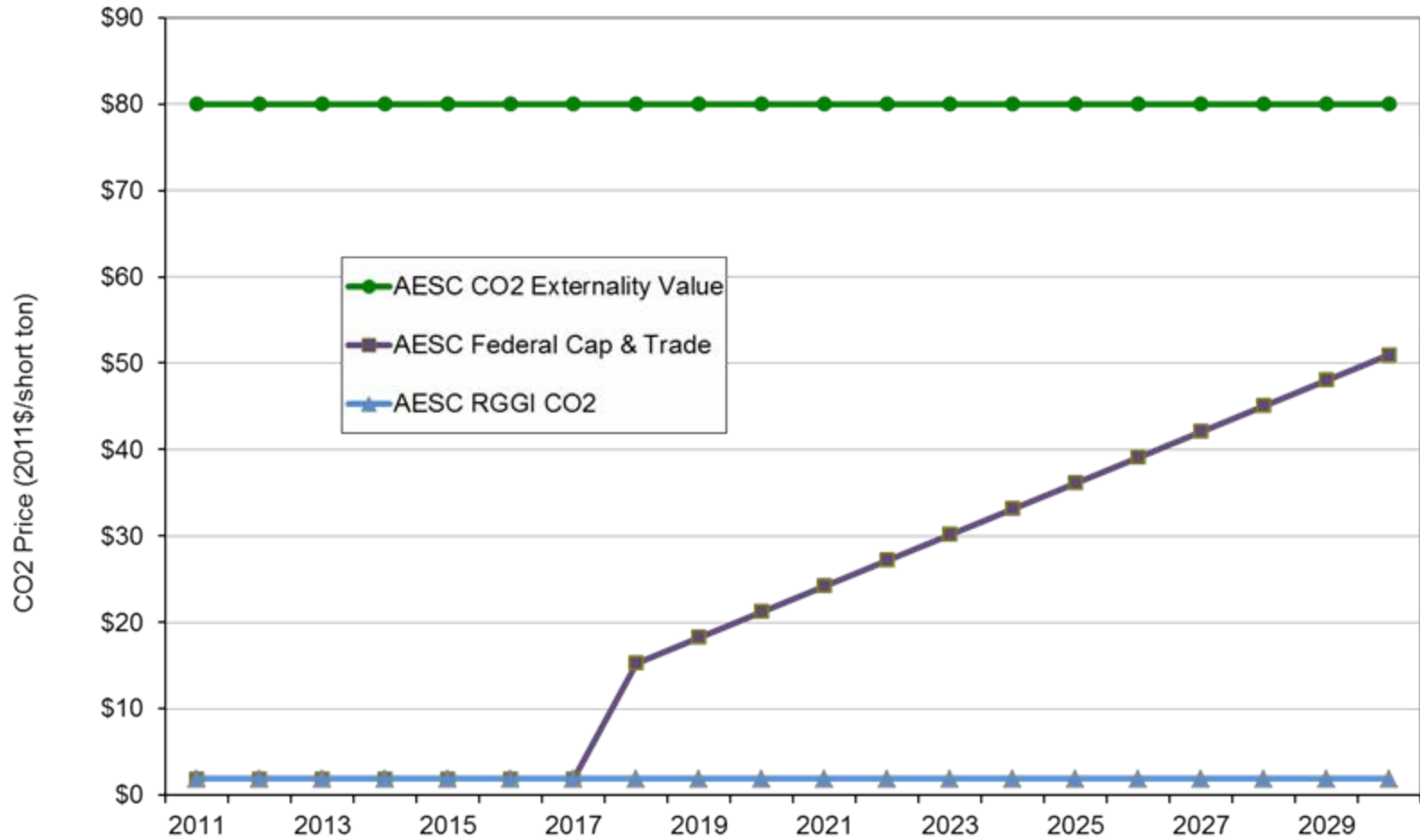


# New England Carbon Price Estimates and Avoided Costs

- Since 2007 the biennial New England regional avoided cost study has included an estimate of carbon allowance prices, based on the existing regional cap-and-trade mechanism (RGGI) and a successor national mechanism.
  - This is included in the projection of MA avoided energy costs because it is considered an internalized cost of carbon.
- The study has also included an estimate of the long term marginal cost of carbon abatement that would support CO<sub>2</sub> stabilization of 450ppm. The value has been estimated at \$80/short ton CO<sub>2</sub> in the past two studies, derived from an examination of other studies with costs ranging between \$50 and \$270 per short ton.
  - The portion of this value not considered an internalized carbon cost has not been included in MA avoided costs because it has been viewed as an externality.



# Carbon Price Estimates for New England



# Massachusetts – Inclusion of an Avoided Cost of Carbon Compliance

- In Massachusetts, a 1994 Supreme Judicial Court decision precludes the Department of Public Utilities (DPU) from authorizing the use of externalities in the TRC benefit cost analysis, as environmental costs are outside the DPU's jurisdiction.
- The decision does allow the DPU to require Program Administrators to include the cost of existing and future utility-related environmental requirements, as these costs will be borne by ratepayers.
- “The Department considers existing state law and likely federal measures to control greenhouse gases to constitute reasonably anticipated environmental compliance costs that will be reflected in future electricity prices in the Commonwealth. Consequently, the Department expects Program Administrators to include estimates of such compliance costs in the calculation of future avoided energy costs.” DPU 08-50-A, March 16, 2009, p. 17

# State Options for Inclusion of Carbon Values in Energy Efficiency Avoided Costs

- For states that do not expect to adopt state-specific climate change requirements in the near- to mid-term future, the costs associated with anticipated future federal climate change requirements, reflected in a forecast of nation-wide allowance prices for carbon dioxide, would be an appropriate set of values (e.g., the internalized value in the above graph).
- For states that expect to adopt state-specific climate change requirements that are more stringent than anticipated federal climate change requirements and consistent with the global climate stabilization goal of 450 ppm, the \$80/short ton value would be appropriate.
- For states that have already adopted state-specific climate change requirements that are more stringent than those anticipated at the federal level, it would be reasonable to consider state-specific information in establishing a carbon compliance cost.



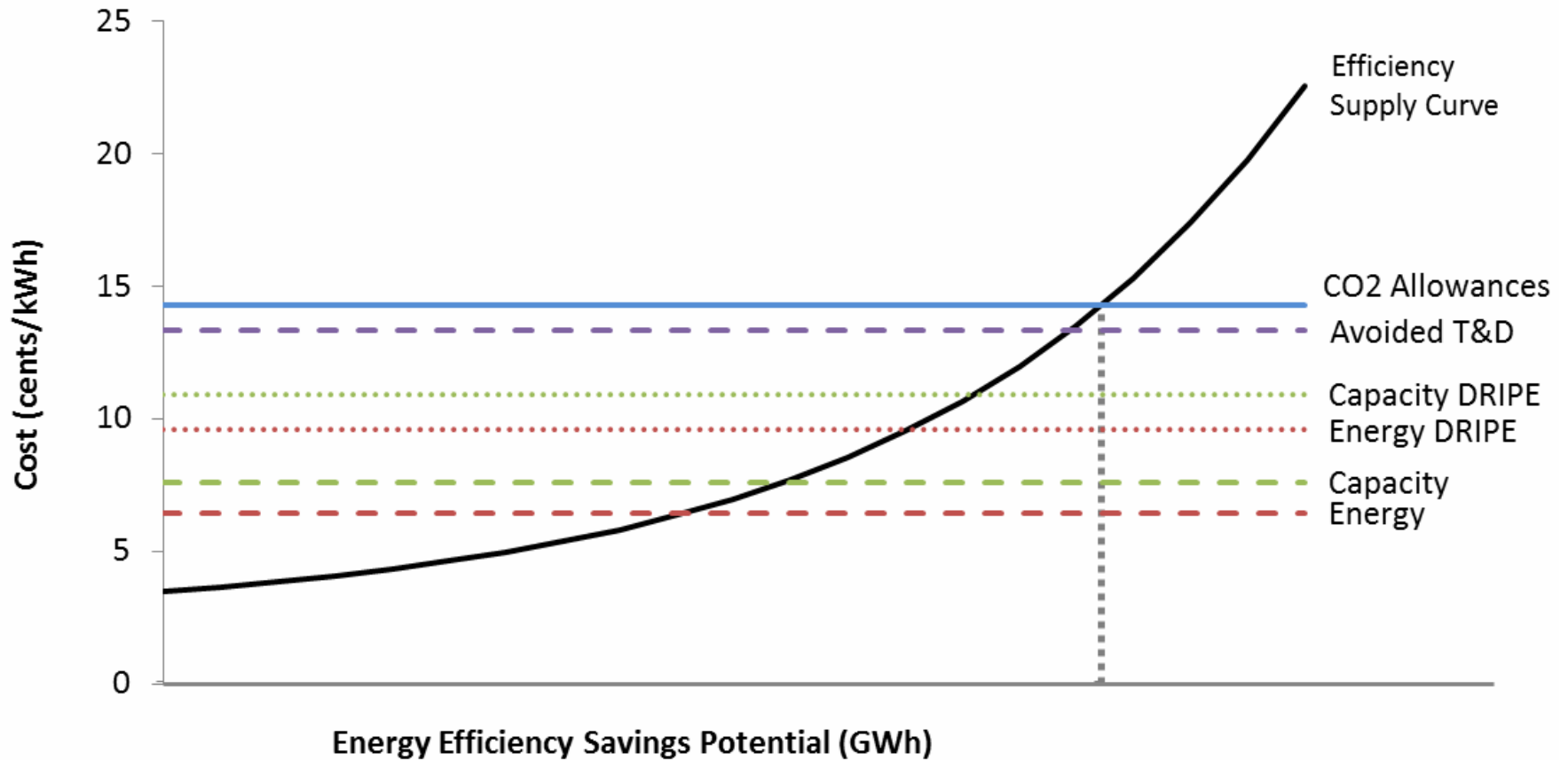
# A Few Options for a State-Based Avoided Cost of Carbon Compliance

- Ideally, the potential costs of compliance with state climate abatement requirements would be informed by a state-wide and economy-wide assessment of CO<sub>2</sub> abatement options and their costs (e.g., the McKinsey curve).
- As a second best, an electricity sector analysis of options and costs can be developed.
- The marginal abatement strategy would represent the avoided cost of compliance with the state's GHG limits. Everything that costs less than this option would be considered cost-effective.
- If neither a statewide nor an electricity sector analysis is available, a proxy can be developed and applied.

# Massachusetts – The ACP as a Proxy for the Avoided Cost of Compliance

- The Renewable Portfolio Standard (RPS) for Class 1 resources is a key policy mechanism in the state to help reduce CO<sub>2</sub> emissions. Suppliers of electricity must provide an increasing proportion of electricity to the Commonwealth from clean energy sources.
- Suppliers who cannot meet their RPS obligations are charged an Alternative Compliance Payment (ACP) for the gap. The ACP was established in 2003 and escalates annually. In 2011 it is ~\$62/MWh.
- The ACP is very likely to be less than the marginal cost of compliance to meet the state's Clean Energy and Climate Plan GHG emission limits, both for 2020 and in the later year targets.
- Efficiency provides many of the same carbon abatement benefits as do renewables.
- The ACP can be considered a proxy for the marginal cost of compliance with the Commonwealth's climate plan.

# Massachusetts Avoided Costs



# Applicability to Gas Measures and Avoided Fuel Oil

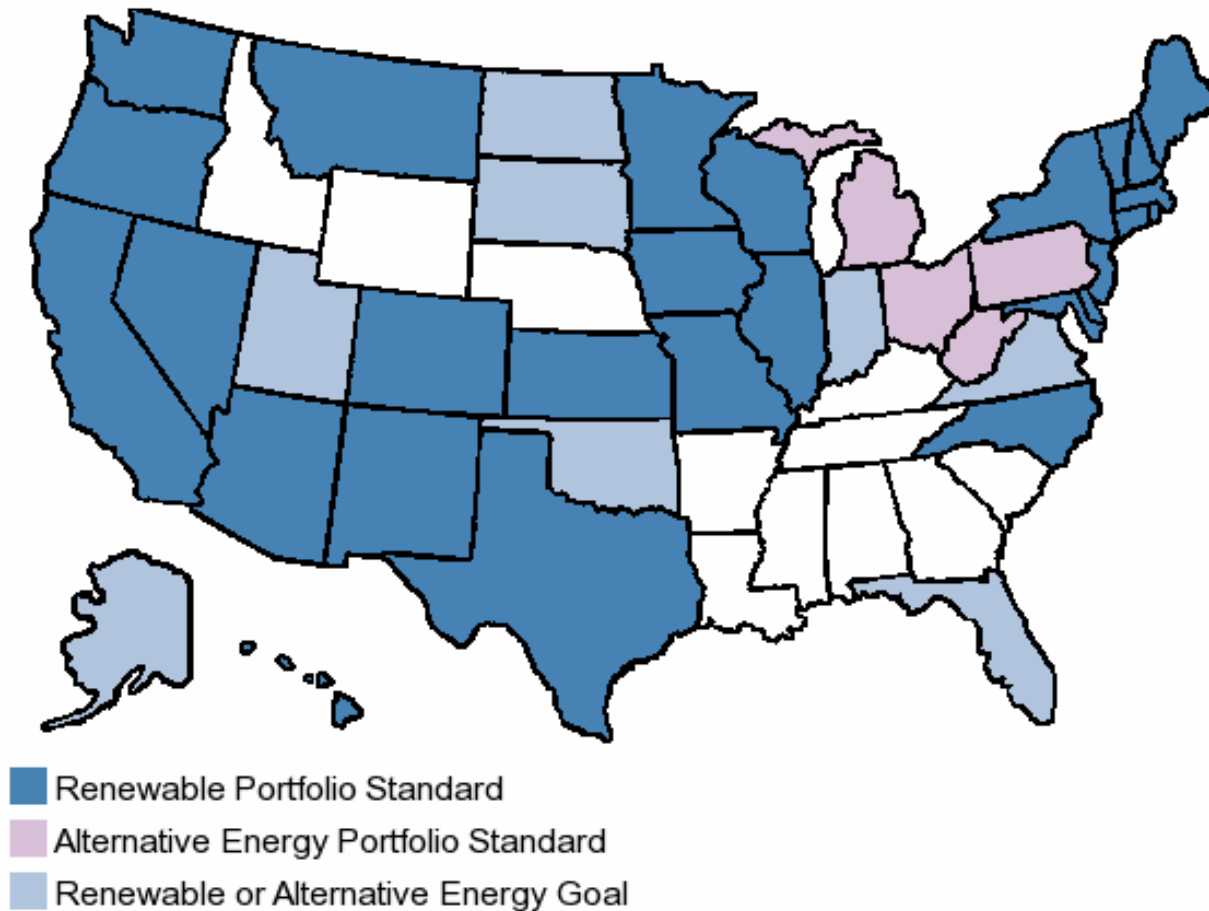
- The carbon emission limits set by the Clean Energy and Climate Plan and GWSA are expected to be met through a variety of strategies in all sectors of the economy.
- Reduction in the use of natural gas and fuel oil through the energy efficiency programs also reduce emissions.
- The cost of carbon abatement should thus also be included in gas measure benefit-cost screening and in valuing avoided use of fuel oil, based on the carbon content of those fuels.



# States with Renewable & Alternative Energy Portfolio Standards

(Pew Center on Global Climate Change)

<http://www.pewclimate.org/sites/default/modules/usmap/pdf.php?file=5907>



# Applicability to Other States

- Two thirds of states use either the TRC or the Utility/PA Cost test as the primary or secondary test in examining the benefits and costs of energy efficiency.
- To be applied properly, the TRC and Utility/PA Cost test should include the avoided cost of existing and anticipated environmental compliance.
- States with charges for RPS non-compliance can consider using those values as an avoided cost of carbon compliance in the context of energy efficiency benefit-cost analysis.

# Intended Consequences

- Inclusion of a high carbon compliance cost in avoided costs will not increase budgets or ratepayer bills. *Annual budgets for energy efficiency are typically set through negotiation and approved by regulators, with little opportunity for unanticipated over spending. Regulators have final say in setting rates so have opportunities to determine appropriate budget impacts.*
- Inclusion of a high carbon compliance cost will enable a wider range of measures to be offered to customers (with capped budgets this will reduce available funds for other efforts and perhaps encourage alternate program marketing).
- Inclusion of a carbon compliance cost in EE avoided costs links a state's climate abatement plan directly with the least cost strategy available to support the GHG reduction targets.

Thanks!