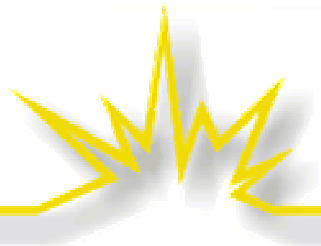


# Economic, Environment and Security Effects of Energy Efficiency and Renewable Energy: A Report for EPA and the New England Governors' Conference

NEEP Policy Conference  
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# Introduction

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## Regulatory Assistance Project

RAP is a non-profit organization, formed in 1992, that provides workshops and education assistance to state government officials on electric utility regulation. RAP is funded by the Energy Foundation and the US DOE.

Richard Sedano was Commissioner of the Vermont Department of Public Service, 1991-2001, and presently serves on the Montpelier Planning Commission



# The Task

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- Inspired by 2003 NEGC/ECP Resolution
  - ❖ Follows up on 2001 Climate Change Action Plan
- Assess existing energy efficiency and renewable energy policies in New England from 2000 and through 2010 for effects on
  - ❖ Economy
  - ❖ Environment
  - ❖ Energy Security
- Make Recommendations



# Tools

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## ➤ IMPLAN

❖ **An input/output model:** The IMPLAN model analysis traces the flow of goods and services, income, and employment among related sectors of the economy. The model computes the eventual sum of all of these purchases cycling through the economy, identifying direct effects, indirect effects, and induced effects.

## ➤ Synapse OTC Workbook

❖ **Relates incremental electric use to emissions of SO<sub>2</sub>, NO<sub>x</sub> and CO<sub>2</sub>**



# Economic Effects

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- Direct: outlays for specific goods and service purchased
- Indirect: further purchases from other segments of the economy down the chain
- Induced: profits and outlays for labor, taxes and so on result in further purchases of goods and services by households and government



# Efficiency is Cheap

## **New England Region 2002 Efficiency Program Investments and Savings**

<b>Public Benefit Funds Invested</b>	<b>Lifetime MWh Savings (Estimated)</b>	<b>Cost/kWh</b>
\$241,246,000	10,036,148	2.4 cents

Source: State level program reports and interviews with program administrators.



# Efficiency Benefits the General Economy

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- Existing EE programs expected to produce in New England
  - ❖ Over \$2 billion in economic output over the period 2000 – 2010.
  - ❖ Over a thousand jobs each year, on average, with more coming in latter years
  - ❖ Nearly \$700 million in wages during that time

## Energy Efficiency Program Impact: Output (000's of 2001 Dollars)

Year	Direct	Indirect	Induced	Total
<b>2000-2004</b>	429,547	103,243	237,202	769,993
<b>2005-2010</b>	577,262	173,177	480,349	<b>1,230,788</b>
<b>Total</b>	<b>1,006,809</b>	276,420	717,551	2,000,781

## Energy Efficiency Program Impact: Employment (Job-years)

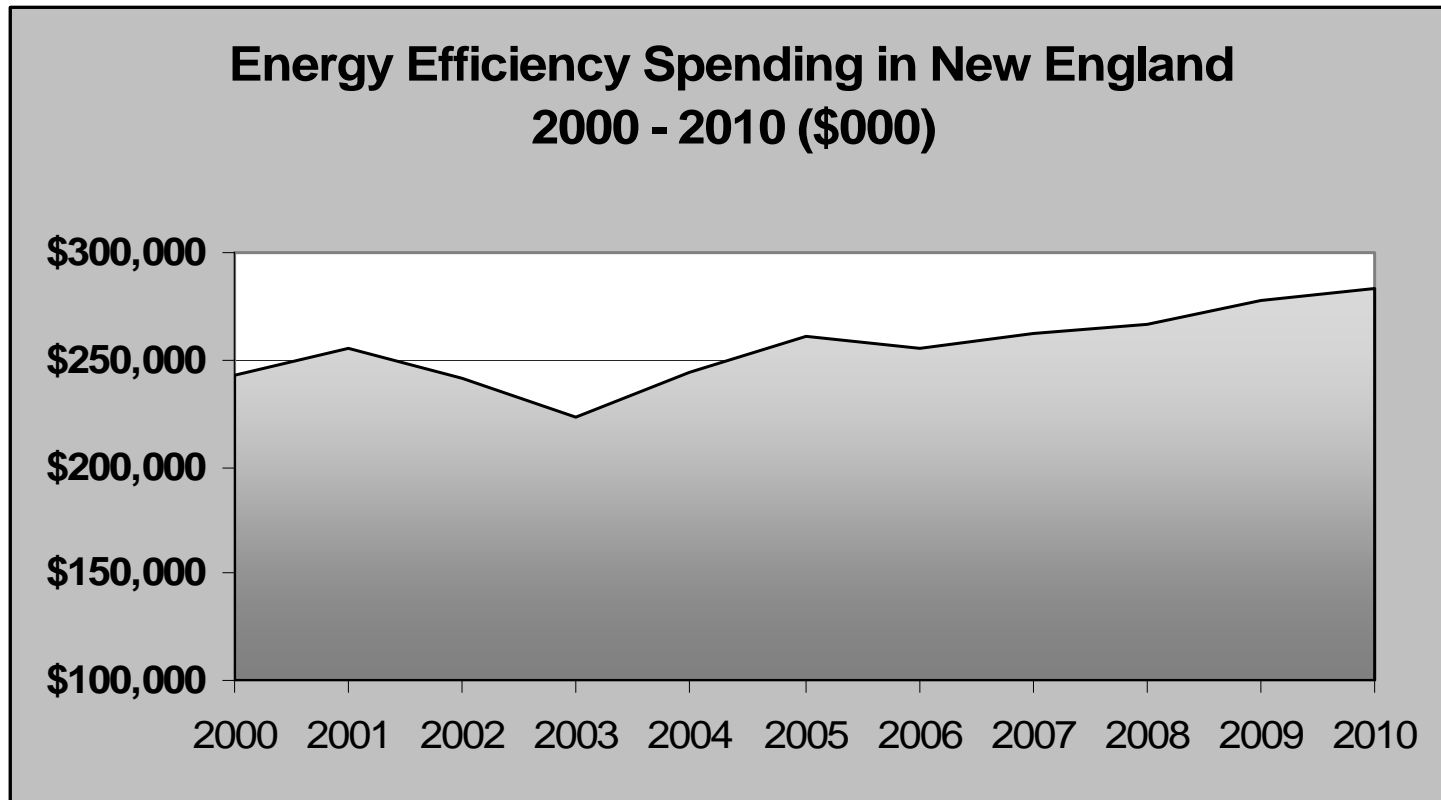
Year	Direct	Indirect	Induced	Total
<b>2000-2004</b>	1,724	1,037	2,337	5,099
<b>2005-2010</b>	3,231	1,707	4,959	<b>9,894</b>
<b>Total</b>	4,955	2,744	<b>7,296</b>	15,533

## Energy Efficiency Program Impact: Labor Income (000's of 2001 Dollars)

Year	Direct	Indirect	Induced	Total
<b>2000-2004</b>	105,361	40,633	91,653	237,646
<b>2005-2010</b>	188,225	70,163	197,761	<b>456,151</b>
<b>Total</b>	293,586	110,796	<b>289,414</b>	693,797

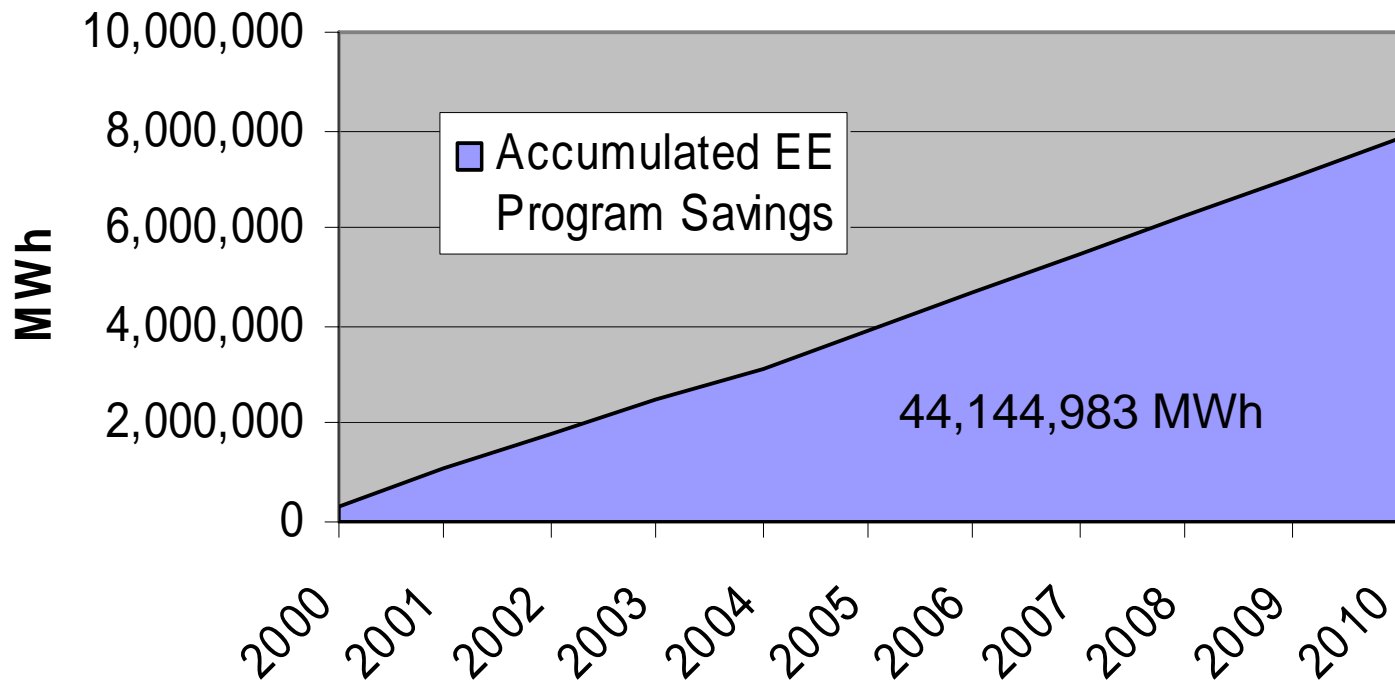


# Assuming Steady EE Spending Policies



Increase due to sales growth and volume-driven charge

# Accumulated Annual EE Program Savings 2000 - 2010 (MWh)





# Air Emissions Effects from Current Energy Efficiency

## Modeling Results: Emissions Reductions Due to Electric Energy Efficiency, 2000-2010 (tons)

	NO <sub>x</sub>	SO <sub>2</sub>	CO <sub>2</sub>
<b>2000-2010 Total</b>	18,147	54,608	18,767,151



# Energy Security

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- Slowing growth in sales and peak has value
  - ❖ Energy efficiency has saved hundreds of MW on peak
  - ❖ Emergencies such as Jan 2004 cold snap reveal value of these savings
- EE helpful in SW CT
  - ❖ This approach is infrequent, not routine

# Recommendations

## Regional Coordination

- 1 Constitute a regional state committee. (NESCOE)
- 2 Value fully energy efficiency and renewable energy in wholesale markets.
- 3 Improve consistency of regional energy efficiency programs.
- 4 Support the New England Combined Heat and Power Initiative.
- 5 Make use of the New England Generation Information System
- 6 Coordinate Renewable RD&D.
- 7 Adopt consistent appliance and equipment efficiency standards

## Regulatory and Policy Actions

- 8 Decouple utility net income from sales. \*
- 9 Maintain support for energy efficiency programs; reconsider budget caps.
- 10 Implement portfolio management for electric resources.
- 11 Re-integrate energy efficiency among electric resources.
- 12 Recognize locational benefits of “smaller” resources.
- 13 Target energy efficiency at peak loads.
- 14 Target energy efficiency at demand response customers.
- 15 Implement dynamic pricing through pilots.
- 16 Air quality rules should encourage clean distributed generation.
- 17 Re-engineer distribution planning to highlight high cost places.
- 18 Institute fair and uniform interconnection rules, business rules, and pre-certified equipment.
- 19 Establish a stable counter-party for long term renewable power contracts.
- 20 Support evaluation, monitoring and verification (EM&V) for energy efficiency and renewable energy funds.
- 21 Recruit businesses as voluntary partners to reduce carbon through EE/RE.

## Recommendations for Collaboration

- 22 Identify and implement best practices for siting wind power.
- 23 Support Regional Greenhouse Gas Initiative.



# Other notes on EE research

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- Hard to get some data
- Hard to get data in consistent formats
- We did not look at expanding EE spending beyond current policies
  - ❖ “procurement-based” EE
  - ❖ Higher caps
  - ❖ Could apply to NEEP regional potential analysis
- More EE would reduce need for renewable energy, offsetting some economic effect





# Thanks for your attention

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❖ RAP Mission: *RAP is committed to fostering regulatory policies for the electric industry that encourage economic efficiency, protect environmental quality, assure system reliability, and allocate system benefits fairly to all customers.*