

# Rhode Island Energy System Challenges

*Points of Crisis and Opportunity*

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University of Rhode Island  
Energy Lecture Series  
February 6, 2008

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Policy Advocate



**Environment  
Northeast**

# Environment Northeast

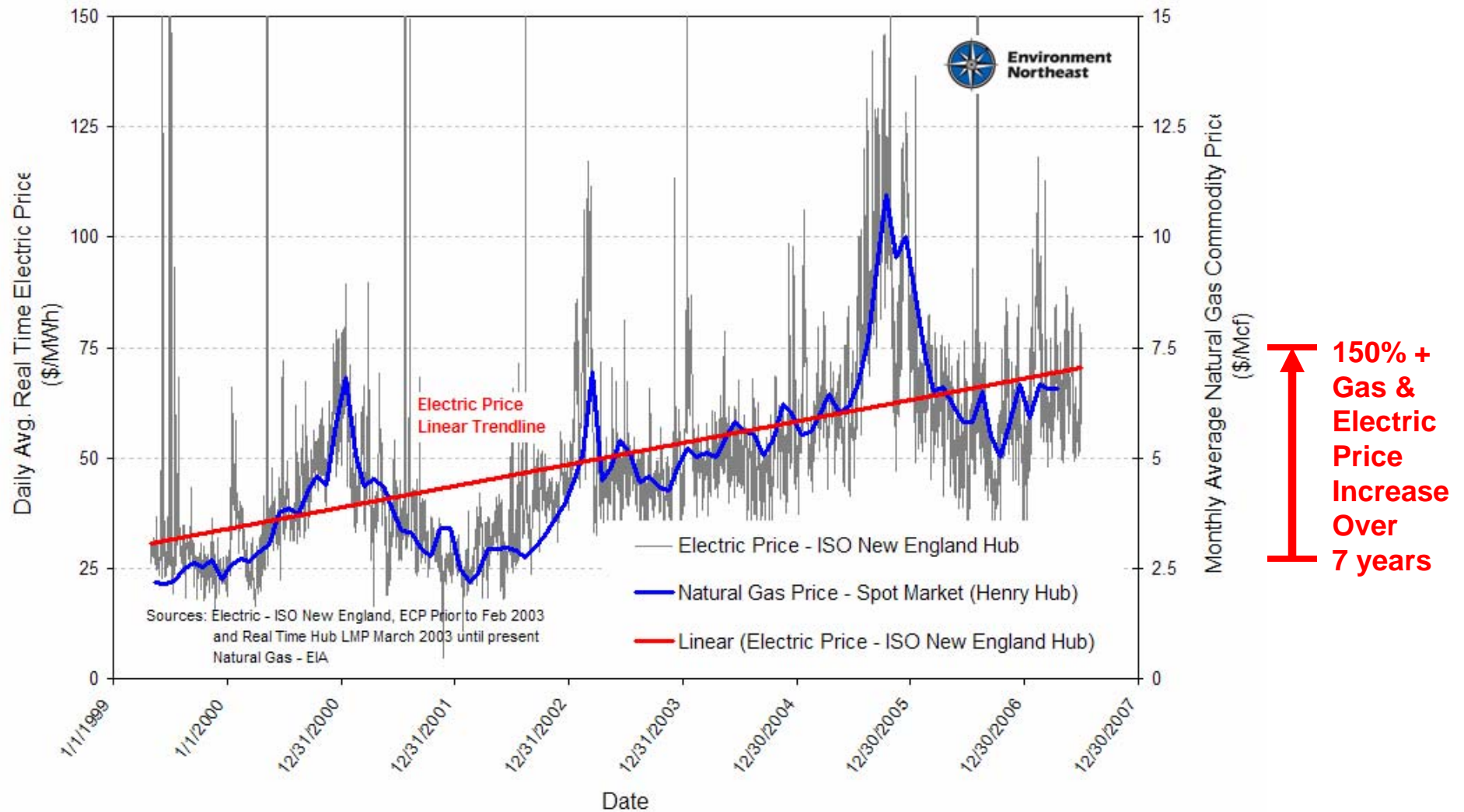
## *Who We Are*

- Environmental Policy Research and Advocacy
  - Non-profit NGO
  - Offices: Rockport, ME / Portland, ME / Boston, MA / Providence, RI / Hartford, CT / New Haven, CT / Charlottetown, PEI
  - Regional approach
- Program Areas
  - Energy Policy
  - Climate Change
  - Diesel Pollution Initiative
  - Forest Practices Initiative
- Environment Northeast is a nonprofit research and advocacy organization focusing on the Northeastern United States and Eastern Canada. Our mission is to address large-scale environmental challenges that threaten regional ecosystems, human health, or the management of significant natural resources. We use policy analysis, collaborative problem solving, and advocacy to advance the environmental and economic sustainability of the region.

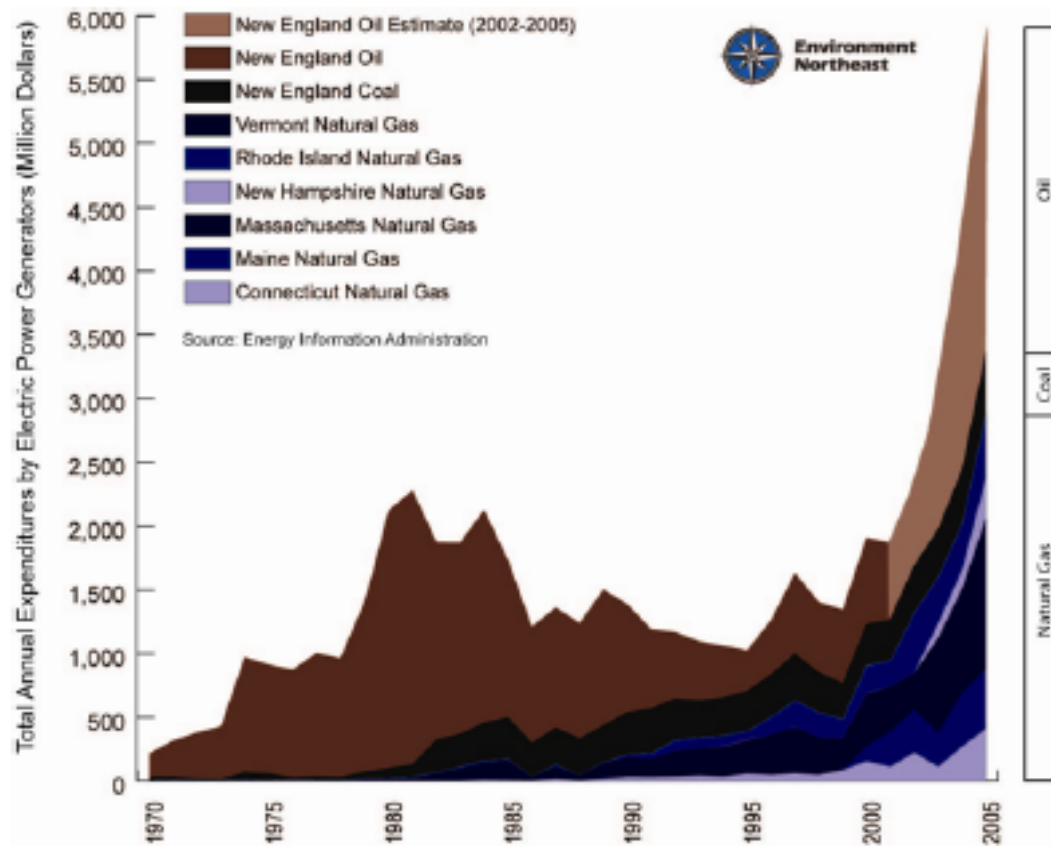


# Natural Gas Prices vs. Electric Prices

(fossil fuel prices – especially gas are a major driver)



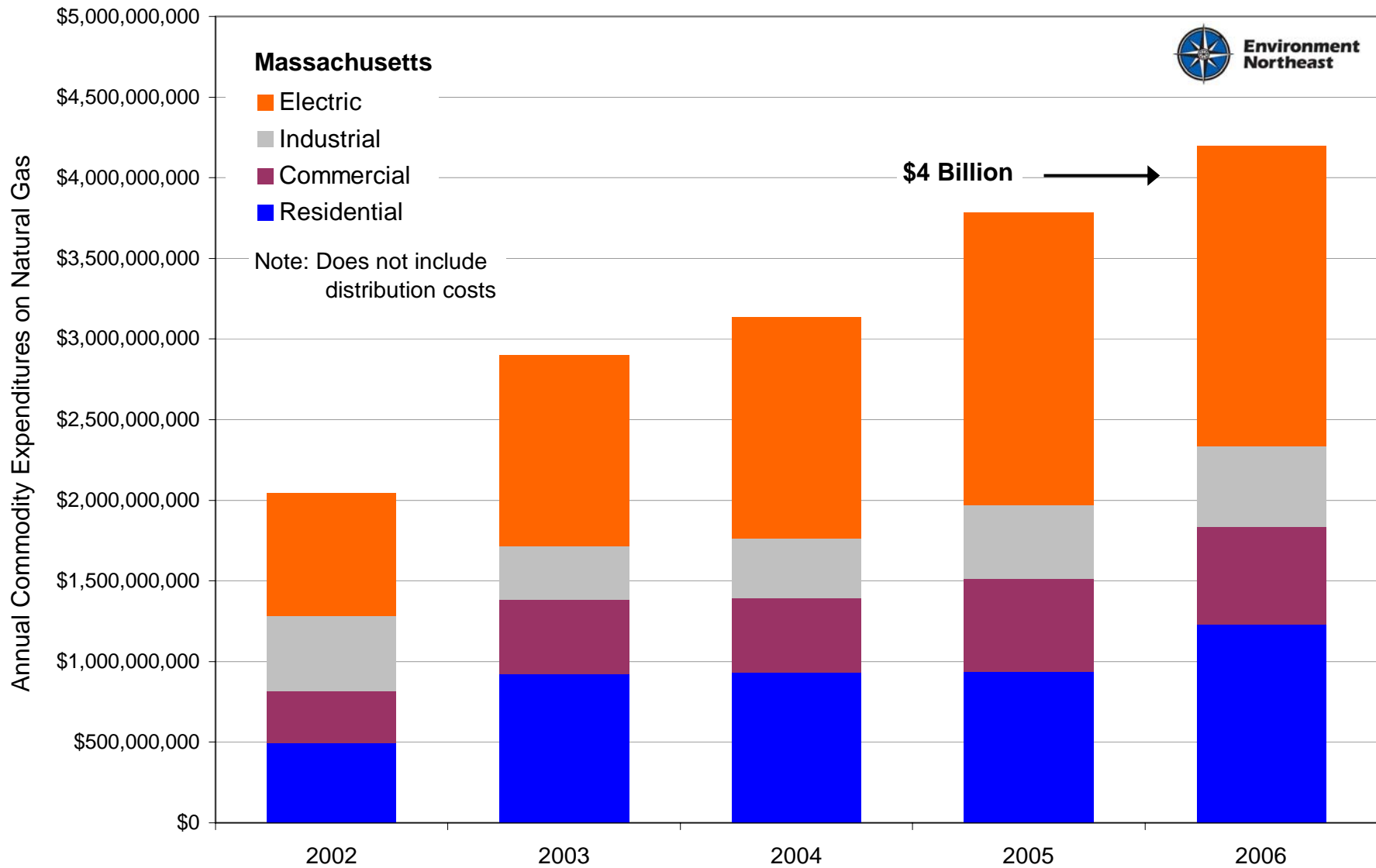
# Fossil Fuel Consumption & Cost for Electric Power Generation



**200% +  
Spending  
Increase Over  
5 years**  
(Jan '00 - '05)

**2000**    **2005**  
**\$2 B** → **\$6 B**

# Spending on Commodity Natural Gas



Source: Energy Information Administration  
Assumes City Gate Prices

Year

# Fundamental Law of Economics Applies to Energy

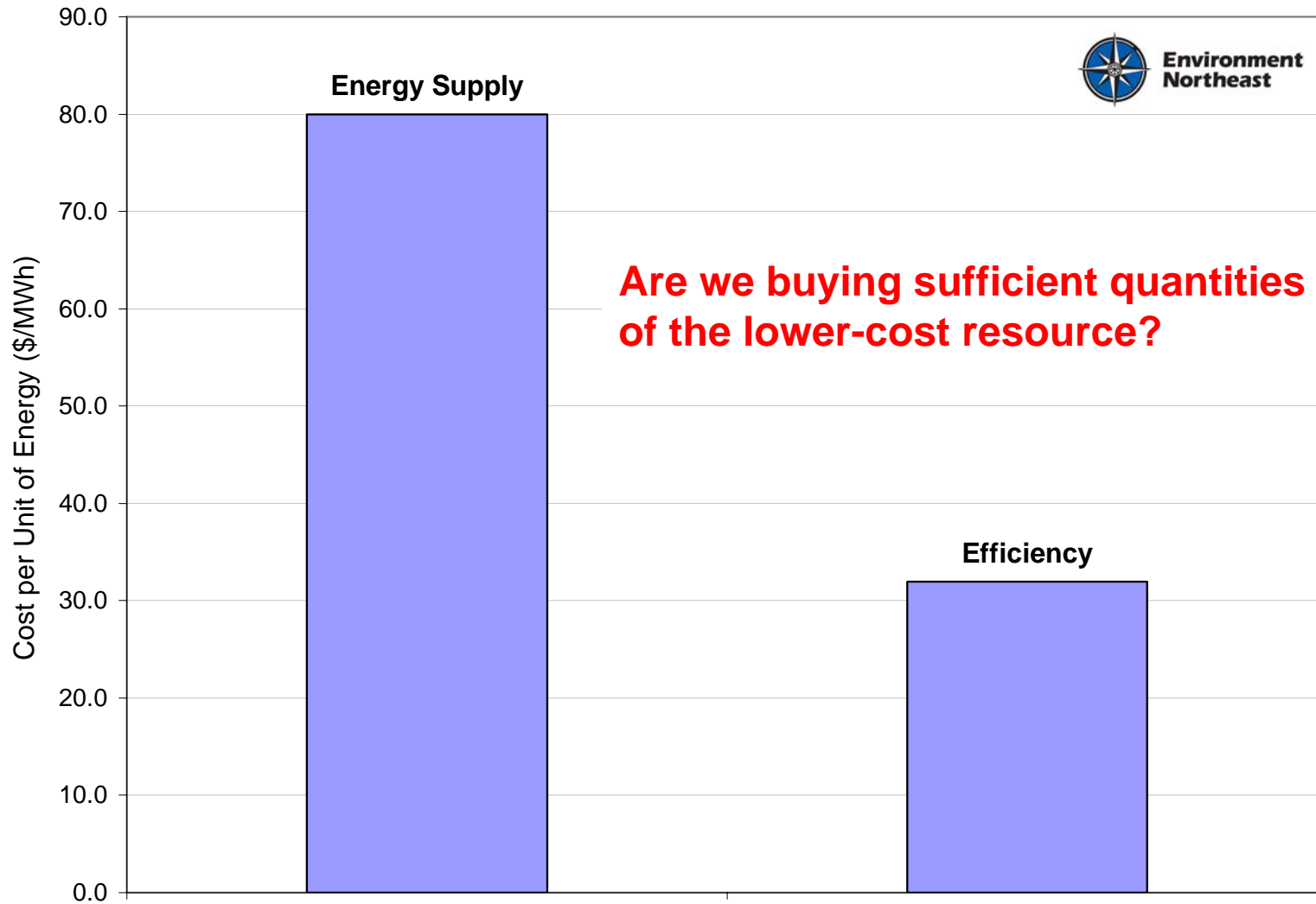
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$$\underline{\text{C}}\text{ost} = \underline{\text{P}}\text{rice} \times \underline{\text{Q}}\text{uantity}$$

**Sharp increase in Price** is driving energy Cost up in RI. As a result:

- **\$1.35 Billion** leaves RI's economy each year for commodity energy
  - Sharp rise from **\$700M in 2003** → **\$1.35 Billion in 2006**
- **50%+ increase** in commodity cost portion of electric bills since 2003
- **90%+ increase** in cost for natural gas & fuel oil since 2003
- **Goal:** Making energy more affordable, reliable, and sustainable for all Rhode Islanders
  - Large users, Medium sized users, Residential users
  - Increased Local Energy Resources and Lower Energy \$ Exports
- We can't control energy supply prices of fossil fuels as the markets are national and transnational,
  - But we can control quantity (efficiency) and local renewable energy supply (wind, wave, tidal, solar, biomass, etc)

# Electric Supply Costs vs. Efficiency Costs

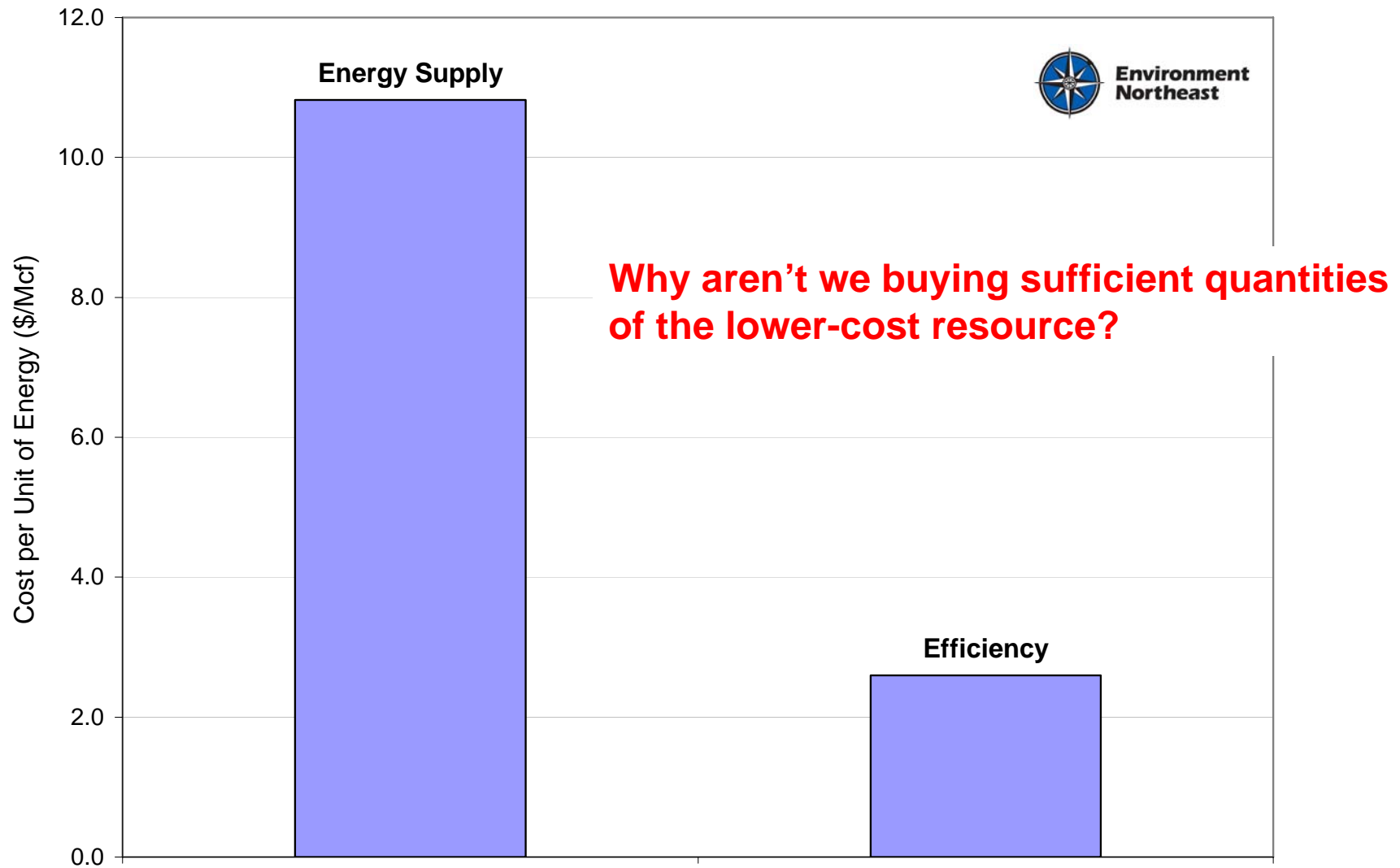


# A Need to Ensure RI Utilities Invest in the Low Cost Resource

*Today's Electric Spending in Rhode Island*



# Natural Gas Supply Costs vs. Efficiency Costs



# Utility Sector Energy Efficiency in New England 1996-2006

- Electric utility restructuring in the mid-1990s led to the creation of System Benefit Charges (SBC) for electric energy efficiency
  - Administered by the DISCOs
- Example: System Benefit Charge levels and funding amounts 2004-2005

State	CT	ME	MA	NH	RI	VT	Total
Mills/kWH	3.0	1.5	2.5	1.8	2.0	2.5	
Annual Budget	\$62M	\$10.6M	\$120M	\$16.5M	\$21.7M	\$17.5M	\$250M

# A Solution Proposed: *“The Comprehensive Energy Efficiency, Conservation, and Affordability Act of 2006”*

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- **RI Energy Act of 2006**

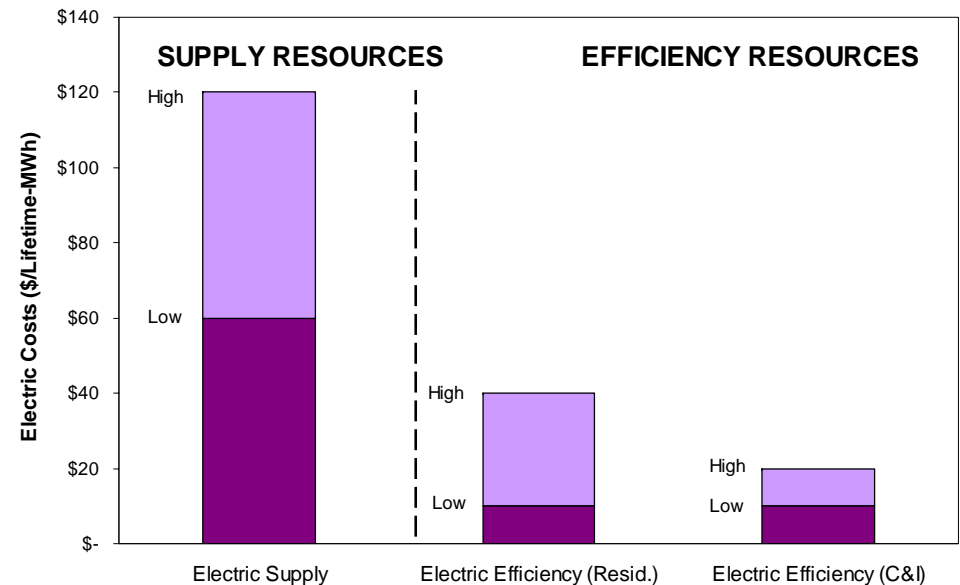
- **“Least Cost Procurement” Mandate** – mandates all cost-effective energy efficiency, DG, renewables, combined heat and power, and demand response be procured before traditional supply, with the savings are passed onto consumers.
  - Energy Efficiency Procurement
  - System Reliability Procurement
    - Renewables, Distributed Generation, Demand Response, Combined Heat and Power
- **Energy Efficiency & Resource Management Council** – New ratepayer council appointed by Governor with Senate advice and consent to give customers a role in energy decisions, help guide state policy, and lower costs.
- **Office of Energy Resources** – Improves state government role in long term planning and oversight and to develop and put into effect plans to promote, encourage, and assist the provision of energy resources in a manner that is consistent with economic, social, and environmental goals.
- **Natural Gas Efficiency Program** – enables cost savings for natural gas consumers by creating Rhode Island’s first large scale rate-payer funded efficiency program

# Least Cost Procurement Timeline

<u>Month</u>	<u>Action Step</u>
Sept – Feb '08 <i>(6 months)</i>	<b>Council drafts recommendations on PUC rules needed for System Reliability &amp; Energy Efficiency (EE) procurement to work</b>
March 1, '08	<b>OER/Council submit recommendations on least cost procurement rules to PUC</b>
June '08	<b>PUC issues procurement rules for System Reliability &amp; EE Procurement</b>
July 15, '08	<b>Council submits “Opportunity Report” that identifies cost effective opportunities to procure EE, DG, DR, RE to utility, PUC, OER, and Leg.</b>
Sept 1, '08	<b>Utility submits System Reliability &amp; EE Procurement Plan to the PUC. Plan must include target percentages for efficiency, DR, DG, and renewables.</b>
November	<b>PUC order with regard to reliability &amp; efficiency procurement plan w/in 60 days of receipt.</b>
Dec 15/Feb 1 '09	<b>Utility submits a “public status report on the implementation LCP” reporting actual achieved percentages of efficiency, DG, DR, CHP, and renewables to PUC, the Division, OER, and the Council.</b>
March 1, '09	<b>Utility submits proposed Supply Procurement Plan.</b>

# Results of Least Cost Procurement

- **Increased Reliability**
- **Lower Energy Costs**
- **Cleaner Energy System and Reduced CO2 and other Air Pollution**
- **Increased Local Energy Resources and Lower Energy \$ Exports**
- **Meet State Goals for Renewable Energy**



# But Rate Design Could be a Problem – How are Rates Currently Set?

1. Electric and gas utilities appear before the PUC in a rate proceeding to determine the total fixed costs (i.e., lines, buildings, personnel) they are allowed to recover.
2. The approved costs are then divided by estimated sales to determine the per kwh or per therm distribution charge.
3. Once the rate is set, utilities have a strong incentive to find ways to increase sales in order to maximize their profits. *The utility gets to keep the amount they collect even when it's more than the allowed revenue set in Step 1.*
4. Efficiency, DG/CHP, and demand side programs, which reduce energy consumption and sales, cut into utility earnings and are not likely to receive the support from the utility that would maximize customer cost savings.
  - Utility and customer interests are NOT aligned
  - Loss of sales – *customer savings* – due to energy efficiency and DG/CHP lower utility profitability dramatically

# Assumptions for A Sample Utility

Assumptions						
Operating Expenses	\$160,000,000					
Rate Base	\$200,000,000					
Tax Rate	35.00%					
Cost of Capital	% of Total	Cost Rate	Weighted Cost Rate		Dollar Amount	
			Pre-tax	After-Tax	Pre-Tax	After-Tax
Debt	55.00%	8.00%	4.40%	2.86%	\$8,800,000	\$5,720,000
Equity	<u>45.00%</u>	11.00%	4.95%	<u>7.62%</u>	<b>\$9,900,000</b>	\$15,230,769
Total	100.00%			10.48%		
Revenue Requirement						
Operating Expenses	\$160,000,000					
Debt	\$5,720,000					
Equity	\$15,230,769					
Total	\$180,950,769					
Allowed Return on Equity	\$9,900,000					

Source: Regulatory Assistance Project (RAP)



# How Changes in Sales Affect Earnings

## – *Today's System*

% Change in Sales	Revenue Change		Impact on Earnings		
	Pre-tax	After-tax	Net Earnings	% Change	Actual ROE
<b>5.00%</b>	\$9,047,538	\$5,880,900	\$15,780,900	<b>59.40%</b>	17.53%
<b>4.00%</b>	\$7,238,031	\$4,704,720	\$14,604,720	<b>47.52%</b>	16.23%
<b>3.00%</b>	\$5,428,523	\$3,528,540	\$13,428,540	<b>35.64%</b>	14.92%
<b>2.00%</b>	\$3,619,015	\$2,352,360	\$12,252,360	<b>23.76%</b>	13.61%
<b>1.00%</b>	\$1,809,508	\$1,176,180	\$11,076,180	<b>11.88%</b>	12.31%
0.00%	\$0	\$0	\$9,900,000	<b>0.00%</b>	11.00%
<b>-1.00%</b>	-\$1,809,508	-\$1,176,180	\$8,723,820	<b>-11.88%</b>	9.69%
<b>-2.00%</b>	-\$3,619,015	-\$2,352,360	\$7,547,640	<b>-23.76%</b>	8.39%
<b>-3.00%</b>	-\$5,428,523	-\$3,528,540	\$6,371,460	<b>-35.64%</b>	7.08%
<b>-4.00%</b>	-\$7,238,031	-\$4,704,720	\$5,195,280	<b>-47.52%</b>	5.77%
<b>-5.00%</b>	-\$9,047,538	-\$5,880,900	\$4,019,100	<b>-59.40%</b>	4.47%

Source: Regulatory Assistance Project (RAP)



# What is Decoupling?

- Today, utility profits increase with sales – when customers conserve energy or employ cost saving DG/CHP, the utilities lose money.
- Decoupling is critical step towards the larger goal of increasing investments in cost saving EE and DG/CHP
- It is a new way to regulate how utilities get paid. It breaks the link between the utilities' profits and their sales volume, enabling the utilities to become full partners in energy efficiency and DG/CHP without losing money.
- Decoupling changes only the way utilities are compensated for their distribution costs. Consumers pay two major fees on gas and electric bills:
  - One for the energy they use and second is for the utility's cost of delivering the energy.
    - Distribution costs are a component of the delivery charge, and include fixed costs, such as those for poles, distribution lines, substations, and personnel.
    - Although these costs are fixed, consumers pay for them, in part, through a charge based on the amount of energy they use – which can lead to over-collection.
- With decoupling, the distribution charges are adjusted annually slightly so that the utility does not collect more or less than it is allowed by the state regulators, regardless of any consumer change in energy consumption.
- The utility becomes neutral to sales volume and therefore decoupling is critical step towards the larger goal of increasing investments in cost saving EE and DG/CHP

# How Does Decoupling Work?

- Full Decoupling Mechanism

- Keep it simple! – decoupling does not allow you to avoid all the debates in a rate case around the revenue requirement
- Step 1: Determine, through a rate case, a methodology for annual revenue requirement adjustments that does not involve sales levels, but rather relies on inflation, capital requirements, productivity, customer changes, or similar factors
  - Open process so interested parties can vet purported utility costs
  - This is where the fight is and a lot of work is done to ensure valid costs.
- Step 2: Simply true up actual distribution revenues to the allowed levels on an annual or quarterly basis and slightly adjust the volumetric distribution charges accordingly.
  - If the utility has over-collected, then return the money to customers.
- Do not attempt to “normalize” sales for weather or economic conditions as part of the true up.

## Does decoupling guarantee utility profits? – No

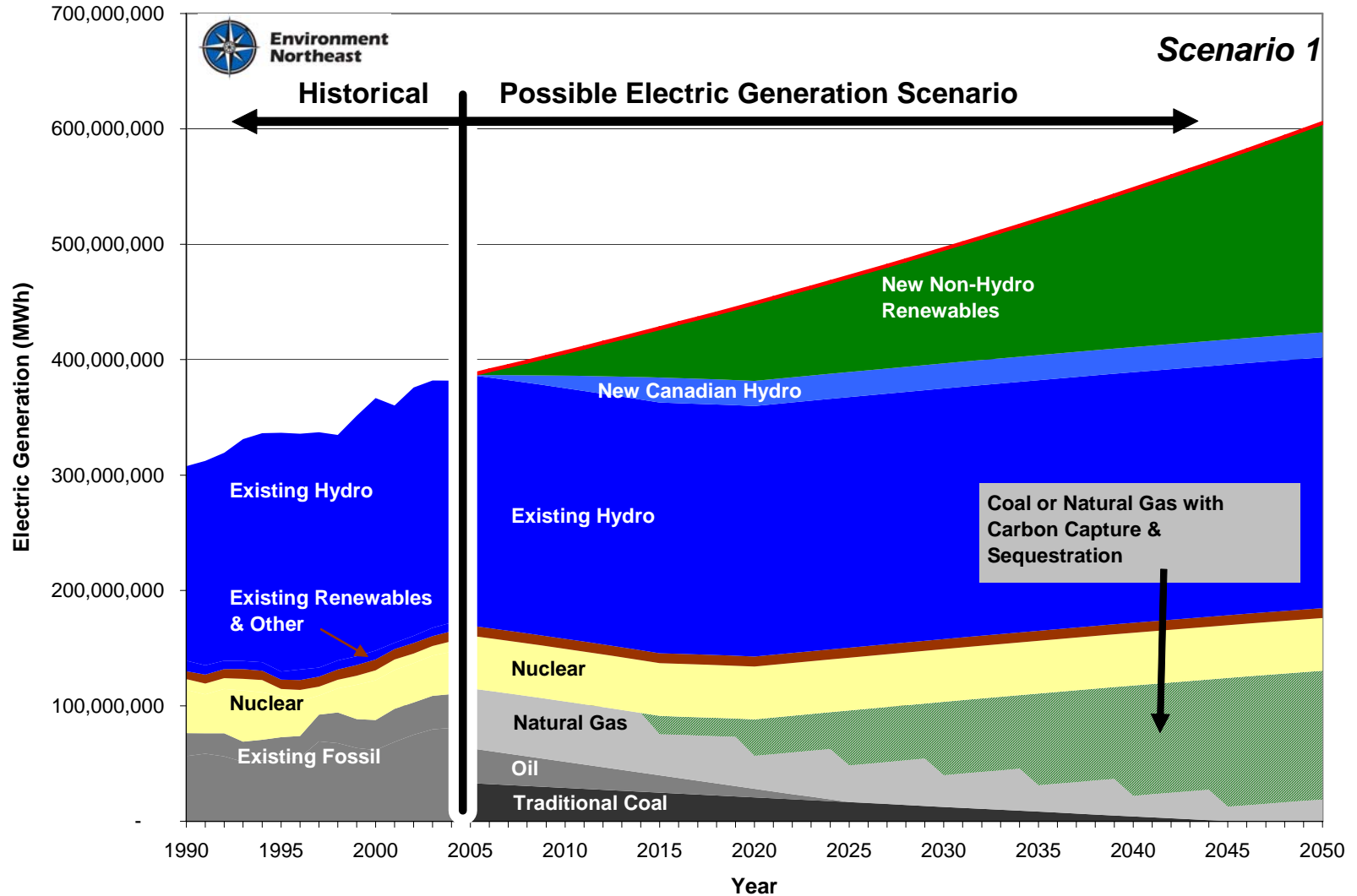
- Decoupling only permits a utility to recover an amount of revenue that has been approved by the public utility commission
- This amount is calculated to allow for reasonably foreseeable costs as well as a fair rate of return on shareholder investment
- Without decoupling, a utility can collect more than its allowed revenue if it sells more energy and any revenue that exceeds costs goes directly to profits for shareholders – decoupling eliminates this
- Moreover, like any business, if a utility fails to manage its costs, its profits will decrease because a larger than expected portion of its allowed revenue will go to pay for costs, rather than to rewarding its shareholders.

# Upcoming Decoupling Activities

- Connecticut:
  - 2007, Connecticut House Bill No. 7432, *An Act Concerning Electricity and Energy Efficiency*, requires that all electric and natural gas utilities decouple at their next rate case
- Massachusetts
  - DPU initiated a general decoupling investigation, that is meant to complement the expected legislative changes around efficiency
  - DPU developed a decoupling straw proposal with a true up on an annual or quarterly basis and participants have been asked to react to it
- New Hampshire:
  - PUC Docket No. DE 07-064 – “intend to investigate ratemaking alternatives, such as decoupling, which would remove obstacles to and encourage energy efficiency”
  - Looking at both electric and natural gas and also considering the benefits/impacts related to DG/CHP
- California
  - Has had decoupling for most of the past 25 years and adjustments have been so small consumers have been barely able to notice.

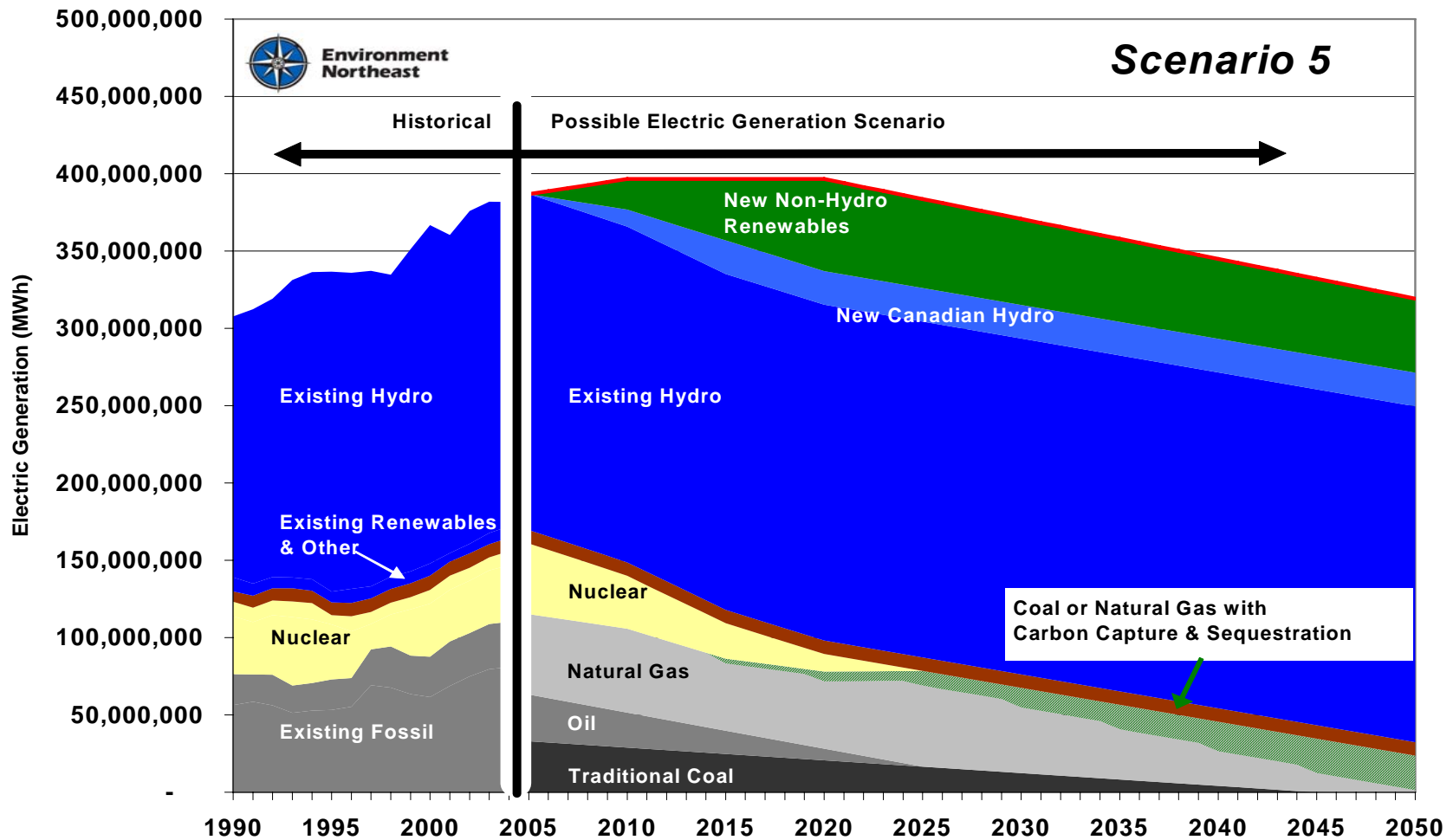
# Scenario 1: Electric Sector Clean-up

Steady load growth, Aggressive Renewables; Nukes needed



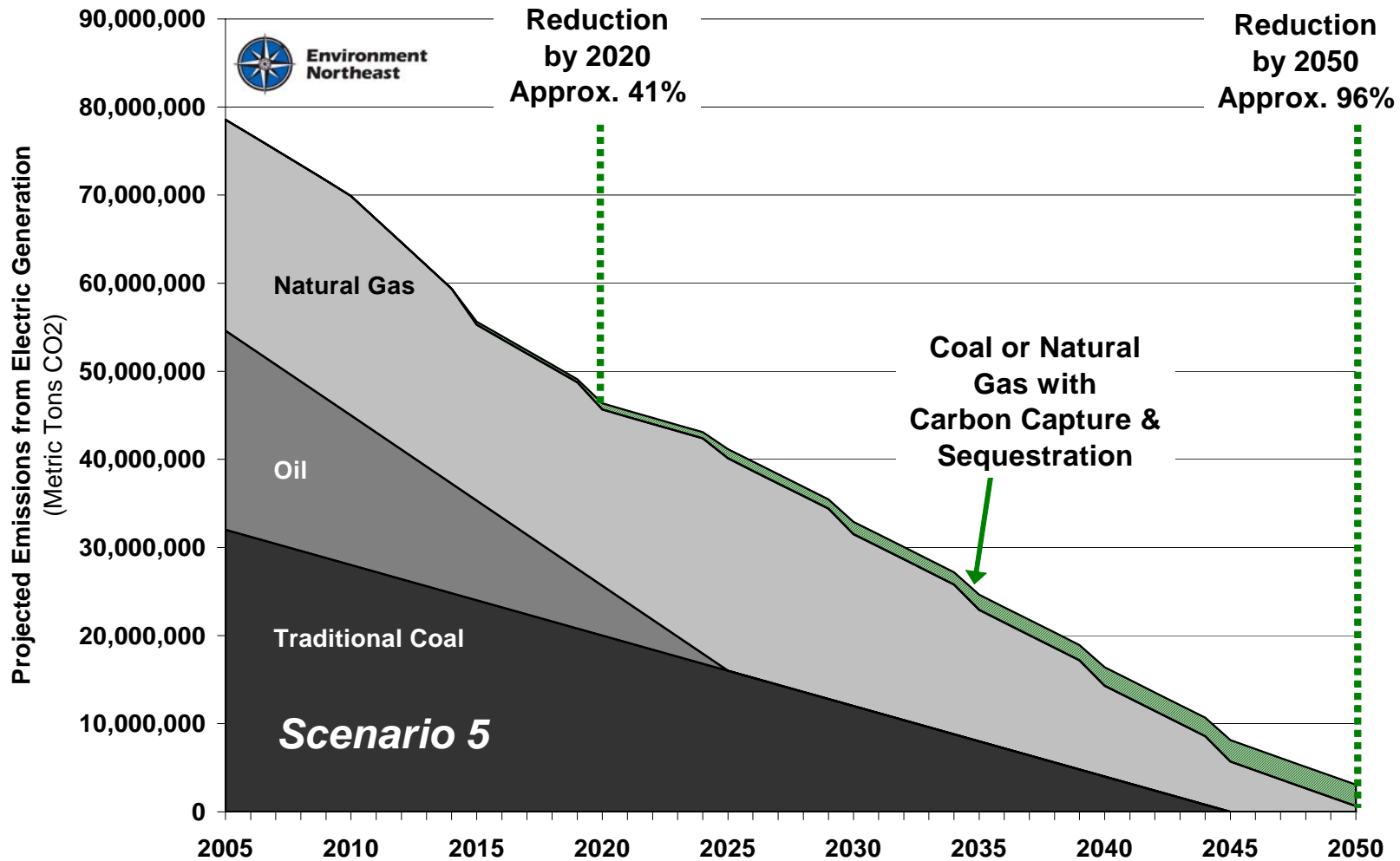
# Scenario 5: Electric Sector Clean-up

Aggressive Energy Efficiency & Increased Renewables;  
Phase-out Nukes



# Electric Sector Clean-up: Scenario 5

## GHG Emission Reductions



# Contact Information

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