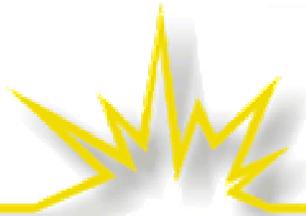


# Energy Efficiency Importance among Electric Resources

Arkansas Workshop on Energy Efficiency  
Richard Sedano  
February 21, 2006

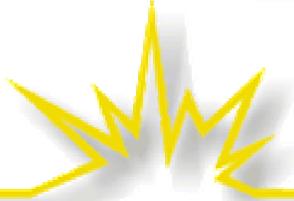


## *The Regulatory Assistance Project*

*50 State Street, Suite 3  
Montpelier, Vermont USA 05602  
Tel: 802.223.8199  
Fax: 802.223.8172*

*177 Water St.  
Gardiner, Maine USA 04345  
Tel: 207.582.1135  
Fax: 207.582.1176*

Website:  
<http://www.raponline.org>



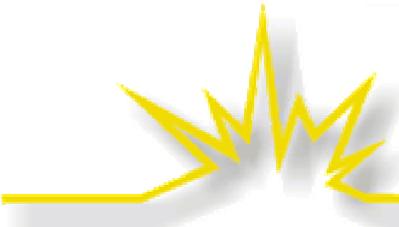
# Introduction

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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.

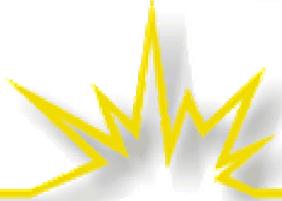
Richard Sedano was Commissioner of the Vermont Department of Public Service, 1991-2001, and presently serves on the Montpelier Planning Commission



# The Why and How of Energy Efficiency

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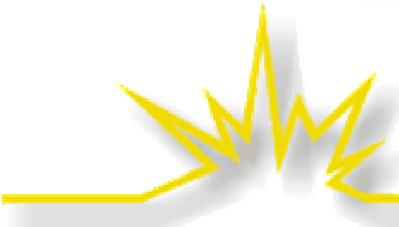
- Challenges and Risks of Growth
- Getting Incentives Right
  - ❖ This afternoon's excellent panel
- Executing Cost-Effective Programs Well
  - ❖ This morning's excellent panel



# Growth?

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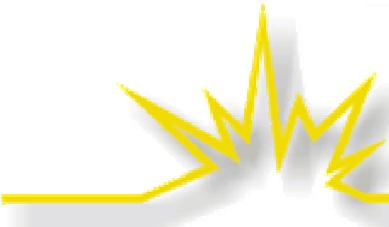
- Balance extracted natural resources with customer resources with environmental considerations and new methods
- Long term outlook
- Effects of *MARKETREGULATION*
- Economic Growth  $\neq$  Energy Use Growth
- What do customers want?



# How will we meet environmental goals?

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- “My work with the (National) Commission (on Electric Policy) has reaffirmed my long-held view that energy and environment policy are inextricably linked....
- I believe that the science supporting global climate change is overwhelming.” --- John Rowe, CEO, Exelon 2004



# Analysis Turns

## Environmental Goals into Strategy

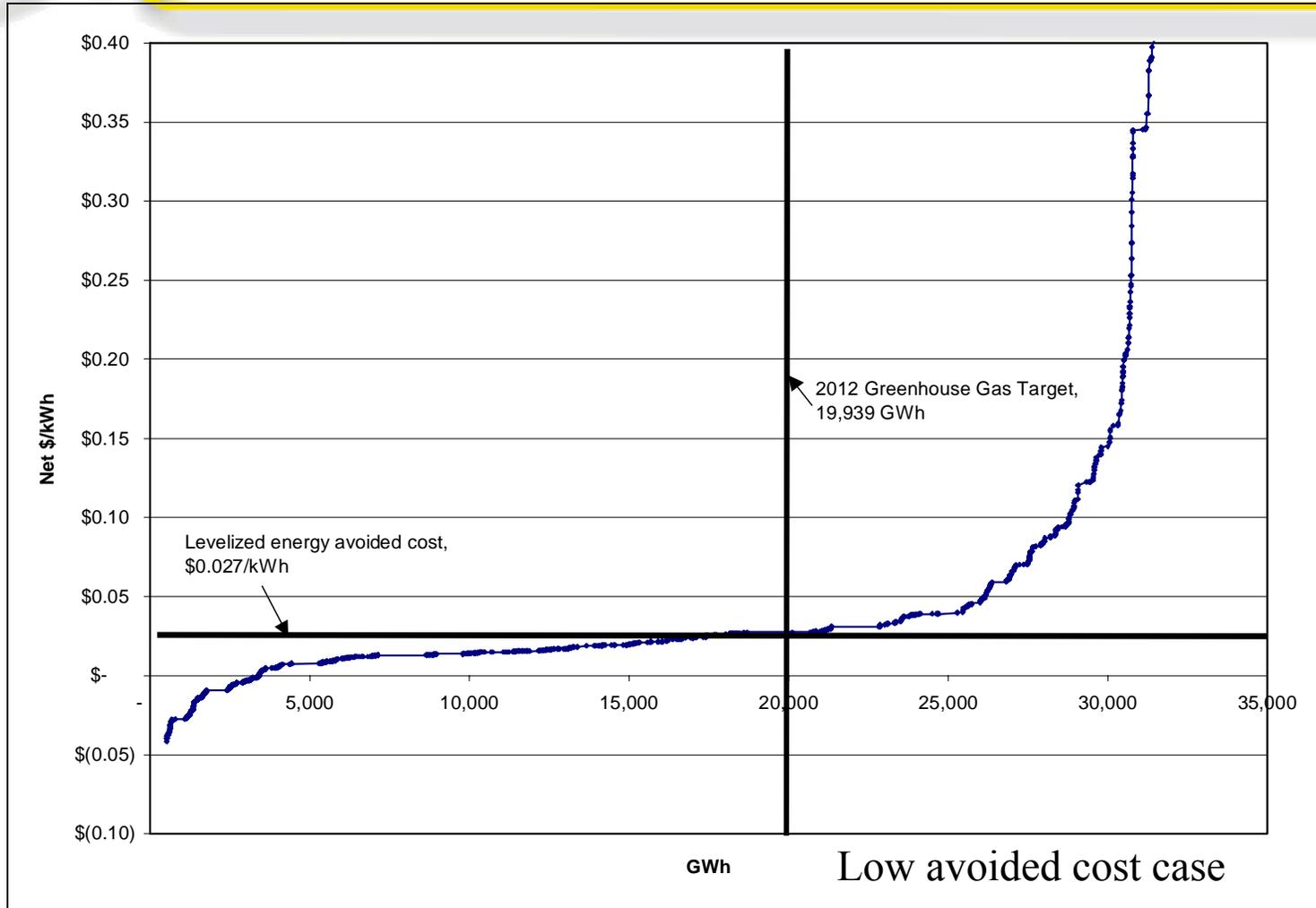
### ➤ NYSERDA

- ❖ A potential analysis for Energy Efficiency and Renewable Energy for New York
- ❖ <http://www.nyserda.org/sep/EE&ERpotentialVolume1.pdf>
- ❖ Meeting Climate Change Goals with clean resources: a supply curve

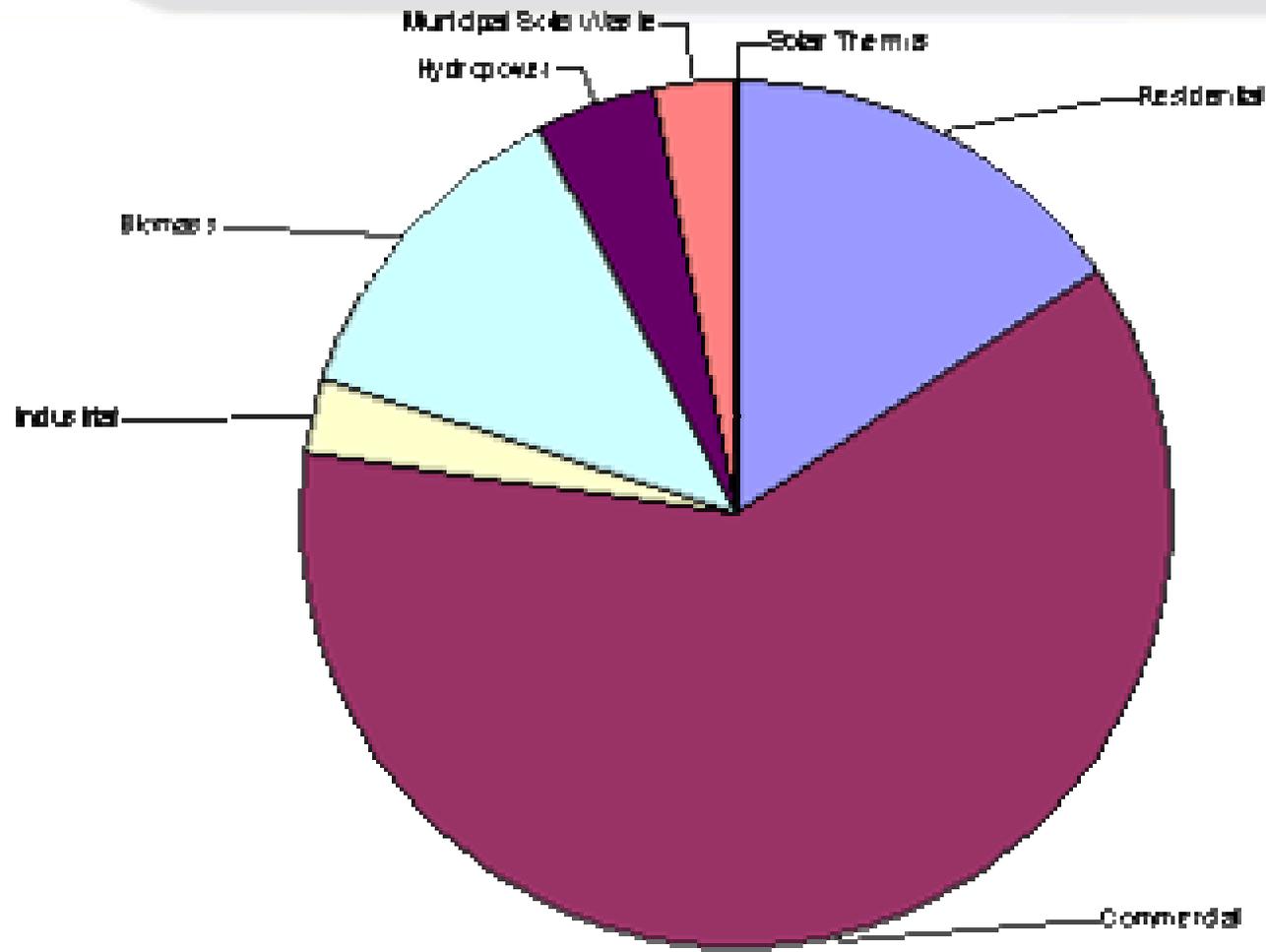
**Table 1.1 Technologies and Practices Examined in the Efficiency Potential Analysis**

	<b>SECTOR:</b>		
	<b>RESIDENTIAL</b>	<b>COMMERCIAL</b>	<b>INDUSTRIAL</b>
<b>Number of Technologies</b>	<b>50</b>	<b>87</b>	<b>39</b>
<b>Markets</b>	New construction	New construction	New construction
	Retail product sales	Renovation	Process overhaul/Replacement
	Retrofit	Remodel/Replacement	Retrofit
		Retrofit	
<b>End Uses</b>	Cooling	Cooling	Motor systems
	Lighting	Exterior lighting	Lighting
	Space heating	Interior lighting	HVAC
	Water heating	Office equipment	Industry-specific processes
		Refrigeration	
		Space heating	
		Water heating	
		Whole building	
	Miscellaneous		
<b>Market segments</b>	<b>2 building types:</b>	<b>9 building types:</b>	<b>4 industry sectors:</b>
	Single family	Education	Manufacturing
	Multifamily	Grocery	Agriculture
		Health	Mining
		Lodging	Construction
		Office	
		Restaurant	22 specific industries
		Retail	
		Warehouse	
		Other	

# Levelized Cost for 2012 Achievable Potential



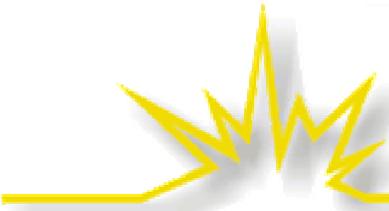
# Mix of Least Cost Resources for 2012 GHG Reduction Target



**Table 1.8 Benefits and Costs of Least-Cost Efficiency and Renewable Achievements Toward 2012 Greenhouse Gas Target (Statewide Low Avoided Costs)**

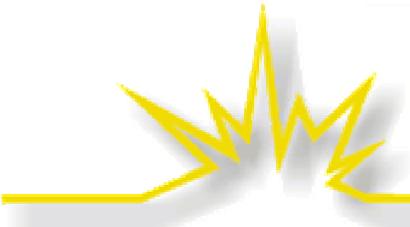
	Annual GWh	Lifetime net cost per kWh saved	Total Resource			
			Benefits	Costs	Net Benefits	BCR
<i>Energy Efficiency Savings</i>						
Residential	3,105	\$ (0.0224)	1,281,359,428	(26,107,167)	1,307,466,595	-49.08
Commercial	12,454	\$ 0.0160	4,068,573,146	2,555,343,290	1,513,229,856	1.59
Industrial	538	\$ (0.0164)	139,598,928	(3,325,355)	142,924,283	-41.98
<b>Total Efficiency</b>	<b>16,096</b>	<b>\$ 0.0084</b>	<b>5,489,531,502</b>	<b>2,525,910,768</b>	<b>2,963,620,734</b>	<b>2.17</b>
<i>Renewable Supply</i>						
Biomass	2,520	\$ (0.0122)	728,546,676	(162,757,236)	891,303,911	-4.48
Fuel Cells	-	NA	-	-	-	-
Hydropower	859	\$ 0.0075	440,421,346	135,787,348	304,633,997	3.24
Landfill Gas	-	NA	-	-	-	-
Municipal Solid Waste	633	\$ (0.0093)	329,616,958	(46,022,347)	375,639,305	-7.16
Photovoltaics	-	NA	-	-	-	-
Solar Thermal	7	\$ 0.0039	2,569,889	352,112	2,217,777	7.30
Windpower	-	NA	-	-	-	-
<b>Total Renewable</b>	<b>4,019</b>	<b>\$ (0.0055)</b>	<b>1,501,154,868</b>	<b>(72,640,123)</b>	<b>1,573,794,990</b>	<b>-20.67</b>
<b>Total Efficiency Savings &amp; Renewable Supply</b>	<b>20,115,208</b>	<b>\$ 0.0050</b>	<b>6,990,686,370</b>	<b>2,453,270,646</b>	<b>4,537,415,724</b>	<b>2.85</b>

Note: Benefits are Cumulative Through 2012 and stated in Present Worth 2003 Dollars



# Long run experience: Northwest Power and Conservation Council

- Used to be *Northwest Power Planning Council*
  - ❖ Covers Oregon, Wash., Idaho, W. Montana
- Experience from 1978 – 2004 (see Fifth Plan):
  - ❖ 40% of electric needs met by energy efficiency at 2.4 ¢/kWh
  - ❖ Deferred T&D saves consumers \$1.25 billion each year
  - ❖ Lowered electric market clearing price
  - ❖ Dampened volatility
  - ❖ Reduces risks associated with environmental regulation



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➤ *Energy efficiency in the Northwest is “big enough to interfere with bad decisions.”*

--- Tom Eckman, Northwest Power and Conservation Council, February 16, 2006

➤ <http://www.nwcouncil.org/energy/powerplan/plan/Default.htm>



# Risks

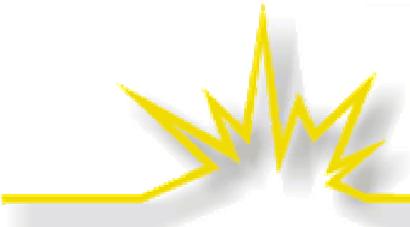
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## ➤ Cost

- ❖ Fossil fuel price level and volatility
- ❖ Construction cost of generation (if rate base) and T&D wires
- ❖ Capital financing
- ❖ Environment and Health compliance
- ❖ Is efficiency a “no regrets” strategy?

## ➤ Decision-making

- ❖ Markets
  - ◆ Regional, national, global venues
  - ◆ Local, Public policy can be overlooked unless explicitly addressed (1977 Act)
- ❖ How does a state protect itself and maintain public confidence?



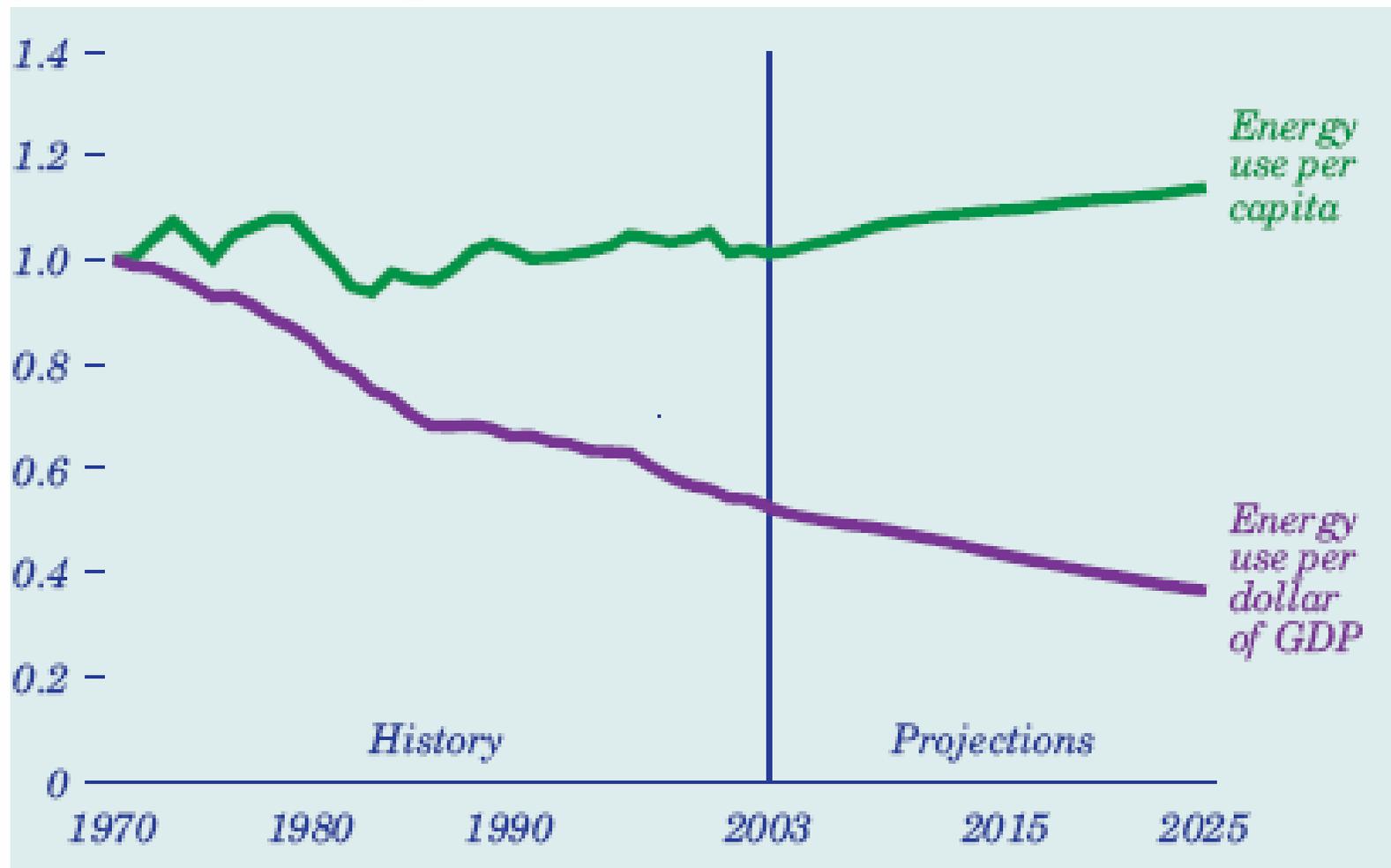
## Wisdom from The Fed

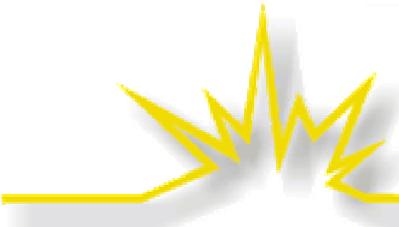
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➤ *“We are operating close to the margins of available global supply of oil and natural gas. And as a result, prices are likely to stay high. And the risk exists if there are significant disruptions of supply that we’ll get additional spikes or movements in energy prices.”*

--- Ben Bernanke, February 15, 2006

*Figure 4. Energy use per capita and per dollar of gross domestic product, 1970-2025 (index, 1970 = 1)*





# Managing Expectations

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**DallasNews.com**  
*The Dallas Morning News*

## **Texas urged to press for more power plants**

Capacity expected to start getting tight by 2009

Friday, February 10, 2006

HOUSTON – It's time to plan new power plants in the U.S., and in Texas, speed is more critical than in some other areas of the country.

**The number of new power plants planned for the U.S. in the next 10 years won't increase capacity enough to meet demand**, experts at a Cambridge Energy Research Associates conference said Thursday. And in Texas, capacity will become **uncomfortably tight by 2009**, some experts predicted. "If that's when we start building coal and nuclear, we will be in a world of hurt," said CERA power expert Daniel Mahoney.

In order to meet electricity demand with cheaper fuel sources, such as coal and nuclear energy, Texas and other states must begin planning the plants now, Mr. Mahoney said, because building such generators takes many years. Otherwise, power generation companies will be left with only one quick-to-build option: natural gas, with its high and volatile price.

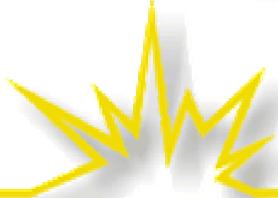
Trouble is, **planning new power plants is difficult these days because it's unclear whether natural gas prices will drop**. Further, talk among some lawmakers of new environmental rules could put coal plant investments at risk, and even though public perception of nuclear power seems to have improved, no one's tested that popularity by breaking ground on a new facility.

This adds up to caution among power plant investors at the very time the country needs them.

**"I think people are going to keep that capital powder dry,"** said Bruce Williamson, chief executive of Dynegy Inc., which owns power generators across the country, including one in Texas.

Even when electricity markets are stable, **power plant investment is a risky business** that depends on fuel price projections and the amount of time before there's a return on investment.

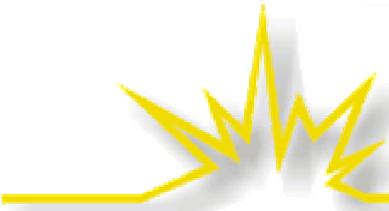
**"The key drivers as we invest in these markets are fuel prices,"** said Alex Urquhart, chief executive of GE Energy Financial Services. "The decision whether to build a new coal plant is: **What do you think will happen to gas prices?"**



# How will we manage risks?

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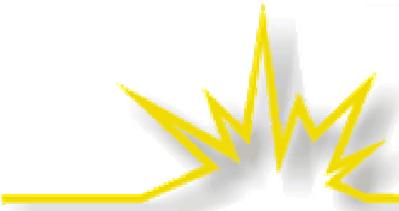
- Planning
- Diversification
- Active Demand Side
- Efficient Growth



# National Petroleum Council

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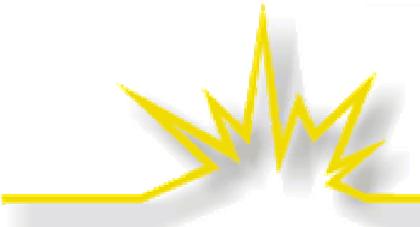
- National Petroleum Council, addressing policy responses to high natural gas costs in the U.S. in advice to the Secretary of Energy, urges a “Balanced” path that seeks to align public and private interests.
- A key recommendation among many is to implement more energy efficiency
- <http://www.npc.org/reports/ng.html> (2003)



# Opportunities for Arkansas from Energy Efficiency

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- Better buildings
- Jobs
  - ❖ From the services and products to build and maintain those better buildings
  - ❖ Instead of exporting \$\$ for fuel
- Least cost, long run, reliable utility service
  - ❖ Stable prices, most “manageable”
- More certainty when big assets are needed



# Thanks for your attention

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- ❖ [rapsedano@aol.com](mailto:rapsedano@aol.com)
- ❖ <http://www.raonline.org>
- ❖ 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.*