

# Energy Efficiency & Utility Profits: Understanding & Living With Utility Incentives

United States Environmental Protection Agency

Workshop on Gas Efficiency

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# About The Regulatory Assistance Project

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- Non-profit organization formed in 1992 by former utility regulators
- Funded by:
  - The Energy Foundation
  - US DOE and
  - US EPA
- Provides workshop and educational assistance to regulators and other government agencies



## Like Any Company: Utility Management Focuses on Profits

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- Under traditional regulation:
  - Utility revenues and profits are linked to unit sales (kW, kWh, therms, etc.)
  - Loss of sales due to successful implementation of energy efficiency will lower utility profitability
  - The effect may be quite powerful...



# 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		<b>\$9,900,000</b>				



# How Changes in Sales Affect Earnings

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

Allowed Return on Equity = \$9,900,000



# A Change in Approach Is Needed

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- “Throughput” incentive is at odds with a requirement to invest in cost-effective energy efficiency
- Policies should, instead, align utilities’ profit motives with acquisition of all cost-effective energy efficiency
- Decoupling & profit incentives, coupled with strong regulatory and legislative policy support and industry leadership are a part of the solution



# NARUC 1989 Resolution in Support of Incentives for Electric Utility Least-Cost Planning

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**RESOLVED**, That the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC) assembled in its 1989 Summer Committee Meeting in San Francisco, urges its member state commissions to:

- 1) **consider the loss of earnings** potential connected with the use of demand-side resources; and
- 2) **adopt appropriate ratemaking mechanisms to encourage utilities to help their customers improve end-use efficiency cost-effectively;** and
- 3) **otherwise ensure that the successful implementation of a utility's least-cost plan is its most profitable course of action**

Sponsored by the Committee on Energy Conservation, Adopted July 27, 1989



## NARUC: 2003 Resolution on EE Support and Incentives

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RESOLVED, That ... (NARUC)... supports the July 2003, call of the Department of Energy which encourages State and Federal Regulatory Commissions to revisit the level of support and incentives for existing gas and electric utility programs designed to promote and aggressively implement cost-effective conservation, energy efficiency, weatherization, and demand response in both gas and electricity markets.

Sponsored by the Committee on Energy Resources and the Environment Adopted by the NARUC Board of Directors July 30, 2003



# NARUC: 2004 Resolution on Gas and Electric Energy Efficiency

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RESOLVED, That the Board of Directors of ...the NARUC... encourages State commissions and other policy makers to support the expansion of natural gas energy efficiency programs and electric energy efficiency programs, including those designed to promote consumer education, weatherization, and the use of high-efficiency appliances, where economic, and to address regulatory incentives to address inefficient use of gas and electricity; *and be it further*

RESOLVED, That the Board of Directors of the NARUC, encourages State and Federal policy makers to:

(i) review and upgrade the energy efficiency standards for buildings and appliances, where economic, to ensure these standards remain valid under potentially higher energy prices, and

(ii) promote the use of high-efficiency consumer products, where economic, including advanced building materials, Energy Star appliances, and energy “smart” metering and information control devices....



## NARUC 2006 Resolution on National Energy Efficiency Action Plan

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**RESOLVED**, That the Board of Directors of the National Association of Regulatory Utility Commissioners (NARUC), convened in its 2006 Summer Meeting in San Francisco, California, **reaffirms its support for the Association's July 2004 "Resolution on Gas and Electric Energy Efficiency"**; *and be it further*

**RESOLVED**, That the Board of Directors commends the commitments made on July 31, 2006 at the opening session of these meetings by a number of State commissions and other stakeholders to take specific actions to move their States aggressively toward increased energy efficiency; *and be it further*



## NARUC 2006 Resolution on National Energy Efficiency Action Plan (cont'd)

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**RESOLVED**, That the Board of Directors:

- endorses the principal objectives and recommendations of the National Action Plan on Energy Efficiency, and
- commends to its member commissions a State-specific, and where appropriate, regional review of the elements and potential applicability of the energy efficiency policy recommendations outlined in the Plan, in an effort to identify potential improvements in energy efficiency policy nationwide.

*Sponsored by the Executive Committee and the Committees on Consumer Affairs, Electricity, Energy Resources and the Environment, and Gas Adopted by the NARUC Board of Directors August 2, 2006*



## New Mexico: Example of Clear Policy Direction

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- It serves the public interest to support public utility investments in cost-effective energy efficiency and load management by removing any regulatory disincentives that may exist and allowing recovery of costs for reasonable and prudently incurred expenses of energy efficiency and load management programs
- The commission shall identify any disincentives or barriers that may exist for public utility expenditures on energy efficiency and load management and, if found, ensure that they are eliminated in order that public utilities are financially neutral in their preference for acquiring demand or supply-side utility resources



# Approaches to Address Utility Incentives for Energy Efficiency

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- Decoupling utility revenues from sales volume
- Lost Revenue/Expense Recovery
  - Adjustment that tracks the implementation of energy efficiency and uses statistical means to determine lost revenues
  - Recovery of net lost revenue can be contingent on achieving certain energy efficiency program goals
  - Alternatively, recovery of “program expenses”
- Providing positive incentives for meeting efficiency goals



# Revenue-Profit Decoupling: What is it?

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- Breaks the mathematical link between sales volumes and profits
- Objective is to make profits levels immune to changes in sales volumes
  - This is a revenue issue
  - This is not a pricing issue
  - Volumetric pricing approaches need not be changed
- Not intended to decouple customers bills from consumption (another topic for another day)



# Revenue Decoupling: The Basic Concept

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- Most effective method to decouple sales & profits
- Basic Revenue-Profit Decoupling:
  - Utility “base” revenue requirement determined with traditional rate case
  - Each future period has a calculable “allowed” revenue requirement
  - Differences between the allowed revenues and actual revenues are tracked on an average use per customer or other basis
  - The difference (positive or negative) is flowed back to customers in a small adjustment to unit rates



# Decoupling Examples:

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- Maryland –
  - Gas Utilities – BG&E and Washington Gas
  - Electric – Pepco (recently filed)
- North Carolina – Gas Utilities
- California – 3 IOUs Electric & Gas Utilities
- Oregon – Northwest Natural Gas
- New Jersey – NJNG (awaiting order)
- Utah – Questar
- New Mexico – PNM (gas filed, electric expected)



## Decoupling: Maryland Baltimore Gas & Electric

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- Decoupling mechanism for residential and general service gas customers
- Straight revenue-per-customer method
- Based on prior rate case test year for base revenue per customer
- Monthly adjustment mechanism similar to traditional fuel and purchase power adjustments
- MADRI Model Rate Rider starting point



## Maryland:

# How BG&E Decoupling Works

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- Allowed Revenues = Test Year Average Use per Customer X No. of Customers X Delivery Price
- Adjustment to Delivery Price = Allowed Revenues - Actual Revenues ÷ Estimated Sales
- Any difference between actual and estimated sales is reconciled in a future month
- Calculated separately for each class
- Calculation of the billing adjustment are filed monthly with the Public Service Commission



# Decoupling: North Carolina

## An Interesting Read

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- North Carolina's three major gas utilities have decoupling mechanism
- Expressed importance of highly volumetric rate structures and lower fixed customer charges
- Rejected some arguments against decoupling
- Good overall discussion of policy framework for decoupling



# North Carolina: Approaches Rejected

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- Rejected higher fixed charge approach as unpopular with customers
- Rejected Attorney General's argument that proposal would penalize customers for conserving



# North Carolina: Customers & Shareholders

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- “Different usage patterns and tariffs of industrial customers” provide good cause to exclude class from mechanism
- Approved as an experimental tariff limited to no more than 3 years
- Required utility contribution toward conservation programs (e.g. \$500,000 per year for Piedmont)
- Required utility to work with the Attorney General and the Public staff to develop appropriate and effective conservation programs to assist its residential and commercial customers



# Decoupling: North Carolina

## Rationale for Decoupling

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- Recognized conservation has potential for financial harm to the utility and its shareholders
- Cited number of benefits: Improved opportunities for conservation of energy resources, savings for customers, downward pressure on wholesale gas prices, helping utility recovery of margin and a reasonable return
- Decoupling better aligns interests of Company and customers with respect to conservation
- Commission on Shareholder Risk: “In a period of declining per-customer usage, a mechanism that decouples recover of margin from usage, without requiring the utility to file frequent rate cases or increase unpopular fixed charges, clearly reduces shareholder risk.”



# Which Brings Us To: A Policy Tale of Two Utilities

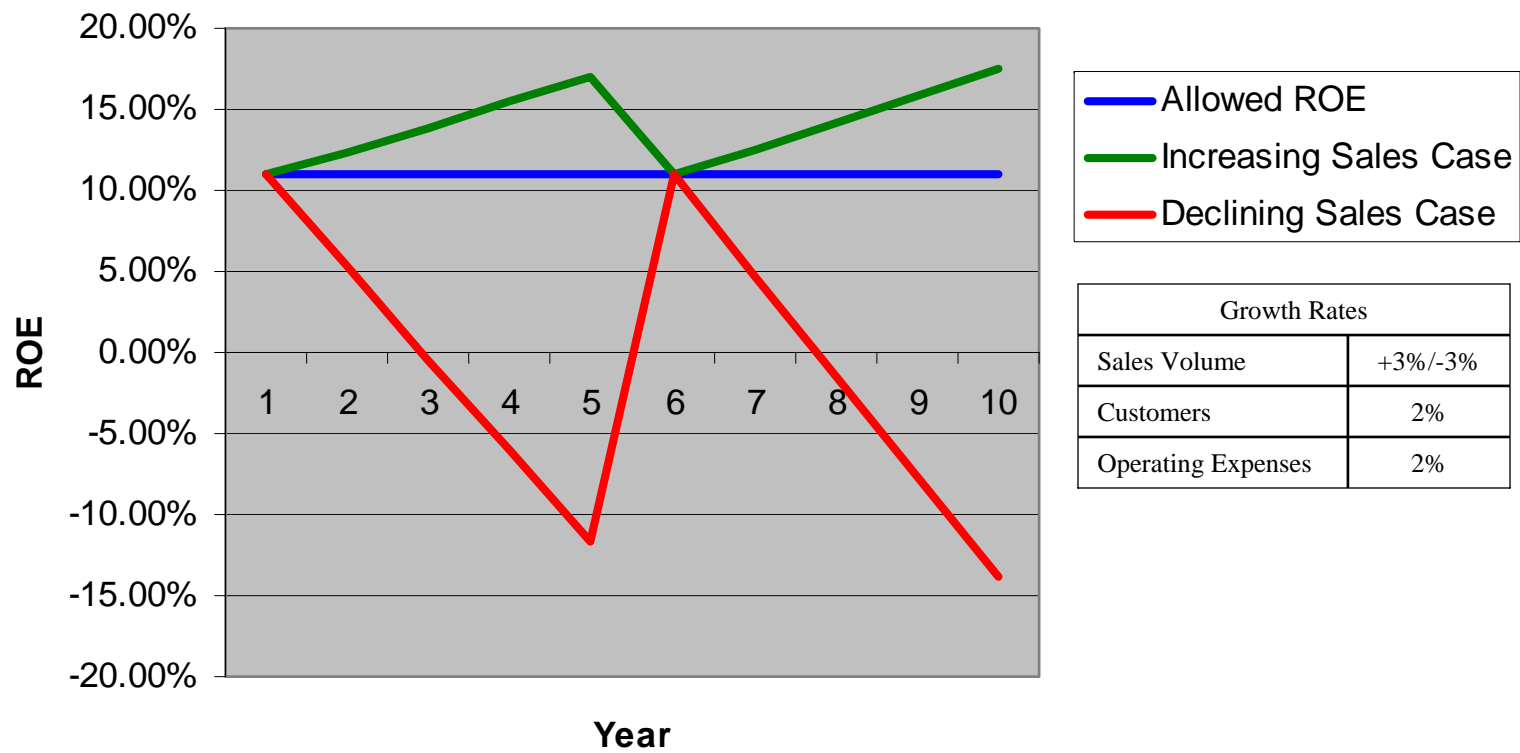
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- Rising revenue-per-customer utilities:
  - Experience rising earnings between rate cases
  - Typical of many electric utilities
- Declining revenue-per-customer utilities:
  - Experience declining earnings between rate cases
  - Typical of many gas utilities
- Under reasonable assumptions, not symmetric between rising and declining cases
- Usually driven by differences in the average consumption between new and old customers
- Policy question: Should decoupling be “profit neutral” relative to future such profit expectations?



# What Happens to ROE Under Traditional Regulation?

Actual ROE vs. Allowed ROE





# California: SDG&E/SoCalGas Shareholder & Customer Sharing

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Earnings Band	Shareholders	Ratepayers
0 - 50	100%	0%
51 - 100	75%	25%
101 - 125	35%	65%
126 - 150	45%	55%
151 - 175	55%	45%
176 - 200	65%	35%
201 - 300	75%	25%
Over 300	Suspension	



# Pacific Gas & Electric

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- Separate Distribution and Generation mechanisms:
  - DRAM (Distribution revenue adjustment mechanism) and
  - UGBA (Utility Generation Balancing Account) revenue adjustment mechanisms
- Allowed revenues: annual CPI-based attrition adjustments for 2004-2006, with following minimums and maximums:

Year	Min	Max
2004	2.00%	3.00%
2005	2.25%	3.25%
2006	3.00%	4.00%



# Decoupling: Oregon Northwest Natural Gas

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- Defers and subsequently amortizes 90 percent of the margin differentials in the residential and commercial customer groups
- Average customer margin-per-therm calculation
- Calculated Monthly
- Places weather risk on utility



# MADRI Model Rule

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- Used BG&E Rate Rider as starting point
- Model Rule is product of collaborative stakeholder process
- Available at: <http://www.raponline.org/Feature.asp?select=78>
- Tracks on demand and energy basis
- Currently 60 day lag between consumption & recovery – may present rate design issue
- Lag can be eliminated with a “use and file” approach
- As written, places weather risk on customer – but this is not a policy position *per se*



# Lost Revenue/Expense Approaches

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- Kentucky
- Nevada



## Lost Revenue/Expense Approaches: Kentucky

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- Allows lost revenue recovery for both electric and gas DSM programs.
- Recovery mechanisms are determined on a case-by-case basis
- Utilities can recover
  - Full costs of commission-approved demand-side management programs and
  - Revenues lost
  - Incentives designed to provide financial rewards to the utility for implementing cost-effective demand-side management programs



# Lost Revenue/Expense Recovery Approaches: Nevada

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- Utility required to track and separate costs
- For Commission approved action plan programs, utility may recover labor, overhead, materials, incentives paid to customers, advertising, marketing and evaluation



# Positive Incentives

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- Arizona
- Connecticut
- Massachusetts
- New Hampshire
- Nevada
- Vermont



# Positive Incentives: APS Performance Incentives

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- Funding for DSM
  - Base rates (\$10 million per year) and
  - Through implementation of an adjustor (average of \$6 million per year)
- APS recovers performance incentive for DSM program results
  - Share of the net economic benefits (benefits minus costs),
  - Maximum of 10% of DSM spending
  - Credits against test year base revenue requirement
  - Low income bill assistance
- APS was obligated to spend \$13 million in 2005 on DSM projects.



## Positive Incentives: Connecticut Performance Incentives

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- Utilities managing conservation & load management programs are eligible for “performance management fees,” tied to performance goals approved by the ECMB and DPUC, including lifetime energy savings and demand savings, and other measures
- Incentives are available for a range of outcomes from 70-130% of pre-determined goals.
- 2004 utilities collectively reached 130% of their energy savings goals, and 124% of their demand savings goals.
- Received performance management fees of \$5.27 million
- 2006 joint budget anticipates \$2.9 million in performance incentives.



## Positive Incentives: Massachusetts Performance Incentives

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### ➤ NSTAR

- After-tax shareholder incentive of five percent
- Level of performance bounded from 75 percent to 110 of design level performance
- Regulatory finding: Incentives must be large enough to promote good program management, but small enough to leave almost all of the energy efficiency funds to directly serve customers



## Positive Incentives: Minnesota Performance Incentives

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- 1999 – Utilities receive a percentage of total net benefits when performance levels are met or exceeded
- Net Benefits are calculated by subtracting each utility's program costs from the avoided costs resulting from each utility's Conservation Improvement Plan (CIP) investment
- Avoided cost estimates (\$/kw,\$/kWh) saved remain constant for the duration of approved biennial CIP



## Positive Incentives: New Hampshire Performance Incentives

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- Two separate incentives
- Cost-effectiveness incentive
  - Utility must achieve Actual to Projected Cost-Effectiveness ratio of 1.0 or higher
  - Incentive is 4% of Planned Energy Efficiency Budget multiplied by the ratio of Actual Cost-Effectiveness to Planned Cost-Effectiveness
- Energy Savings incentive
  - Utility must achieve 65% of planned energy savings
  - Incentive is 4% of Planned Energy Budget, multiplied by ratio of Actual Energy Savings to Planned Energy Savings
- Maximum incentive in each sector (residential and commercial/industrial) is 12%
- Sectors are calculated separately



## Positive Incentives: Nevada Incentives

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- DSM Incentive: Bonus rate of return for DSM investments 5% higher than authorized rates of return for supply investments
- Critical Facilities Incentive: Facilities may be designated “critical” for reliability, diversity of supply- and demand-side resources, development of renewable resources, fulfilling statutory mandates and/or retail price stability
- Incentives for critical facilities may include:
  - Enhanced return on equity on facility over its life
  - CWIP treatment
  - Creation of “regulatory asset” account



## Positive Incentives: Vermont Performance Incentives

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- Incentive in effect for 2000-2002
- Efficiency is responsibility of Efficiency Vermont, the state's "Energy Efficiency Utility" (EEU)
- EEU receives performance incentives for meeting or exceeding specific goals in contract between Vermont's Public Service Board (PSB) and EEU
- Incentive categories:
  - Program Results Incentives (electricity savings & resource benefits)
  - Market Effects Incentives (significant market transformation)
  - Activity Milestones Incentive (exemplary performance for rapid start-up and/or infrastructure development )
- Incentives capped at \$795,000 over three years



# Thanks for your attention

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- Website: [www.raonline.org](http://www.raonline.org)
- E-mail: [rapwayne@aol.com](mailto:rapwayne@aol.com)
- RAP Efficiency Policy Toolkit:  
<http://www.raonline.org/Pubs/General/EfficiencyPolicyToolkit.pdf>