RAP® Energy solutions for a changing world

A Decoupling Foundation

Montana Public Service Commission Workshop on Decoupling

Presented by Richard Sedano

October 28, 2016

The Regulatory Assistance Project (RAP)®

Introducing RAP and Rich

- RAP is a non-profit organization providing technical and educational assistance to government officials on energy and environmental issues. RAP staff have extensive utility regulatory experience.
  - Richard Sedano directs RAP's US Program. He was commissioner of the Vermont Department of Public Service from 1991-2001 and is an engineer.

This Presentation

- Basics of decoupling
  - Why states do it
  - The calculations
  - Design principles
- Decoupling and Water Utilities
- Some Decoupling Experiences

If the Answer is Decoupling, What is the Question?

- Traditional regulation motivates a utility
  - to increase sales, and
  - to resist reducing sales
  - This is the '**throughput incentive**'

Is There Something Wrong with the Throughput Incentive?

- There are many reasons why utility sales might go up or down, but **what should the utility motivation be**?
- Aligning utility incentives with the public interest to the maximum degree
  - Public interest increasingly in conflict with the throughput incentive
  - An EERS is likely to be in conflict with the throughput incentive, PV adds conflict

Deeper: What's the Problem with the Throughput Incentive?

- Utility rate designs recover fixed (investment and labor) costs in the volumetric charge
- Instability - If sales decline, profits decline, if sales increase, profits increase
- EE, DG, other policies reduce sales …
  - Not just what utility does, but markets do too
- Decoupling is a tool to address the throughput incentive

How Changes in Sales Affect Earnings

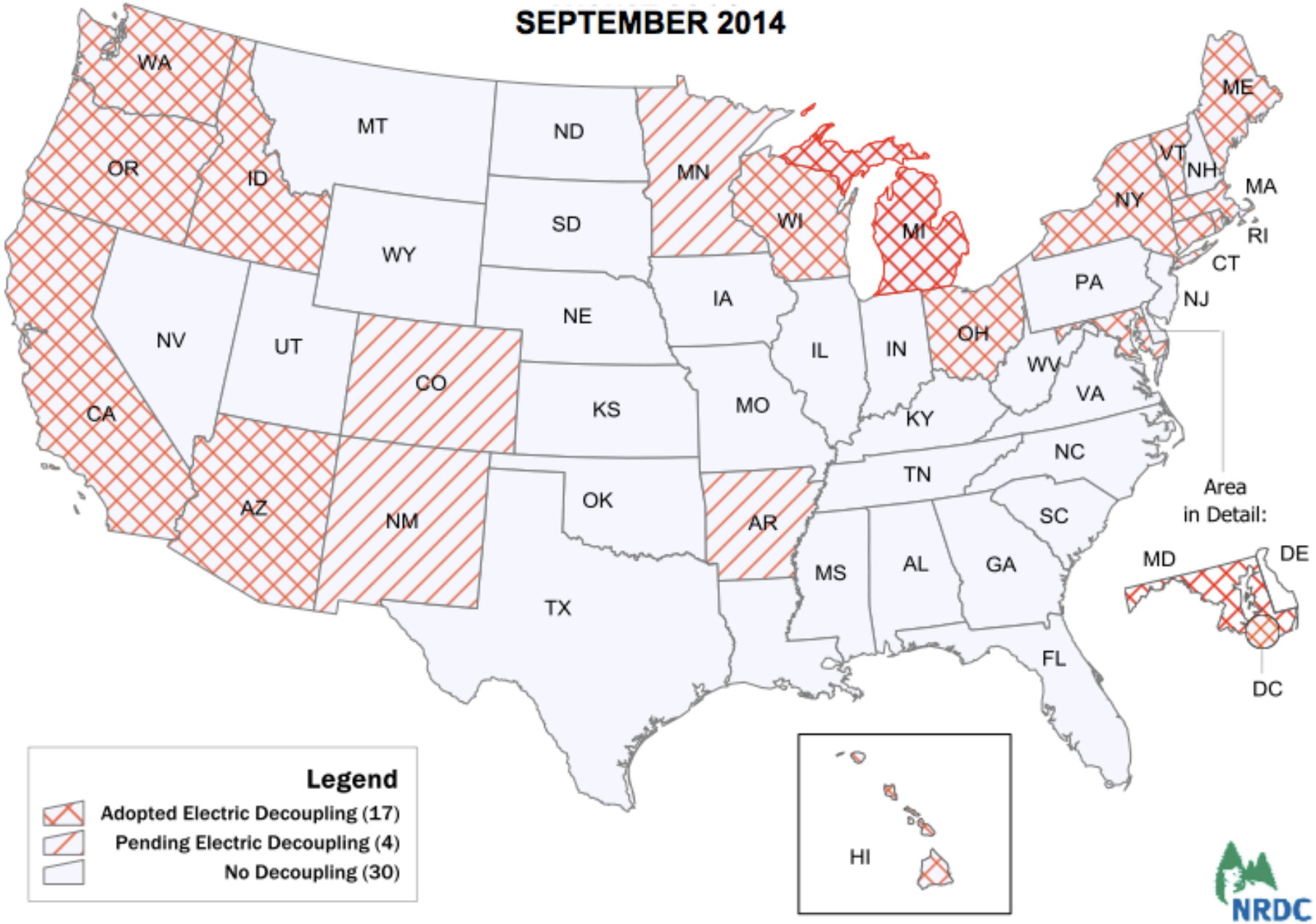
	Revenue Change		Impact on Earnings		
% Change in Sales	Pre-tax	After-tax	Net Earnings	% Change	Actual ROE
5.00%	$9,047,538	$5,880,900	$15,780,900	59.40%	17.53%
4.00%	$7,238,031	$4,704,720	$14,604,720	47.52%	16.23%
3.00%	$5,428,523	$3,528,540	$13,428,540	35.64%	14.92%
2.00%	$3,619,015	$2,352,360	$12,252,360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

At a High Level, What Does Decoupling Do?

- Decoupling is a regulatory mechanism to ensure that utilities have a reasonable opportunity to collect roughly the same revenues that they would under conventional regulation, independent of changes in sales volume **for which the regulator wants them to be indifferent**.

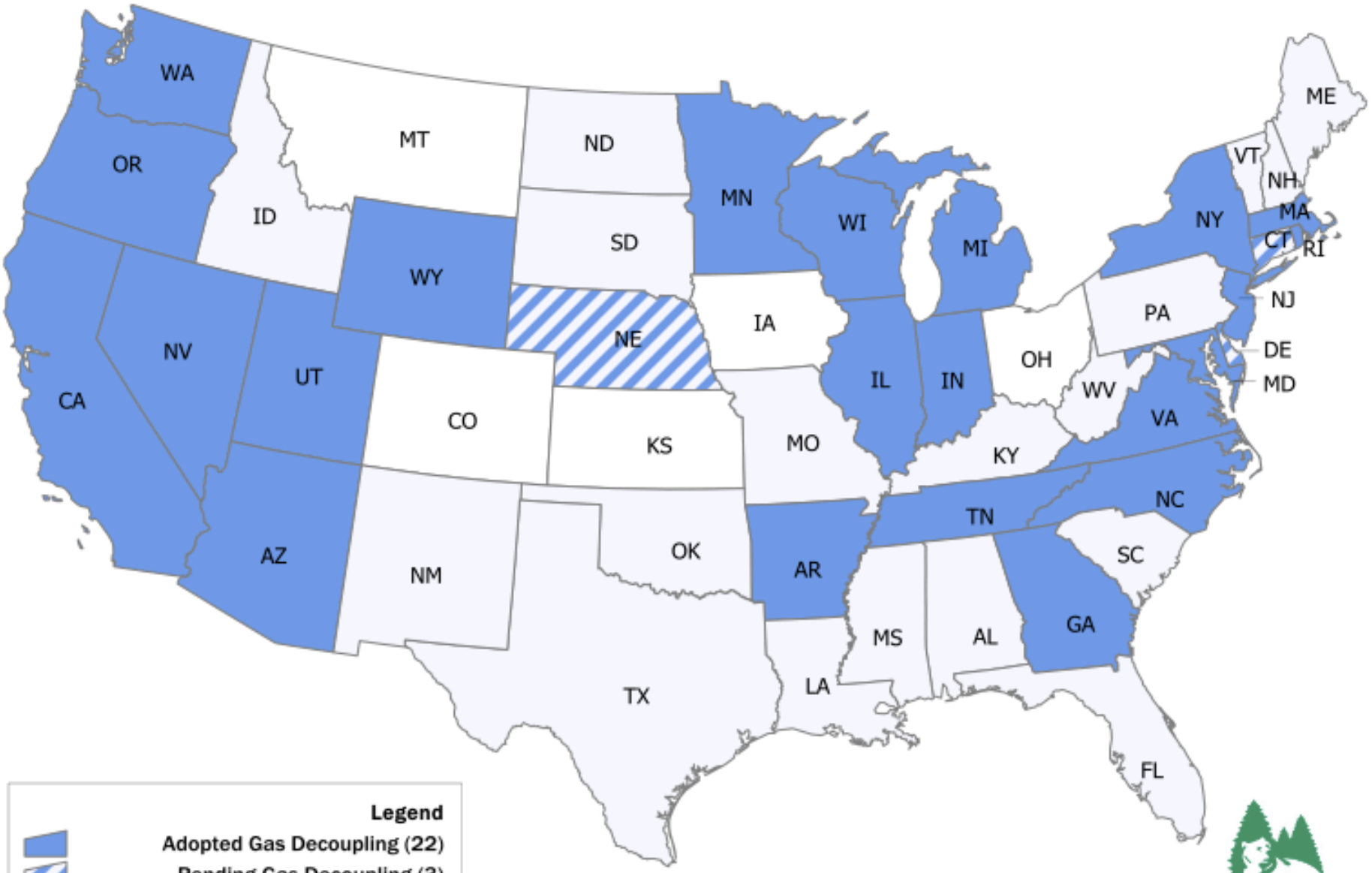
Electric Decoupling in the US

SEPTEMBER 2014



Gas Decoupling in the US

SEPTEMBER 2014

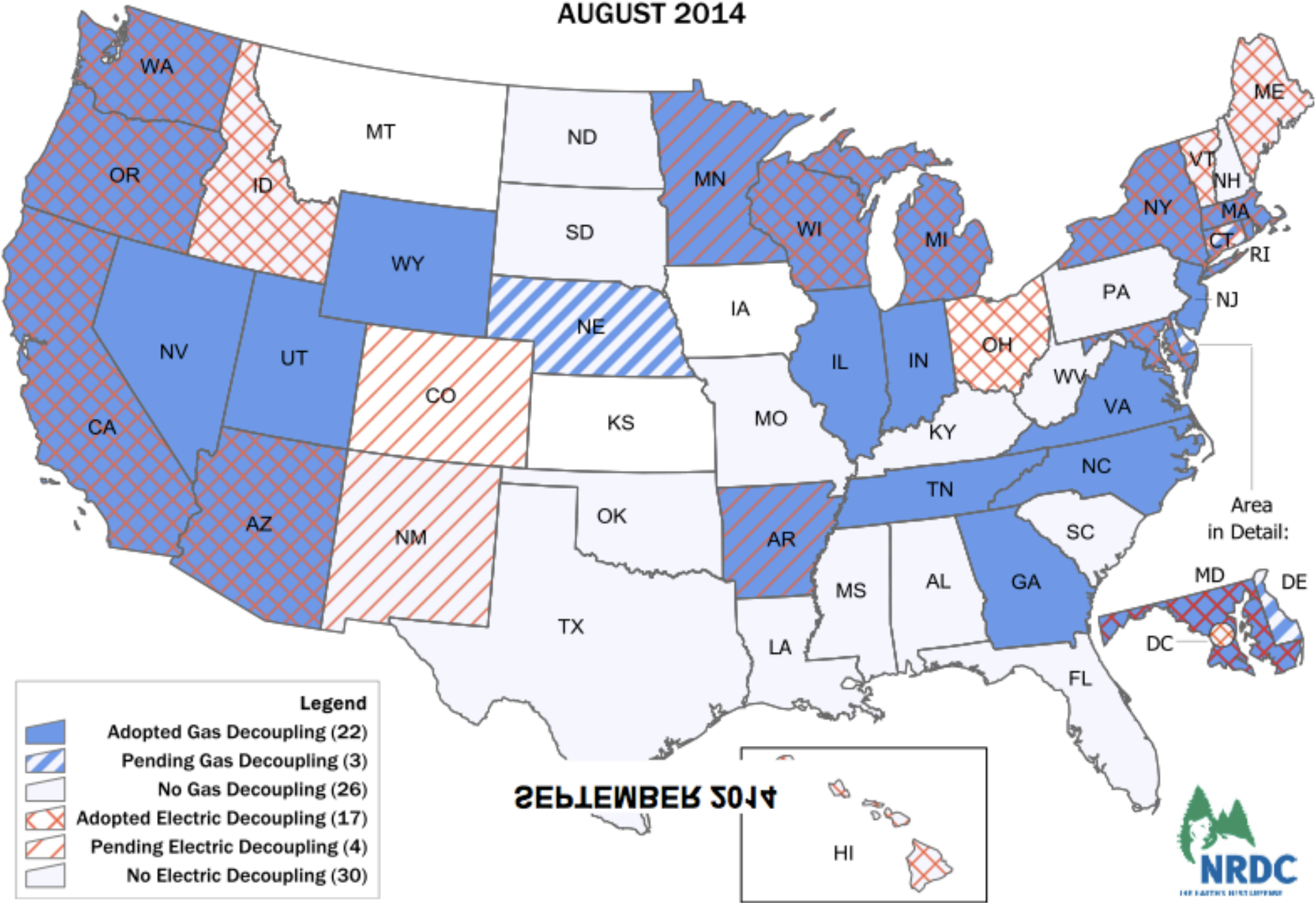


AGA American Gas Association

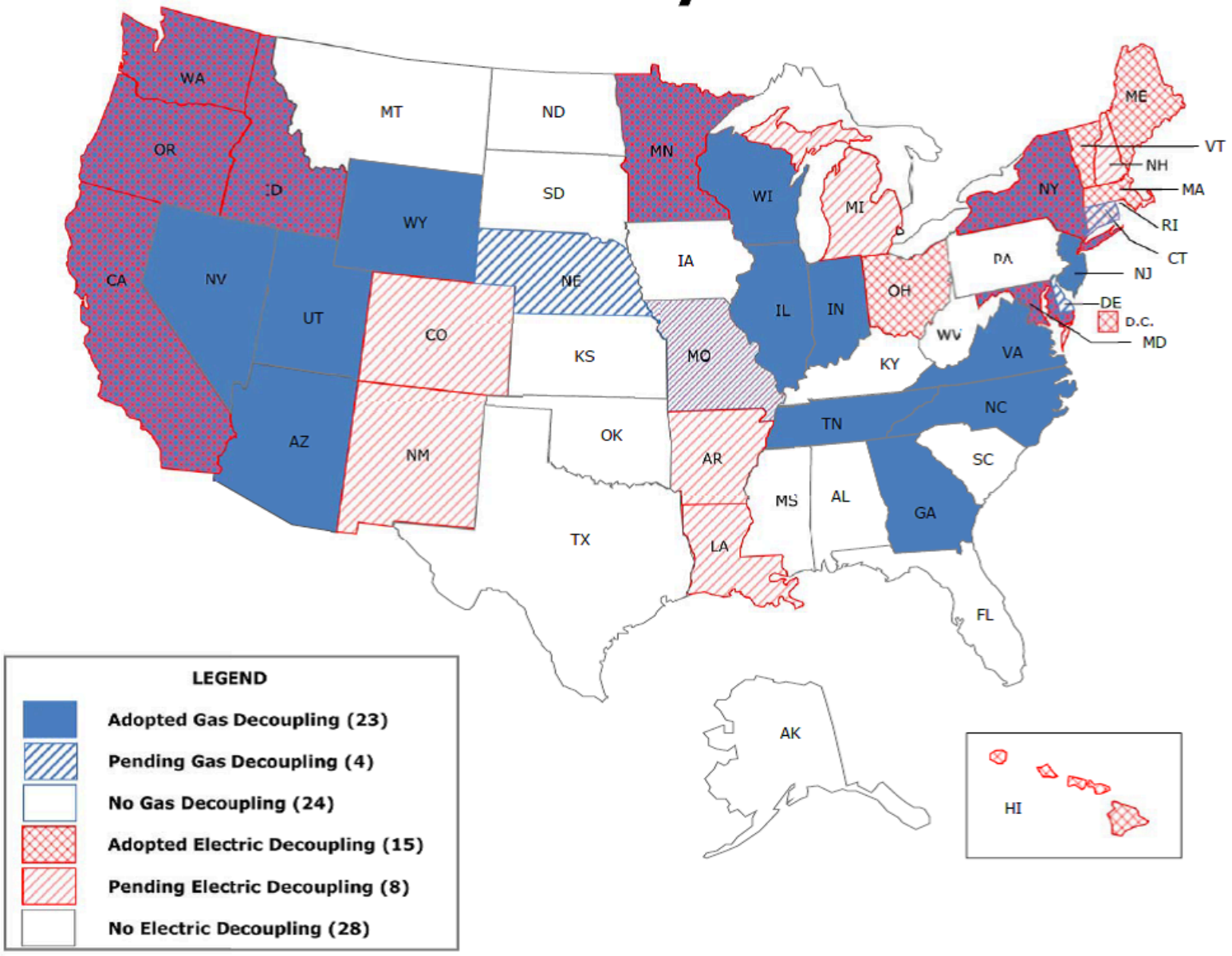
NRDC The Earth's Best Defense

Gas and Electric Decoupling in the US

AUGUST 2014



Electric and Gas Decoupling in the U.S. January 2016



NRDC

Legality of Decoupling

- Some states ban changes to rates outside a rate case
  - This stops decoupling
  - Some states have clarified this in statute
- Some states have a longstanding assignment of discretion to the PUC to regulate utilities as appropriate
  - Allowing reconciliations in decoupling without an explicit statute

What Does Decoupling Do?

- Adjusts rates (prices) and usually revenues between rate cases
- Relies on found revenue requirement
- When sales deviate from rate case assumption, rate is adjusted to collect calculated revenue
  - Basis can reflect changes owing to trends or forecasted events, an added level of complexity

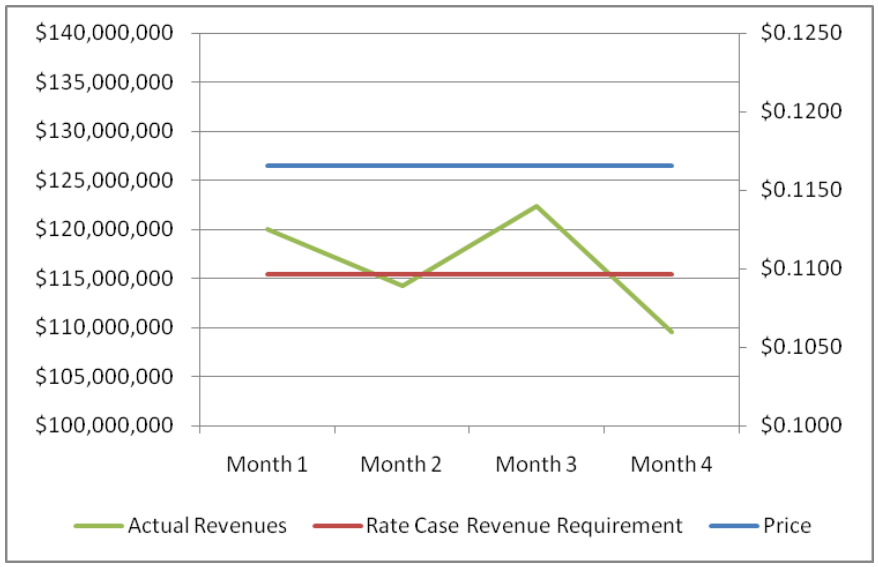
Revenue Regulation: A More Descriptive Term for What We Are Doing

Comparing Decoupling with Traditional Regulation

- Traditional regulation sets prices and lets revenues rise and fall with sales volumes
- Most utility costs, other than power supply vary little in the short run with respect to sales
- If prices are set to recover non-power costs by volume, then lower/higher sales means lower/higher profits
- Decoupling resets revenues to recover non-power costs by adjusting the price

A Well-Designed Decoupling Mechanism Provides Predictable Revenue Independent of Sales

Traditional Regulation:
Constant Price =
Fluctuating Revenues/Bills



Revenues = Price * Sales

Decoupling:
Precise Revenue Recovery =
Fluctuating Prices

Price = Target Revenue ÷ Sales

Simple Calculations: Basic Regulation
(electric)

- Rate Base x Rate of Return = Return
- Return + Operating Expenses + Taxes = Revenue Requirement
- Revenue Requirement / Sales (kWh) = Rates ($/kWh)

The Decoupling Calculation

- Utility Target Revenue Requirement determined with traditional rate case
  - By class & by month (or other period coinciding with how often decoupling adjustment is made)
- Each future period *will have* different *actual* unit sales than Test Year
- The difference (positive or negative) is flowed through to customers by adjusting Price for that period (see Post Rate Case Calculation)

Periodic Decoupling Calculation		
From the Rate Case		
Target Revenues		$10,000,000
Test Year Unit Sales		100,000,000
Price	$	0.10000
Post Rate Case Calculation		
Actual Unit Sales		99,500,000
Required Total Price	$	0.1005025
Decoupling Price	$	0.0005025

No change in target revenue

The Revenue per Customer Decoupling Calculation

- In any post-rate case period, the Target Revenue for any given volumetric price (i.e., demand charge or energy rate) is derived by multiplying the RPC value from the rate case by the then-current number of customers

Periodic Decoupling Calculation		
From the Rate Case		
Target Revenues		$10,000,000
Test Year Unit Sales		100,000,000
Price	$	0.10000
Number of Customers		200,000
Revenue Per Customer (RPC)		$50.00
Post Rate Case Calculation		
Number of Customers		200,500
Target Revenues ($50 X 200,500)		10,025,000
Actual Unit Sales		99,750,000
Required Total Price	$	0.1005013
Decoupling Price "Adjustment"	$	0.0005013

Rate Design Elements (Nothing New Here)

- Use a Customer Charge for customer specific costs (metering, billing)
- Use a Demand Charge (generally for larger customers) for costs that vary with peak demand
- Energy charge generally recovers most production, T&D/delivery costs
  - Full recovery in volumetric charges
  - Time, Usage sensitivity (inclining blocks)

Effect of Decoupling on Rate Design

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Decoupling and Rate Design

- Rate design is getting increased attention for the price signals sent to customers
  - Align price signals to public policy and efficient investment, including but not limited to traditional rate design practices
- Decoupling does nothing to interfere with price signal or allocation objectives, public policy orientation is consistent

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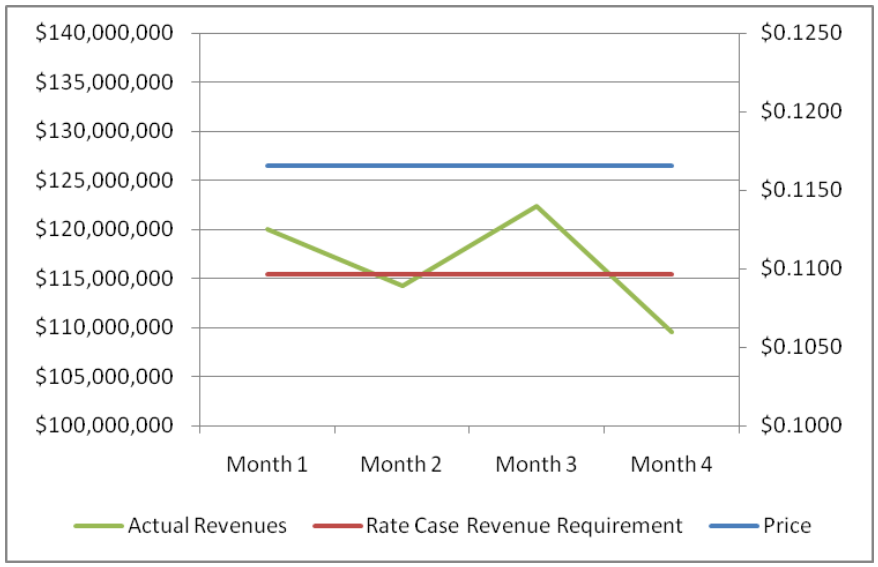

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Decoupling and Power Costs

- Fuel part of power costs can be volatile
  - Not easily adaptable to decoupling
  - Fuel adjustment clause in wide use anyway
- Fixed part of owned generation costs are adaptable to decoupling
  - One of many decoupling design choices

Is There an Analog to Power Costs in Water Utilities?

- Throughput incentive: Yes to both
  - Decoupling enables efficiency
- Capital portion of costs: Higher for water

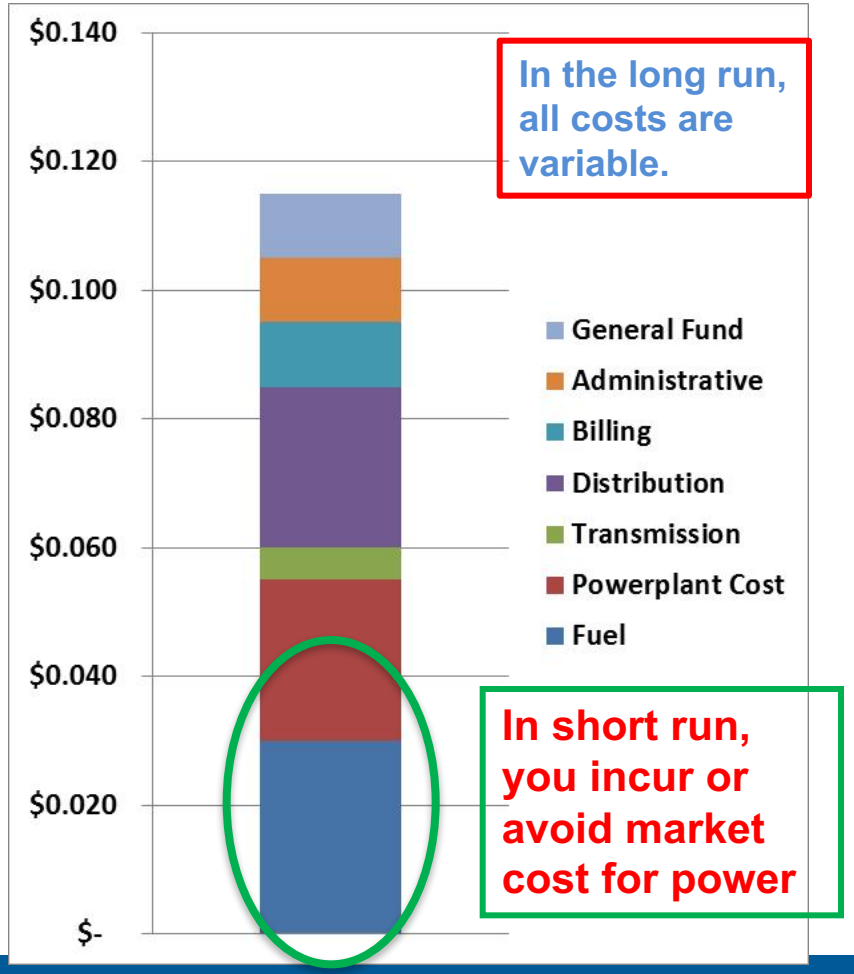
- Decoupling mechanisms can have reopeners or exceptions
  - Dealing with exogenous or huge effects
  - Large (lumpy) capital events in water systems

Analog to Natural Gas

- Throughput incentive: Yes to both
  - Decoupling enables efficiency
- Capital portion of costs: Higher for Gas

What Causes Net Revenue Instability?

- To encourage economic efficiency, rates should reflect long-run marginal costs, including societal costs like emissions.
- In the short run, utility expenses vary with short-run marginal costs.
- These may be **VERY** different from long-run costs.



Full Decoupling

- All effects on sales reflected
  - Sales, weather, economy
  - Throughput incentive fully resolved
- Options to partially address the throughput incentive (but then it remains)
  - Normalizations
    - Weather (degree days)
    - The economy

Two approaches to Decoupling
(both start with rate case revenue requirement)

- Revenue per customer
  - Calculated by dividing rev reqmt by number of customers = RPC
  - Distinguish appropriate classes
  - Periodic **Ministerial** process: RPC x actual customers = new rev reqmt, then divide by actual sales = new rates
  - "K factor" option to account for identified trends and future changes
- Attrition
  - Periodic **Evidentiary** proceedings: what has changed, reset rev reqmt
  - Use actual sales and new rev reqmt to set new rate
  - Comfort needed in this "exception-based" process

Why RPC Might be Appealing

- In many utility systems, short term costs are correlated with customer counts
  - Especially in a territory that is not "built out"
  - It might be lumpy, but Δ customer count still representative of Δ fixed cost

What is this K Factor?

Why might the future be different from the past?

- Adjust for identified trends or forecasts that are likely to change the basis of the revenue requirement
  - Inflation -- Size of Households
  - Productivity -- Capital Budgets
- Can be applied to the revenue requirement
  - Or can be applied to the RPC
- Has a shelf life as long as the assumptions are reliable
- Decoupling 201 – balance value with complexity (first time out, keep it simple)

Decoupling Advantages

- RPC simple to administer, customizable
- Stabilizes utility revenues
- Utility focuses on costs it can control,
- Removes utility throughput incentive
  - Accommodating aggressive EE
  - Maintaining rate design as price signal
  - Focus on Policy Priorities? Service?
- Delay general rate case (and associated attention and expense) to when driven by underlying cost shifts (not by usage changes)
- Process ought to reveal priorities

Decoupling and Performance

- Decoupling does not promote:
  - EE, DG, etc.
  - It does remove sales-driven attitudes that utilities properly have in traditional system – "Enabling"
  - It can promote cost cutting
- Decoupling is compatible with a performance system
  - Build in public interest priorities (new)
  - Roll any rewards or penalties into periodic rate adjustment
  - Protect against disruptive cost cutting

Decoupling Downsides

- Rates change more frequently (generally less than power cost adjustment riders) and outside a general rate case
- Great success with EE and DG will increase rates, even as total costs may ⬇⬇
  - EE participants tend to save far more than rates tend to rise
- PUC, others are unfamiliar with decoupling
- Delays rate cases, which can be illuminating

How Does Decoupling Differ from Conventional Regulation

- Conventional Reg.
  - Set rates based on cost, and let the revenues flow as sales volumes change between rate cases.
- Decoupling
  - Set revenues based on cost, and let the rates flow as sales volumes change between rate cases.

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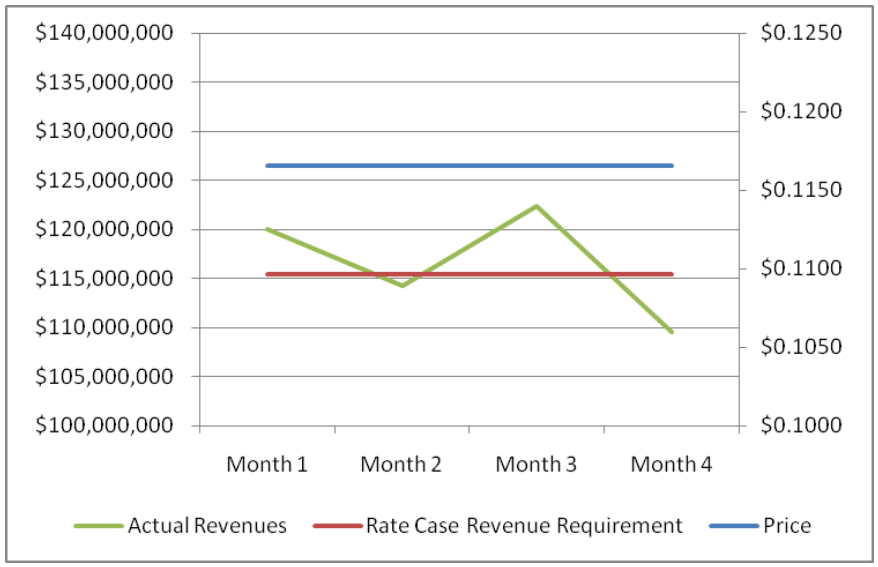

Revenues = Price * Sales

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If There Will Be a Rate Case Every Year, Do We Need Decoupling?

- Do you want a rate case every year?
- Do you need a rate case every year?
- If you have a rate case every year, the rate and revenue results of each will be similar if each is done well

Frequent Rate Cases

- Having rate cases every year means utility will not keep extra revenue, "the margin," from increased throughput very long
- But
  - Rate cases are expensive
  - Consume the time of your best thinkers
  - Decision-makers reacting, not looking ahead
  - Utility still has the throughput incentive

Design Goal for Decoupling

- Over time, utility revenues track what frequent rate cases would have produced
  - Note emphasis on revenues
  - Because over the term of the decoupling mechanism, non-power costs do not change that much
- Works best if decoupling becomes the norm

Decoupling Comes in Various Colors

Some Proposals to Solve our Problem are **Not** Decoupling

Decoupling is Not

- Straight fixed variable rate design
  - Shifting all short run fixed costs to the customer charge

Decoupling is not

- A lost revenue adjustment mechanism
  - That identifies revenues lost specifically due to consumer funded energy efficiency programs and restores that revenue

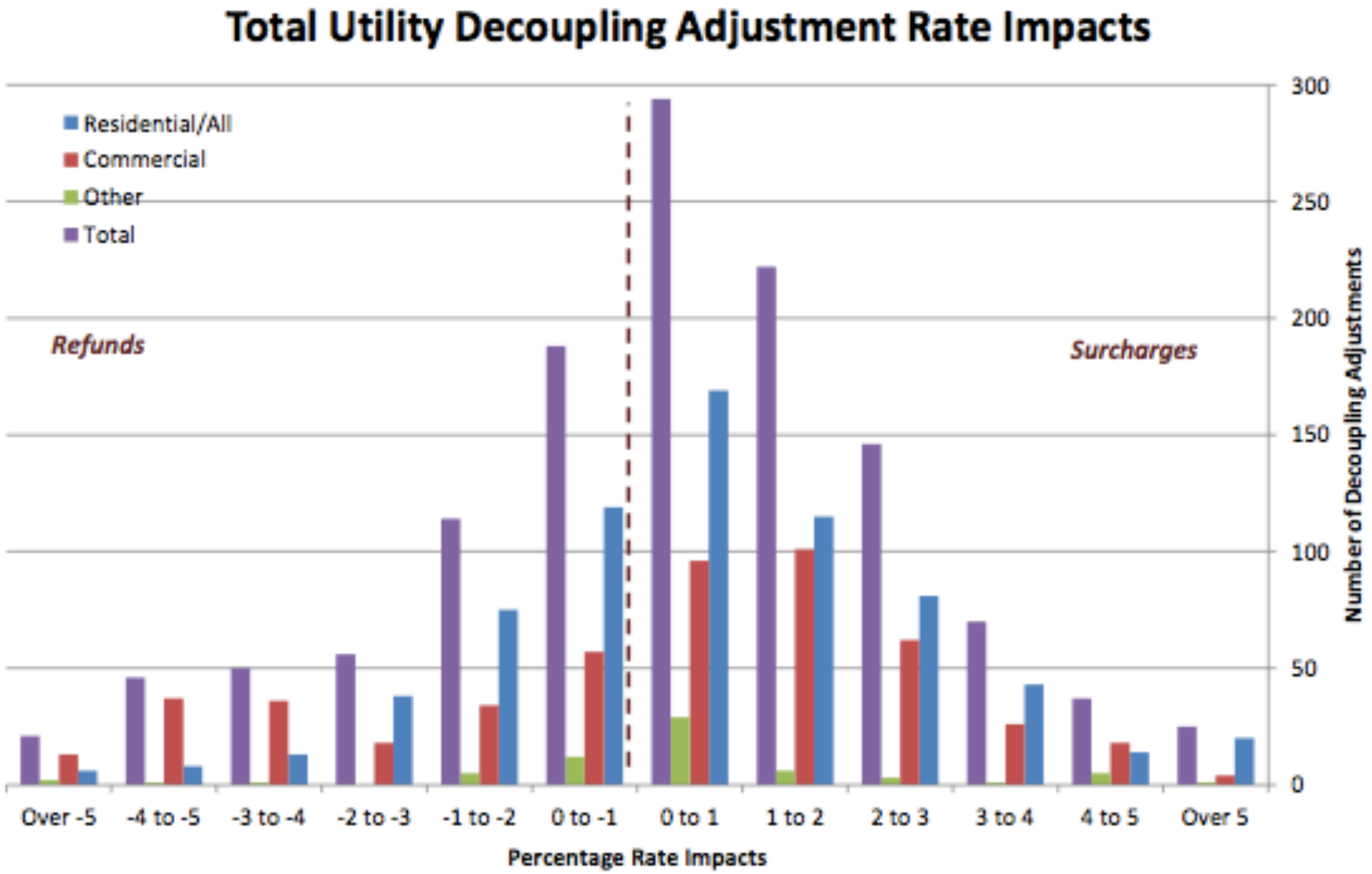
Third Party Administration of EE

- May address concerns about EE program design and delivery
- But does not address the motivation of the utility to support EE and DG or its motivation to load build

Decoupling Choices Regulators are Asked to Make

- Apply to **non-power costs** or all costs?
- Frequency of rate adjustments?
- Limits on rate adjustments, disposition of deferrals*
- Assessing the risk of the firm, WACC, what to do?
- Full, or Factor in weather?
- RPC, attrition, both, other revenue requirement Δs?
- Addressing changed risk profile of the utility*
- Include industrial customers?
- Trigger for next mechanism?
- Overlay performance?
- What to do with earnings above and below target ROE?
- Other public interest progress

From Pamela Morgan



Cost of Capital

- Path A
  - Let the markets tell us how firm risk has changed
  - Evaluate in next rate case
    - Be sure to use comparable group of utilities
- Path B
  - Take an adjustment to ROE right away
    - Downpayment on benefits
    - Generally works better in a settlement so utility can get something it wants

Decoupling and Risk (path C)

Without Decoupling	Ratio	Cost	Weighted With-Tax Cost of Capital
Equity	45%	11.0%	7.62%
Debt	55%	8.0%	2.86%
Weighted Cost			10.48%
Revenue Requirement: $1 Billion Rate Base			$ 104,800,000
With Decoupling			
Equity	42%	11.0%	7.11%
Debt	58%	8.0%	3.02%
Weighted Cost			10.13%
Revenue Requirement: $1 Billion Rate Base			$ 101,280,000
Savings Due to Decoupling Cost of Capital Benefit:			$ 3,520,000

Decoupling Choices Regulators are Asked to Make

- Making these choices in a public, **transparent** process helps to promote **confidence** that participants **understand** what the mechanism is doing, that there is a **common** understanding, that information is not being **withheld**, that **priorities** are built in, that there is **value** in moving from traditional regulation

Decoupling Comes in Various Colors

Advanced Decoupling Choices

- Use the K factor for trends and forecasts
  - i.e. The MacMansion effect, or Electric Vehicles, or structural cost Δ (i.e. transmission capital), or productivity
- In RPC, adjust customers for outages
  - Motivates low outage frequency and duration
- Price adjustments monthly, current (MD)
  - Conveys information to customers

Words Matter: Advantages of the Term "Revenue Regulation"

- Focus on revenue
- Focus on stabilizing revenue
- Avoids conflation of meanings attached to decoupling
- Juxtaposes with "Rate Regulation" to aid compare and contrast with a rate cap
- Juxtaposes with "Performance- or Incentive-regulation"

Communicating with Customers

- Answer: why are my rates changing?
  - With relevant policy context and trends
  - Transparency makes for clear messages
- How is decoupling changing utility priorities and decisions?
- How is utility performance?
  - Hopefully good news (improved mgmt focus)
- What do customers want (for future)?
- Is there **coherence with policy goals**?

How Does the "Utility of the Future" Happen?

- **Service** (not throughput) the priority
- **Customers**: service and resources
- Public Policy - driven
- Risk Management to manage cost
- Regulation focuses on value

- How can decoupling assist?

Oregon PUC Order 09-020 pg 27

"… PGE does have the ability to influence individual customers through direct contacts and referrals to the ETO. PGE is also able to affect usage in other ways, including how aggressively it pursues distributed generation and on-site solar installations; whether its supports improvements to building codes; or whether it provides timely, useful information to customers on energy efficiency programs. We expect energy efficiency and on-site power generation will have an increasing role in meeting energy needs, underscoring the need for appropriate incentives for PGE."

RAP Energy solutions for a changing world

Revenue Regulation and Decoupling:

A Guide to Theory and Application

[Revenue Regulation and Decoupling]

[Decoupling Case Studies]

[A Decoupling Spreadsheet Model]

RAP™ Energy solutions for a changing world

[A Decade of Decoupling
Pamela Morgan]

Decoupling Case Studies: Revenue Regulation Implementation in Six States

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power sector. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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Puget Sound: Recent Decoupling Approval

- RPC, applied to delivery costs (power has its own adjustment)
- Service quality mechanism pre-existed
- More EE, low income Wx and bill assistance
- K factor addressing historic utility cost ↑
- Rev reqmt stale, no change to rate design
- No EE performance
- Resolved other local issues

One Innovative Proposal
Tucson Electric - Arizona

- Annual decoupling adjustment
- Inverted seasonal residential rate design
- Any surcredits applied to initial block
- Any surcharges applied to end blocks

	Summer	Winter	
Customer Charge	$ 7.00	$ 7.00	
First 500 kWh	$ 0.080	$ 0.073	Minus any decoupling credit
Next 2,500 kWh	$ 0.102	$ 0.093	Plus any decoupling surcharge
Over 3,000 kWh	$ 0.120	$ 0.113	Plus any decoupling surcharge