The PBR Challenge for US Consumer Advocates

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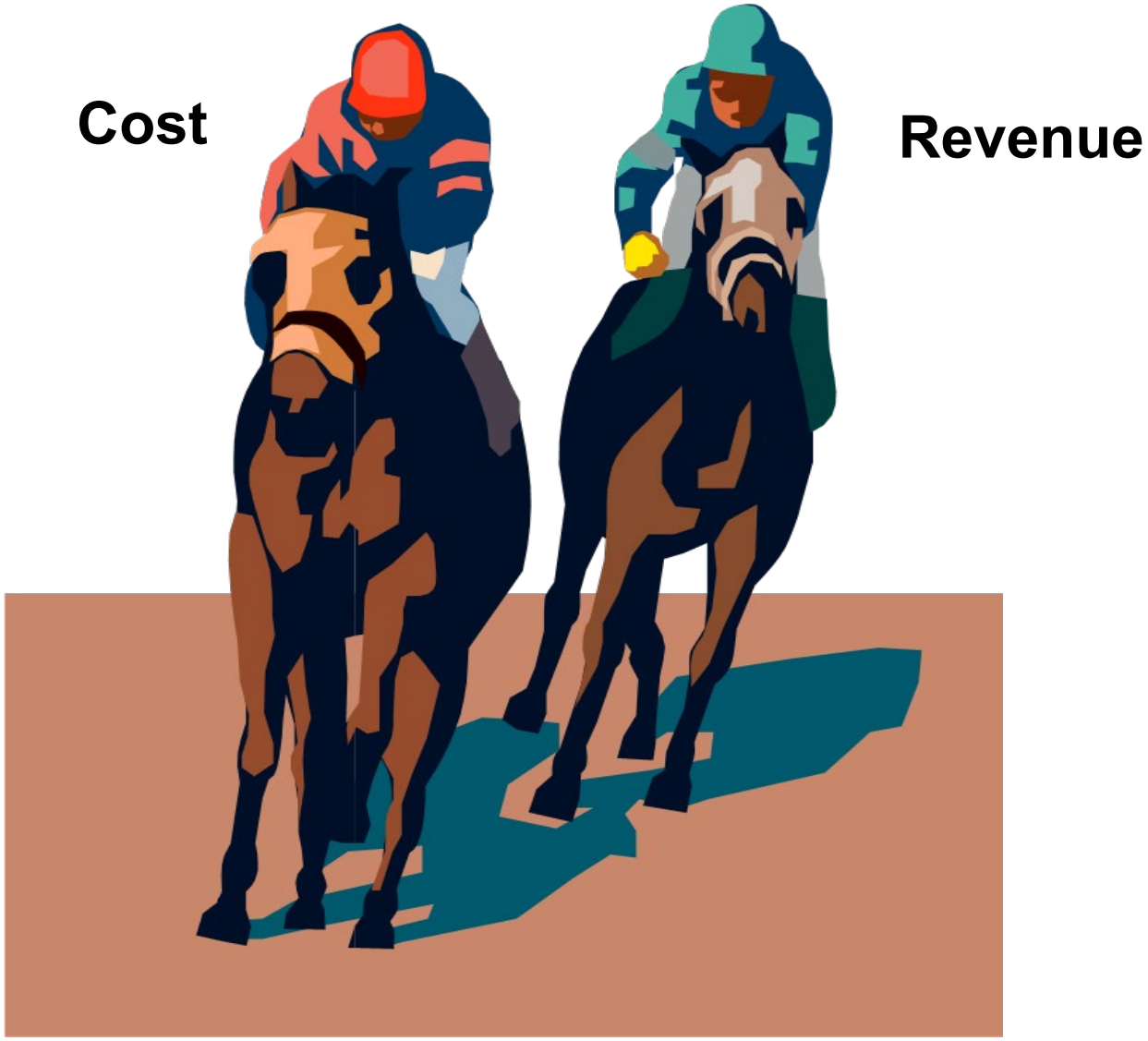
Introduction

Performance-based regulation ("PBR") and other alternatives to traditional cost of service regulation ("COSR"), which are collectively called "Altreg", are being considered in many US jurisdictions today

This presentation briefly discusses

- Forces driving Altreg
- PBR and other Altreg options
- PBR challenges and opportunities for consumer advocates

The Age of Altreg



What's Driving Altreg?

COSR works best under favorable business conditions that make rate cases less frequent. Infrequent rate cases…

- strengthen utility cost performance incentives
- reduce regulatory cost

Business conditions are less favorable today than in COSR's "golden age"

- Load growth much slower
- Some utilities nonetheless need high capital spending to modernize infrastructure and increase resiliency and/or reliance on clean energy sources

>>> Cost tends to grow faster than revenue

- Many generic issues to consider (e.g., rate designs and system planning)

Under COSR, these conditions lead to frequent rate cases, weak cost containment incentives, and high regulatory cost

As well, utilities are financially insulated from environmental damage that they cause

Altreg Options

COSR problems have spurred development of Altreg options

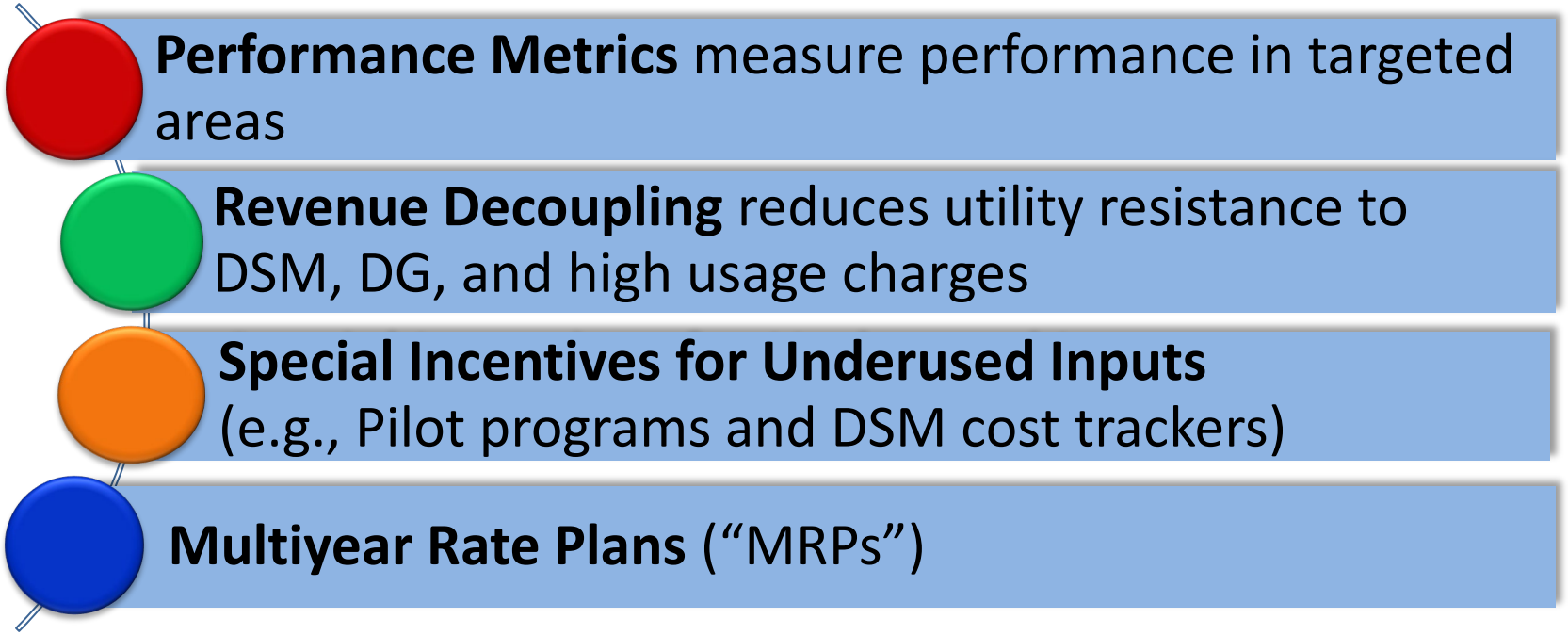
Utilities care mainly about attrition and propose…

- higher fixed charges
- additional cost trackers
- (Cost of service) formula rate plans
  - Essentially *comprehensive* cost trackers
  - Used by the FERC and, for retail services, in some southeastern and Exelon states (e.g., AR, AL, MS, LA, IL, MD, DC)

The PBR Alternative

PBR: Altreg approaches intended to encourage better performance through stronger incentives (aka "incentive regulation")

4 well-established approaches:



Multiyear Rate Plans

Key Components

- Reduced rate case frequency (e.g., 4 or 5 year cycle)
- Attrition relief mechanism ("ARM") automatically escalates rates or revenue but is not linked to utility's *actual* costs

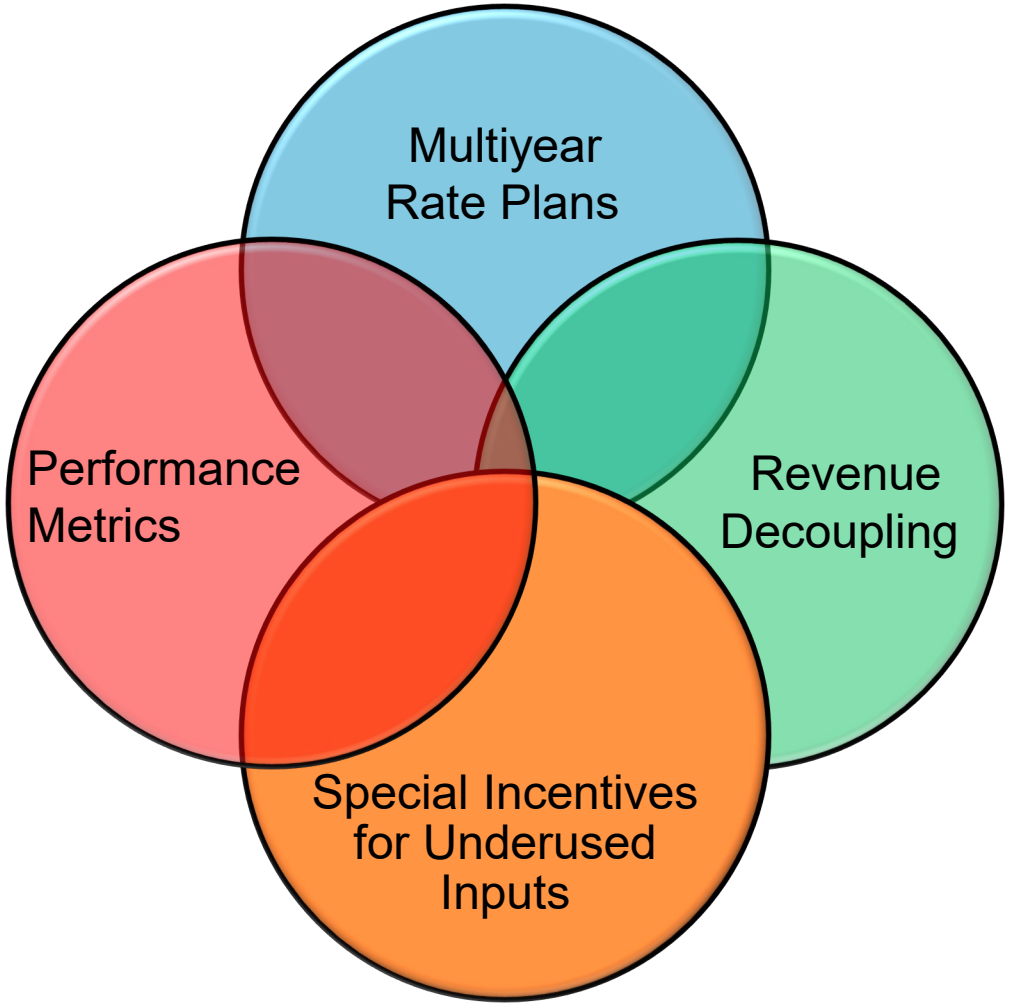
  >>> Stronger cost containment incentives

  >>> More efficient regulation

Precedents

- Popular in Great Britain, Canada, and Australia
- Ontario is a North American PBR leader
- Used in diverse American states (e.g., California, New York, and Florida)
- Mounting interest in other states (e.g., Washington and North Carolina)

Basic PBR Approaches Often Combined



MRP Pros and Cons

Pros

MRPs *do* streamline regulation and have sometimes sparked better performance

More time to address generic issues

Utilities assume some risk

MRPs sometimes include productivity growth targets and/or statistical benchmarking of cost and reliability

>>> Refreshing emphasis on utility performance

MRPs often initiated by legislators and regulators, not utilities

MRP Pros and Cons (continued)

Cons

Utilities can and have played strategic games in MRP ratemaking

US regulatory staff and consumer groups are underfunded relative to foreign (e.g., Canadian) counterparts

Consumer advocates have lost some PBR battles (e.g., MA) but also won some (e.g., HI)

Confusion is commonplace in legislative and regulatory undertakings to consider PBR

Consultants are often not PBR experts.

Some consultants will "say anything" to advance their clients' interests

Misconceptions that result from this "fog of Altreg" can produce surprising outcomes

- MD and DC have recently approved "multiyear rate plans" that are really formula rates due to "reconciliation mechanisms"
- IL is on the verge of doing the same thing

Conclusions

Altreg is a reflection of environmental concerns and unfavorable business conditions

Environmental groups are major Altreg players

Amongst the Altreg approaches, PBR has the best shot at helping consumers

PBR includes multiyear rate plans and decoupling, not just metrics

Consumer advocates should keep an open mind about PBR

Consider going out the PBR learning curve and becoming forceful, persuasive practitioners

Appendix

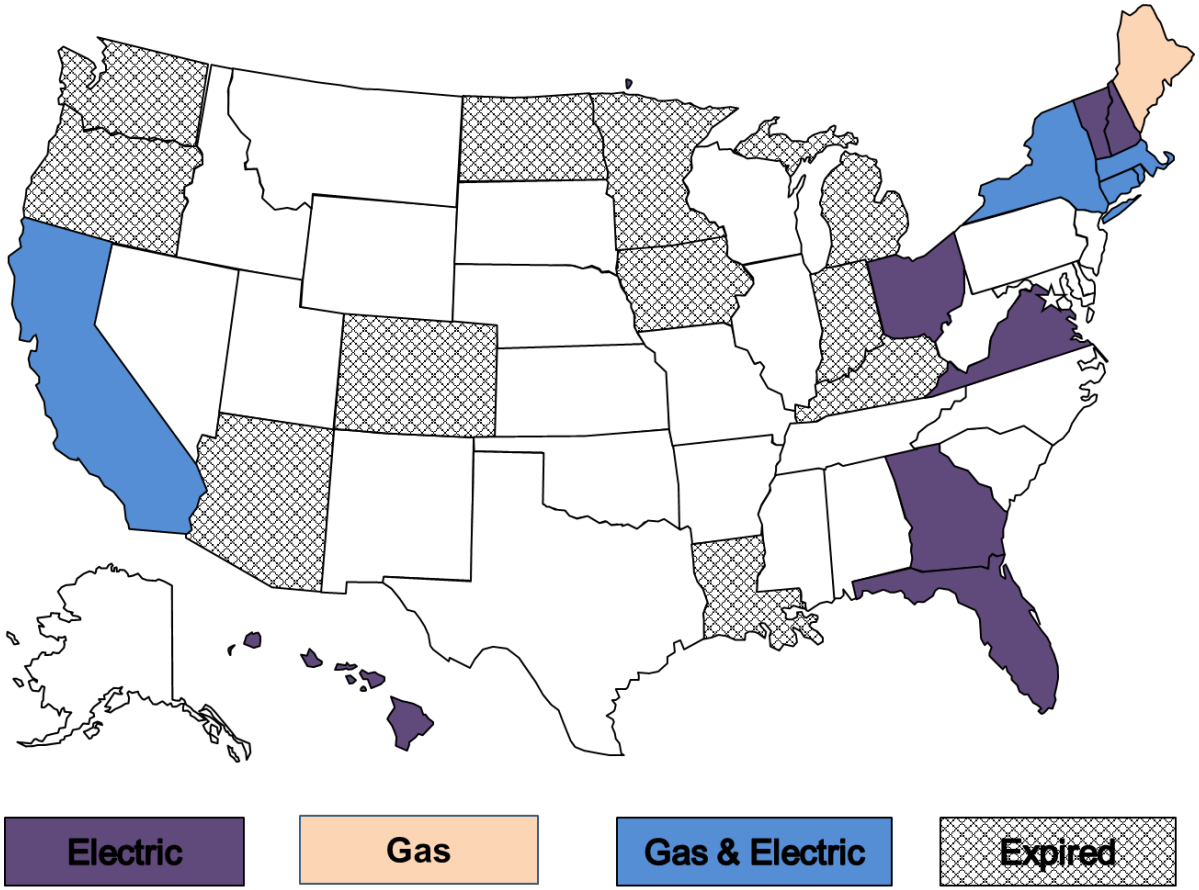
Indicators of Energy Utility Attrition 1931-2015[1]

Multiyear Averages	Electricity UPC			Natural Gas UPC			GDPPI Inflation	Summary Attrition Indicators	
	Residential	Commercial	Average [A]	Residential	Commercial	Average [B]	[C]	Electric [C-A]	Natural Gas [C-B]
1927-1930	7.06%	6.67%	6.86%	NA	NA	NA	NA	NA	NA
1931-1940	5.45%	2.00%	3.73%	0.54%	0.94%	0.74%	-1.59%	-5.31%	-2.33%
1941-1950	6.48%	5.08%	5.78%	3.90%	4.60%	4.25%	5.26%	-0.52%	1.01%
1951-1960	7.53%	6.29%	6.91%	3.40%	3.16%	3.28%	2.42%	-4.49%	-0.86%
1961-1967	5.37%	10.48%	7.93%	2.42%	4.94%	3.68%	1.77%	-6.15%	-1.90%
1968-1972	6.38%	6.43%	6.41%	1.78%	3.97%	2.88%	4.66%	-1.75%	1.78%
1973-1982	1.34%	1.61%	1.47%	-2.15%	-1.10%	-1.63%	7.24%	5.77%	8.86%
1983-1986	0.90%	2.26%	1.58%	-3.07%	-4.26%	-3.66%	3.13%	1.55%	6.79%
1987-1990	1.39%	2.29%	1.84%	-1.25%	1.33%	0.04%	3.33%	1.49%	3.29%
1991-2000	1.15%	1.68%	1.41%	-0.37%	-1.77%	-1.07%	2.03%	0.62%	3.10%
2001-2007	0.73%	0.64%	0.68%	-2.12%	0.30%	-0.91%	2.47%	1.79%	3.38%
2008-2015	-0.47%	-0.20%	-0.34%	-0.85%	-1.55%	-1.20%	1.53%	1.87%	2.73%

>>> Key business conditions are on balance much less favorable today than in COSR's "golden age" when it became a tradition

[1]Colorado Public Utilities Commission, Proceeding 17AL-0649E, Direct Testimony of Mark N. Lowry on Behalf of Public Service Company of Colorado, Hearing Exhibit 105, October 3, 2017, page 29.

MRP Precedents: United States



MRPs are a common form of Altreg in U.S.

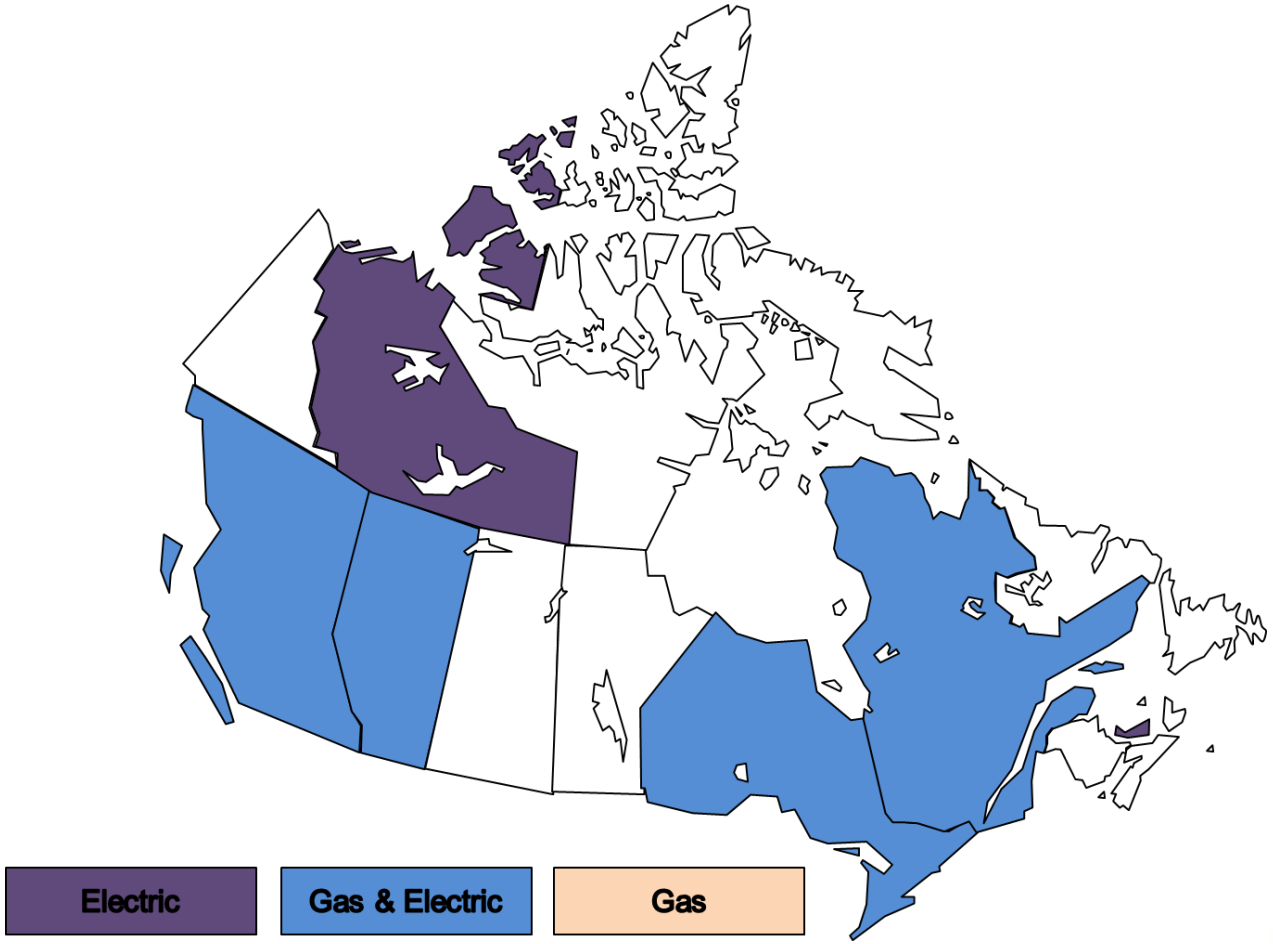
Popular for vertically integrated electric utilities (e.g., Hawaii)

Renewed popularity for power distributors (e.g., New England)

MRP Precedents: Canada

MRPs are the norm for Canadian gas & electric power distributors

Impetus has come mainly from policymakers



MRP Case Study: Central Maine Power

Attrition Relief Mechanism:

growth Rates = growth GDPPI – X (X=1%)

Capital Cost Tracker: Automated metering infrastructure

Earning Sharing: Asymmetric sharing of surplus earnings

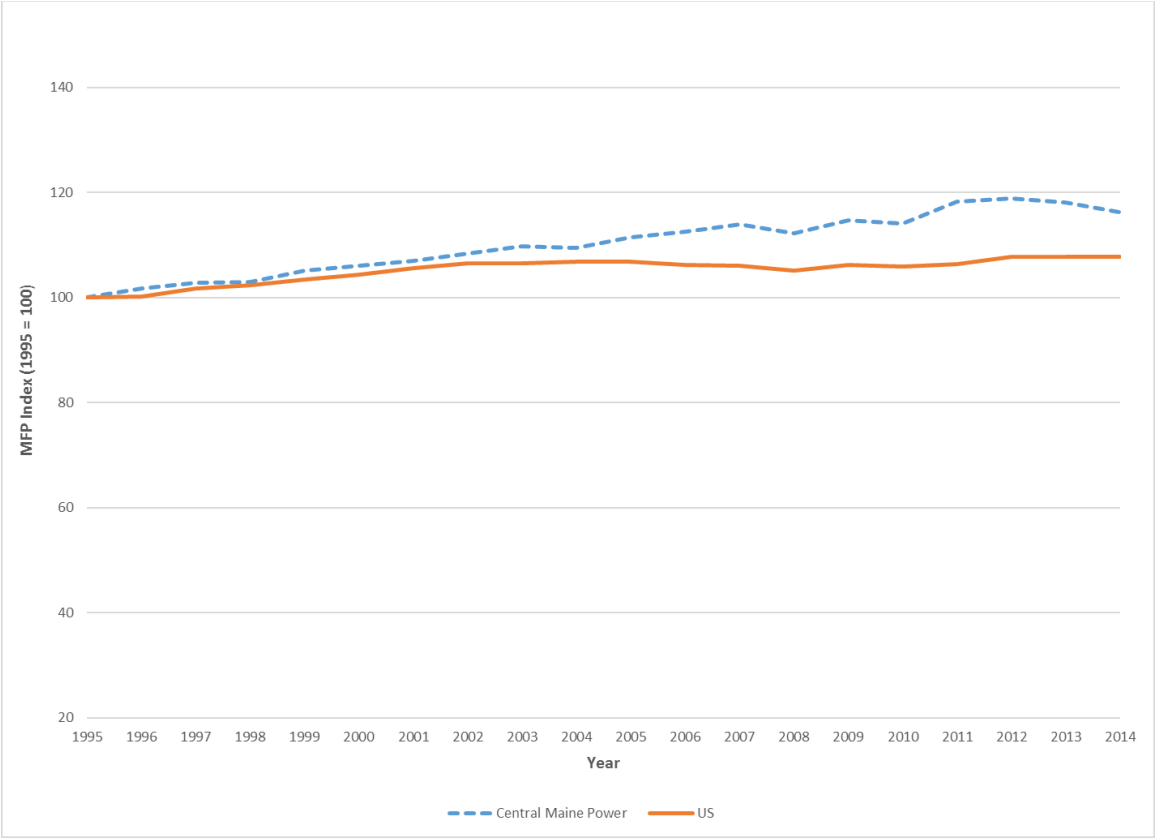
Plan term: 5 years (2009-13)

Service Quality: Multi-indicator penalty mechanism

Marketing Flexibility: Light-handed regulation of optional targeted rate schedules and rate discounts

Reference: Maine Public Utilities Commission, "ARP 2008 Settlement," June 2008

Multifactor Productivity Trend of CMP Under MRPs



MRPs have improved utility performance

But some plan provisions (e.g., earnings sharing & capital cost trackers) weaken incentives

ARM Design Options

ARM design is biggest issue in most MRP proceedings

Several well-established approaches

- Indexing

  e.g., $\textit{growth Revenue} = \textit{Inflation} - X + \textit{growth Customers}$

- Forecasting

- Hybrid

X factor controversies in US and Canada

Revenue Decoupling

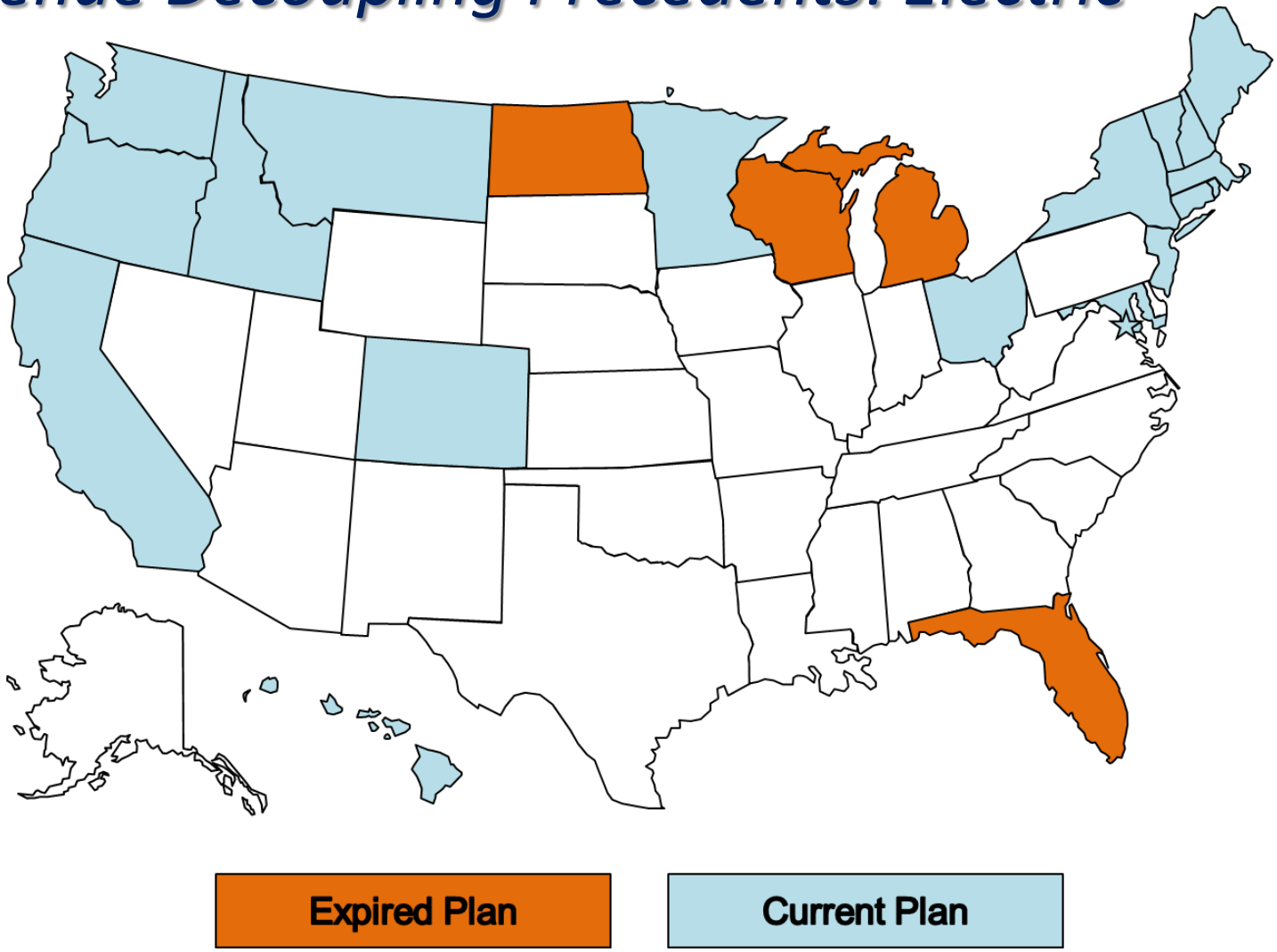
Decoupling Basics

- Tracker and rider cause *actual* revenue to track *allowed* revenue closely
- Thus, revenue (and earnings) are "decoupled" from UPC
- Revenue adjustment mechanism escalates allowed revenue (e.g., for customer growth)

Decoupling Advantages

- Eliminates "lost margin" disincentive for utility to embrace DSM and DG
- Rate designs that encourage efficient DSM and DG are less risky
- No need for high fixed charges that many (e.g., Wisconsin) utilities favor
- Reduces rate case frequency by targeting an attrition problem

Revenue Decoupling Precedents: Electric



Special Incentives for Underused Inputs

The Basic Idea

- Utilities can be reluctant to use certain inputs (e.g., substitutes for capex) or embrace new ways of doing things
- Targeted inducements for such actions are available

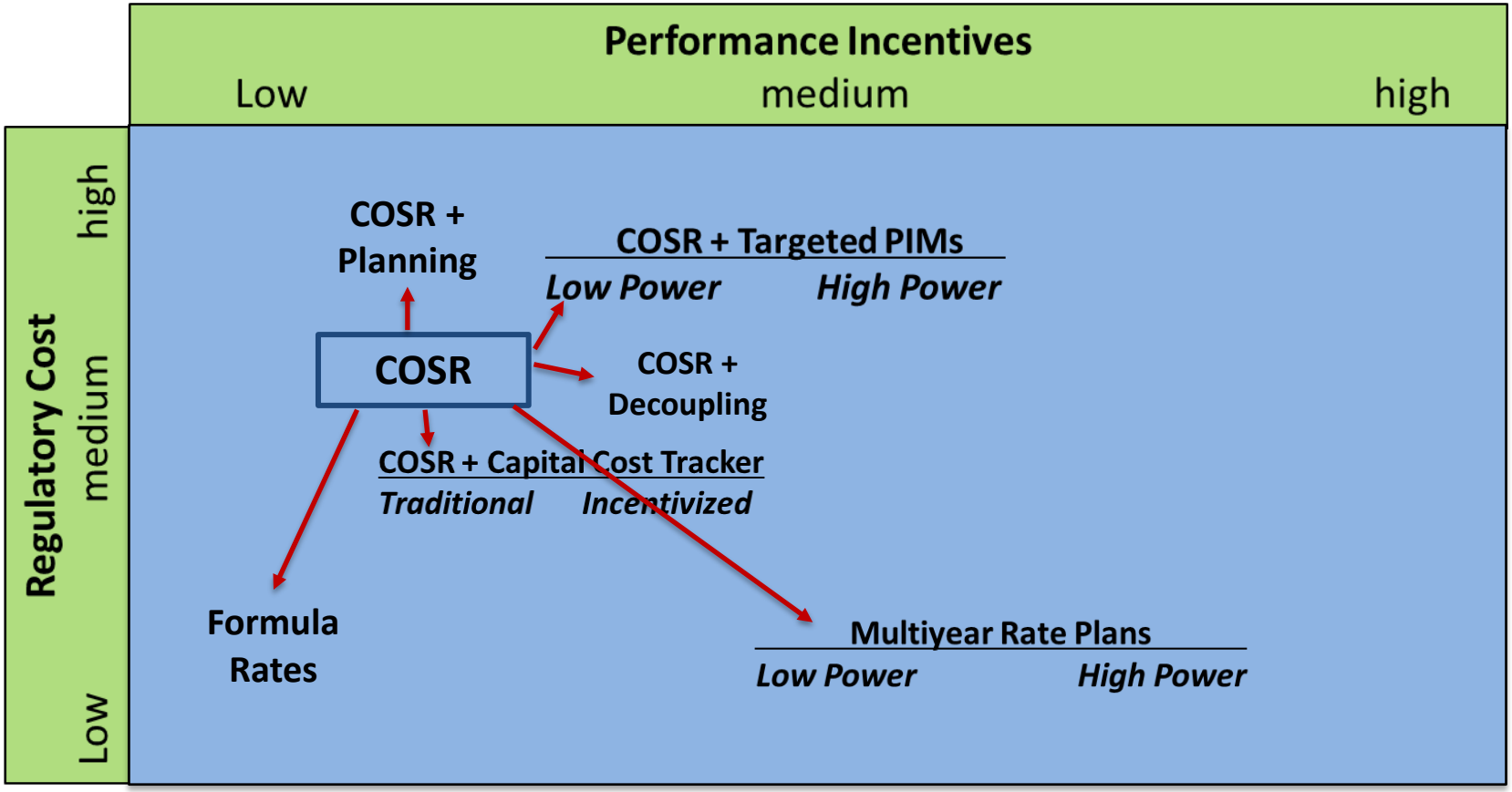
Tools

- Trackers and riders for costs of underused inputs
  (e.g., DSM and purchased power expenses)
- Capitalize operation & maintenance expenses and add ROE premium
- Prior approval and pilot programs for risky but promising initiatives

Downside

- Cost trackers are a crude tool that can give rise to excessive costs
  (e.g., many utilities have made imprudent purchased power commitments)

Key Attributes of Altreg Alternatives



Performance Metrics

Performance metrics quantify utility activities in key performance areas

Several potential uses

- **Monitoring Only**
- **Monitoring with Target**
- **Performance Incentive Mechanisms (PIMs)**

PIMs strengthen incentives in targeted areas by linking revenue to performance

Performance metric systems can have different approaches for different metrics

"Scorecards" summarize utility performance for public

What do PIMs Target?

PIMs most commonly target service quality and energy conservation (e.g., *positive* incentive to embrace conservation)

Need for *new* performance metrics and incentive mechanisms is focus of recent "utility of the future" proceedings

Peak load management

- *System* load peak
- "Non-wire alternatives" to *local* grid investments

Utilization of advanced metering infrastructure capabilities

Quality of service to DG customers

Electric vehicles

Ontario Scorecard Metrics

Performance Outcomes	Performance Categories	Measures	
Customer Focus Services are provided in a manner that responds to identified customer preferences.	Service Quality	New Residential/Small Business Services Connected on Time	
		Scheduled Appointments Met On Time	
		Telephone Calls Answered On Time	
	Customer Satisfaction	First Contact Resolution	
		Billing Accuracy	
		Customer Satisfaction Survey Results	
Operational Effectiveness Continuous improvement in productivity and cost performance is achieved; and distributors deliver on system reliability and quality objectives.	Safety	Level of Public awareness [measure to be determined]	
		Level of Compliance with Ontario Regulation 22/04	
		Serious Electrical Incident Index	Number of General Public Incidents
			Rate per 10, 100, 1000 km of line
	System Reliability	Average Number of Hours that Power to a Customer is Interrupted	
		Average Number of Times that Power to a Customer is Interrupted	
	Asset Management	Distribution System Plan Implementation Progress	
	Cost Control	Efficiency Assessment	
		Total Cost per Customer [1]	
		Total Cost per Km of Line [1]	

Notes:
1. These figures were generated by the Board based on the total cost benchmarking analysis conducted by Pacific Economics Group Research, LLC and based on the distributor's annual reported information.
2. The Conservation & Demand Management net annual peak demand savings include any persisting peak demand savings from the previous years.

Ontario Scorecard Categories (continued)

Performance Outcomes	Performance Categories	Measures	
Public Policy Responsiveness Distributors deliver on obligations mandated by government (e.g., in legislation and in regulatory requirements imposed further to Ministerial directives to the Board).	Conservation & Demand Management	Net Annual Peak Demand Savings (Percent of target achieved) [2]	
		Net Cumulative Energy Savings (Percent of target achieved)	
	Connection of Renewable Generation	Renewable Generation Connection Impact Assessments Completed On Time	
		New Micro-embedded Generation Facilities Connected On Time	
Financial Performance Financial viability is maintained; and savings from operational effectiveness are sustainable.	Financial Ratios	Liquidity: Current Ratio (Current Assets/Current Liabilities)	
		Leverage: Total Debt (includes short-term and long-term debt) to Equity Ratio	
		Profitability: Regulatory Return on Equity	Deemed (included in rates)
			Achieved

Notes:
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Cost Performance PIMs

Cost performance PIMs have the general form

$$Award/Penalty = \$ \times (Cost\ Metric^{Actual} / Cost\ Metric^{Benchmark})$$

Benchmarks are often based on statistics (e.g., average value of metric for a utility peer group)

Statistical Benchmarking	Approaches to benchmarking that use statistics

Econometric Benchmarking

Basic steps…

- Develop mathematical model of relationship between cost and cost drivers
- Estimate model parameters using historical utility operating data
- Fit model with parameter estimates (a_0, a_2, …) & utility values for business condition variables

$$\ln Cost_{Bench} = a_0 + a_1 \times \ln Input\ Prices^{Western} + a_2 \times \ln Customers^{Western} + a_3 \times \ln Line\ Miles^{Western} + \ldots$$

Compare benchmark to utility's actual value

$$Performance = Cost_{Actual}/Cost_{Bench}$$

Illustrative Econometric Cost Model Used in Regulation

VARIABLE KEY

N = Number of Retail Customers
CAPTOT = Total Generating Capacity
GNET = Net Generation Volume
AGETOT= Average Age of Generation Plant
PCTDIRT= Percentage of Generation Capacity that is Coal or Heavy Fuel Oil
PCTNUC= Percentage of Generation Capacity that is Nuclear
PCTSCR= Percentage of Generation Capacity that is Scrubbed
PCTELEC= Percentage of Retail Customers who are Electric
TXMIPERCUST= Line Miles per Retail Customers in 2012
PCTPOTD= Percentage of Line Plant that is Overhead
Trend = Time Trend

EXPLANATORY VARIABLE	PARAMETER ESTIMATE	T-STATISTIC	P-VALUE
N	0.546	24.558	0.0000
CAPTOT	0.183	7.446	0.0000
GNET	0.122	6.119	0.0000
AGETOT	0.128	4.119	0.0000
PCTDIRT	0.186	6.329	0.0000
PCTNUC	0.275	21.575	0.000
PCTSCR	0.066	4.369	0.000
PCTELEC	0.070	2.178	0.030
TXMIPERCUST	0.050	3.516	0.000
PCTPOTD	0.131	3.290	0.001
Trend	-0.005	-4.487	0.000
Constant	19.616	741.485	0.000

Rbar-Squared	0.955
Sample Period	1996-2016
Number of Observations	1134

REFERENCE:
Public Utilities Commission of Colorado, D-17AL-0649E, Testimony of Mark N Lowry for Public Service of Colorado, October 3, 2017. Model developed by PEG Research LLC

Benchmarking in Regulation

Regulators in some jurisdictions do their *own* cost benchmarking

Australia	O&M & capex
Ontario	Total cost
GB	"Totex" (O&M & capex)

e.g., Ontario Energy Board

60+ Ontario power distributors operate under multiyear rate plans

Board benchmarks their total cost annually using econometric model

Basis for "stretch factors" in price cap indexes w/ Inflation – X formulas

Distributors must use the model to benchmark their proposed forward test year revenue requirements in rate cases

OEB is now developing *granular* benchmarking capability

Roles for PBR Tools

When PBR tools are used in concert each has a role

PBR Tools	Roles
Multiyear Rate Plans	Strengthen *general* cost containment incentives Streamline regulation
Revenue Decoupling	Removes disincentives to embrace DSM, DG, and innovative pricing
Special Incentives for Underused Inputs	Encourages use of these inputs
PIMs	Shore up weak spots in incentive structure

Formula Rates

Basic Idea

Revenue requirement adjusted annually to reflect pro forma cost of service --- "cost of service formula"

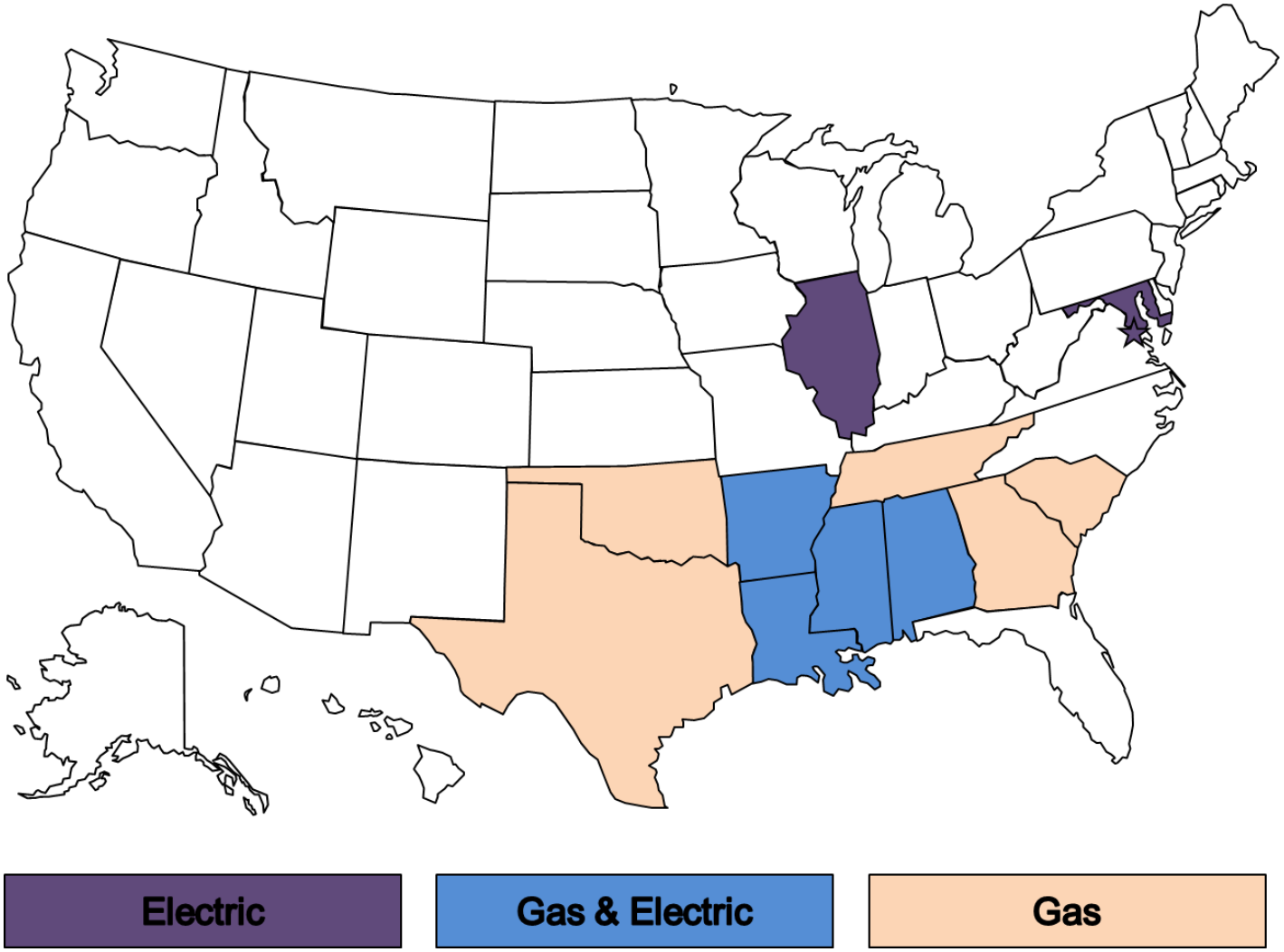
Retail variant: reset rates automatically to achieve target ROE when actual (or forecasted) ROE differs materially

Scope and duration of prudence reviews reduced

Supplemental "bells & whistles" may strengthen incentives and add a PBR flavor

- SQ PIMs
- *growth Revenue$^{O\&M}$ < Growth CPI+ 0.5%*

Formula Rate Precedents



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