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Performance-Based Regulation: The Power of Outcomes

RAP/CESC Webinar, Part 2

David Littell
Principal
The Regulatory Assistance Project (RAP)®

550 Forest Avenue, Suite 203
Portland, Maine
United States

+1 207 592 1188
dlittell@raponline.org
raponline.org

1 What is PBR?

“All regulation is incentive regulation”

Bradford, P. (1989). Incentive Regulation from a State Commission Perspective. Remarks to the Chief Executive’s Forum

Incentives of traditional regulation

- Build and own to grow rate base
- Increase volume of sales and electricity usage to enhance profits
- Cut non-capital expenses
- Avoid disallowances

PBR provides a regulatory framework to connect goals, targets, and measures to utility performance or executive compensation.

Performance Based Regulation is. . .

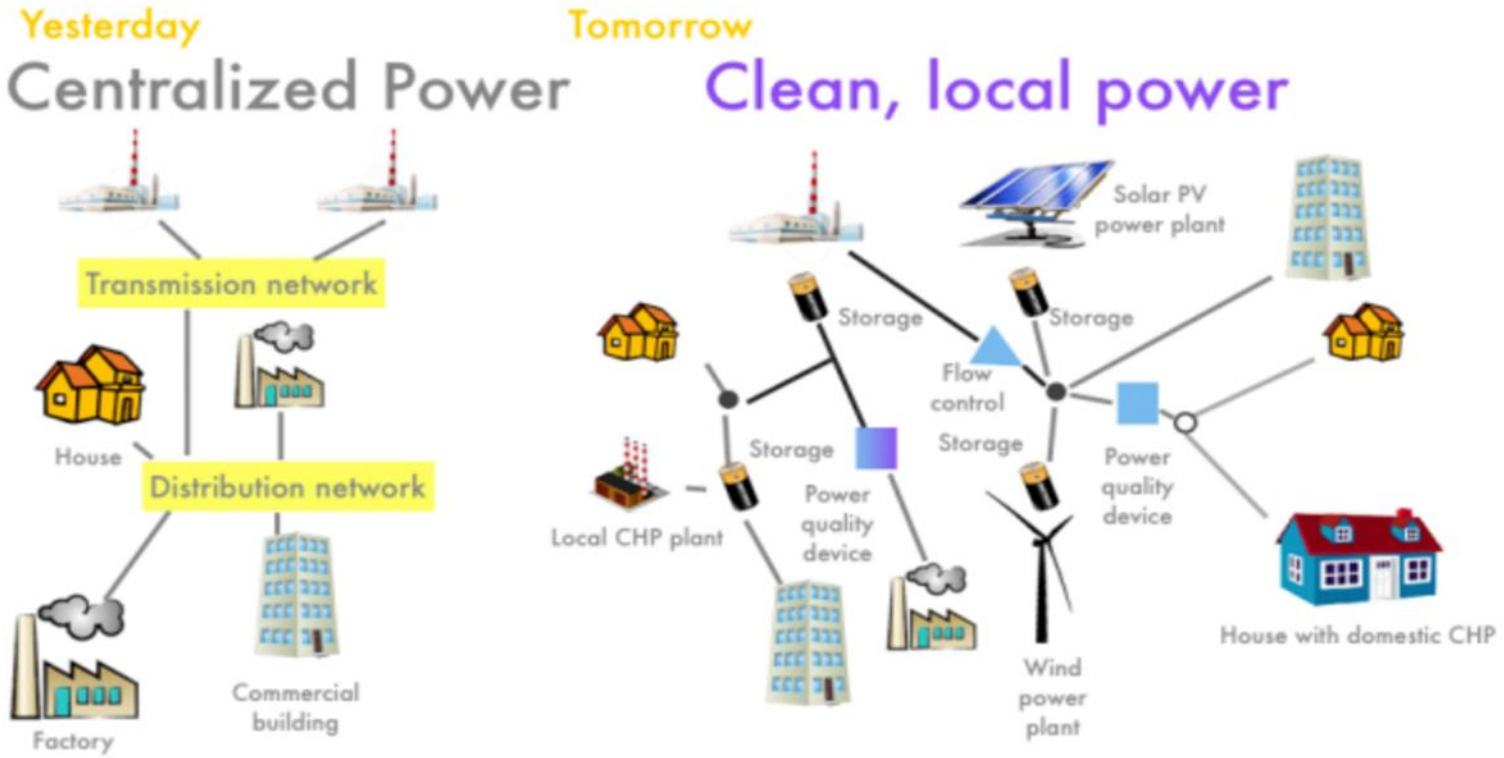
- PBR provides a regulatory framework to connect goals, targets, and measures to utility performance or executive compensation.
- Performance Incentive Mechanism (PIMs) are a component of a PBR that adopts specific performance metrics, targets, or incentives to affect desired utility performance that represent the priorities of the jurisdiction.

Elements of PBR

- Understand status quo incentives
- Guiding goal
- Directional incentives
- Operational incentives
- Measurable performance criteria
- Metrics
- Outputs and outcomes

2 Why is PBR important?

PBR and smart transformation of power sector



Source: Farrell, J. (2011). The Challenge of Reconciling a Centralized v. Decentralized Electricity System. Institute for Local Self-Reliance.

Old system = barrier to new technologies, policies

Questions: are there . . .

- Good things that are not profitable for the utility? (EE, solar PV)
- Bad things that are profitable to the utility? (Non-beneficial electrification)
- Good things not getting done for lack of interest or motivation? (Smart meters)
- Bad incentives but easily seen or less easily seen? (Swapping lightbulbs)

PBR can identify, target positive incentives and outcomes

- Solar distributed generation
- Higher ramping rate for integration of renewables
- Peak load reduction via demand response
- Increase customers enrolled in time-varying rates
- Water savings
- EV rate education and charging station deployment

3 What does “Bad” PBR look like?

Practices that can lead to difficulty

- Basing performance incentives on inputs
- Rewards or penalties based on exogenous factors ex: weather, economic growth, etc.
- Unclear or uncertain metrics or goals
- Lack of clarity and measurement methodology
- Not understanding utility motivations

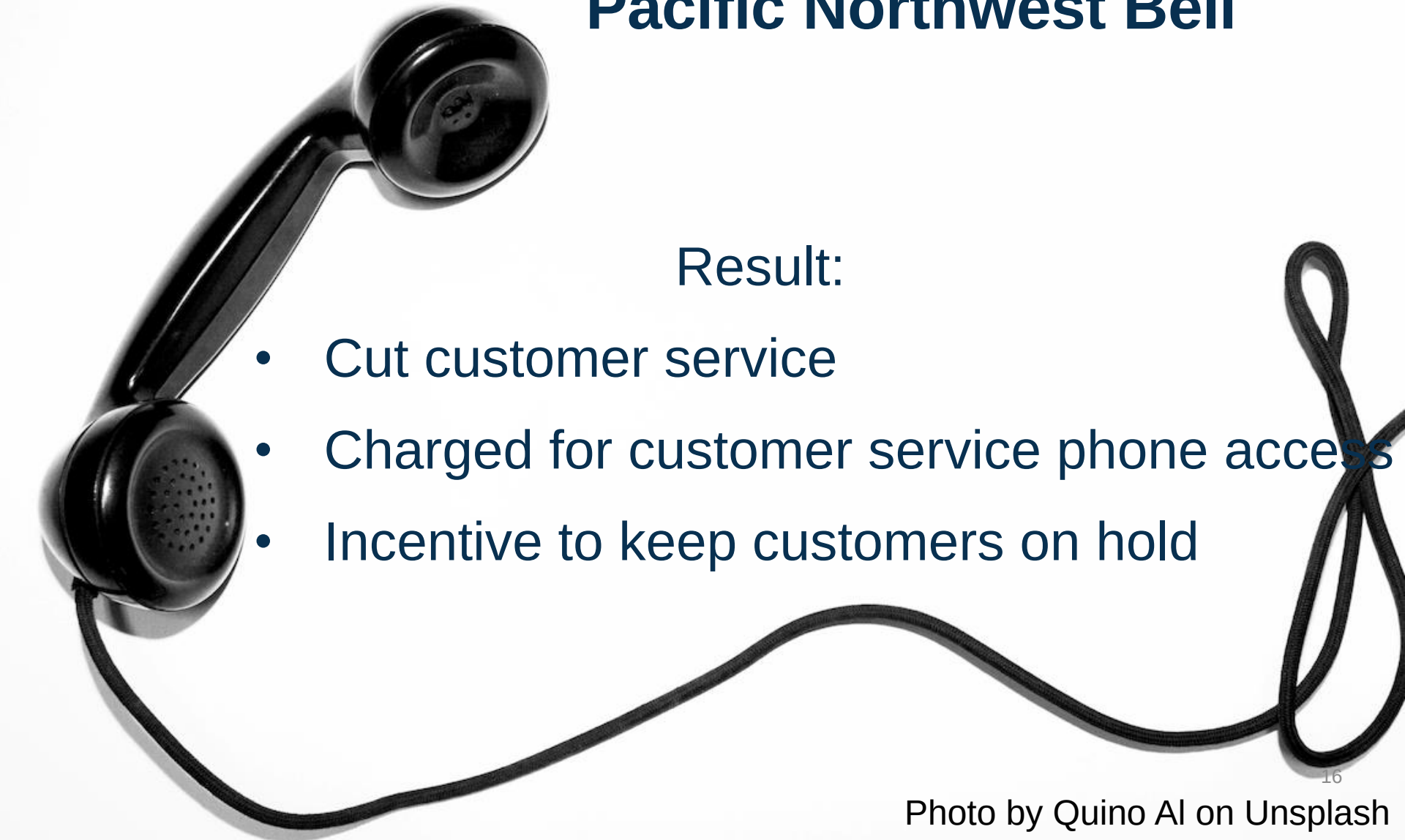
Energy Efficiency Funding
U.S. State of Washington

- Bad incentive structure incentivized the utility to spend a lot on measures that saved very little.

Photo by Jay Mantri on Unsplash

Carte Blanche for Cost Cutting

Pacific Northwest Bell



Result:

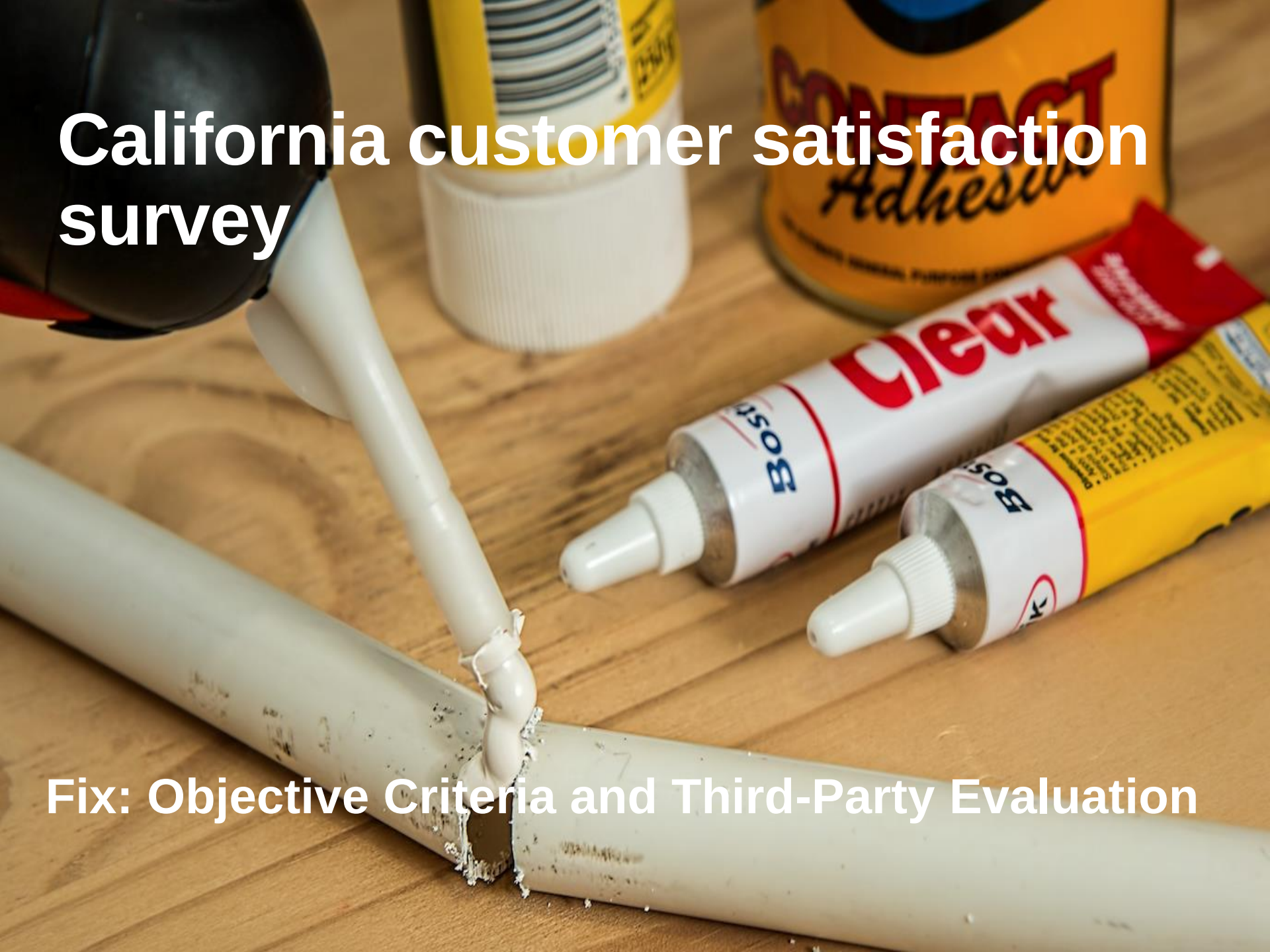
- Cut customer service
- Charged for customer service phone access
- Incentive to keep customers on hold

Photo by Quino Al on Unsplash

Energy Efficiency Incentive Structure

Puget Sound Power and Light, Washington

Utility short of the targets in 9 out of 10 topical areas, but received huge incentive


California customer satisfaction survey
Clear
Fix: Objective Criteria and Third-Party Evaluation

The Charlotte Observer

BUSINESS

Expert: Save-a-watt a rip-off for consumers

By John Murawski - (Raleigh) News & Observer

AUGUST 01, 2008 12:00 AM

Duke Energy's controversial energy efficiency plan would be a windfall to Duke shareholders and a rip-off to Duke customers, an energy expert told state regulators Thursday.

Testifying before the N.C. Utilities Commission, Richard Spellman laid out the case against the save-a-watt proposal after the company's experts and executives had advocated for the proposal during three previous days of hearings.

If approved by the utilities commission, Spellman said, Duke's proposal would be the most expensive energy-efficiency program in the nation, but it would produce negligible energy savings.

Save-a-watt "is a bad deal for Duke ratepayers, but it is a great deal for stockholders in the company," Spellman said. "Do you want to be the one state in the U.S. that ends up with a (cost) that's a lot higher than what's being paid elsewhere?"

How are avoided costs calculated in the incentive?

Baseline and Incentive Design are critical

- “Save-A-Watt” program adopts high incentive
- The incentive was avoided investment in plant
- Perceived as paying excessive incentives to the utility for avoided investment in plant
- “Most expensive energy efficiency program in the nation”

FERC Transmission ROE Policies

- To broadly improve transmission reliability and reduce congestion, FERC's Order No. 679 awards the transmission utility a higher rate of return on equity for new transmission investment.
- There is no requirement to quantify the benefits of a given investment in relationship to overall costs

4 What does “Good” PBR look like?

Incentives set up to work

- Create good incentives
- Remove bad incentives
- Establish transparency at each step
- Align benefits and rewards
- Learn from experience
- Simple is good

Illinois Metrics for Time-of-Use Rates

ComEd customers enrolled in time-varying rates

- Number of residential customers on the utility tariff with time-variant or dynamic pricing
- Number of residential customers serviced by retail suppliers which have requested monthly data interchange for interval data

California PBR for nuclear plant capacity factor

Diablo Canyon nuclear plant costs were high

- Rate base of cost overruns rejected
- Performance metric based on plant availability
- Diablo Canyon enjoyed a very high availability rate and operated with a very high capacity factor for much of its service life.

ConEd's Brooklyn-Queens Demand Management Project

Localized DERs to Achieve Lowest Cost service

- Utility provided incentives such as direct payments to DER providers or customers
- Facilitated competitive procurements among DER providers; payments capped at the utility savings
- Shared savings consisted of ratepayers avoiding additional distribution costs; Con Edison receiving some of these savings in the form of a ROE adder

Non-Wires Alternatives

CPUC December 2016 Order

- Each utility is required to identify a significant upcoming distribution system investment and solicit proposals to meet the need with portfolios of distributed resources.
- If the most cost effective, then the utility will be required to enter into a contract with the winner.

Facilitated Competition Model under a Monopoly Regulated Business

- The power sector is changing rapidly
- Regulation should seek outcomes that simulate competitive market behavior where possible and beneficial
- For some purposes, advanced distributed technologies enable competition for provision of safe, reliable and low cost service

New York's "Reforming the Energy Vision"

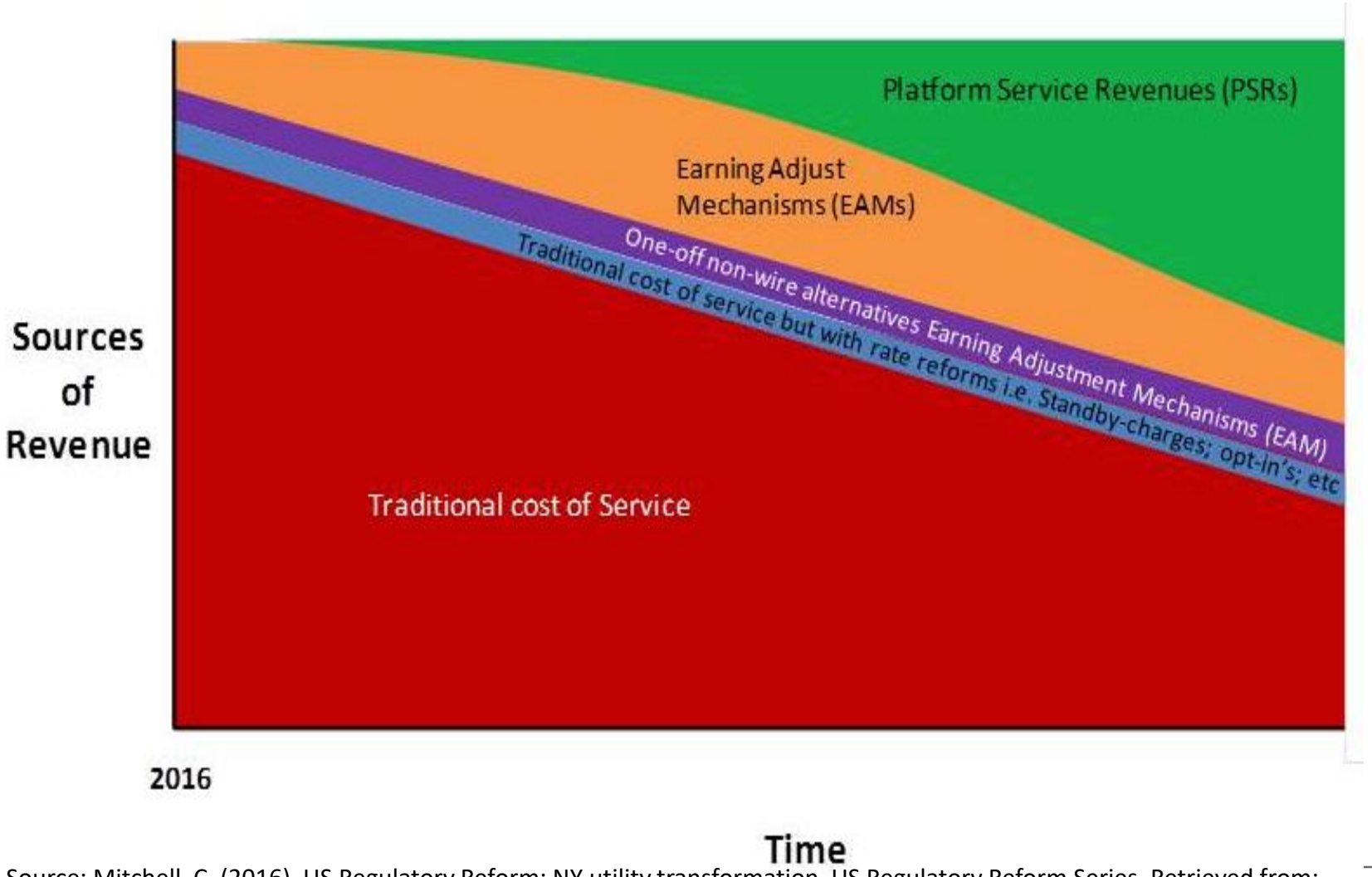
Integration of markets, customers, DER developers and utility regulation

- Metrics to encourage utilities to motivate third party activity where that provides efficient system outcomes
- Outcome-based incentives encourage innovation by utilities, allowing utilities to determine the most effective strategy

NY REV rewards distribution utilities for achieving facilitated competition and customer satisfaction

- Earnings Adjustment Mechanisms
- Financial details set in rate cases for each distribution utility
- Some EAMs are expected to supplement contributions to platform service revenues for the foreseeable future.

NY REV utility revenue over time

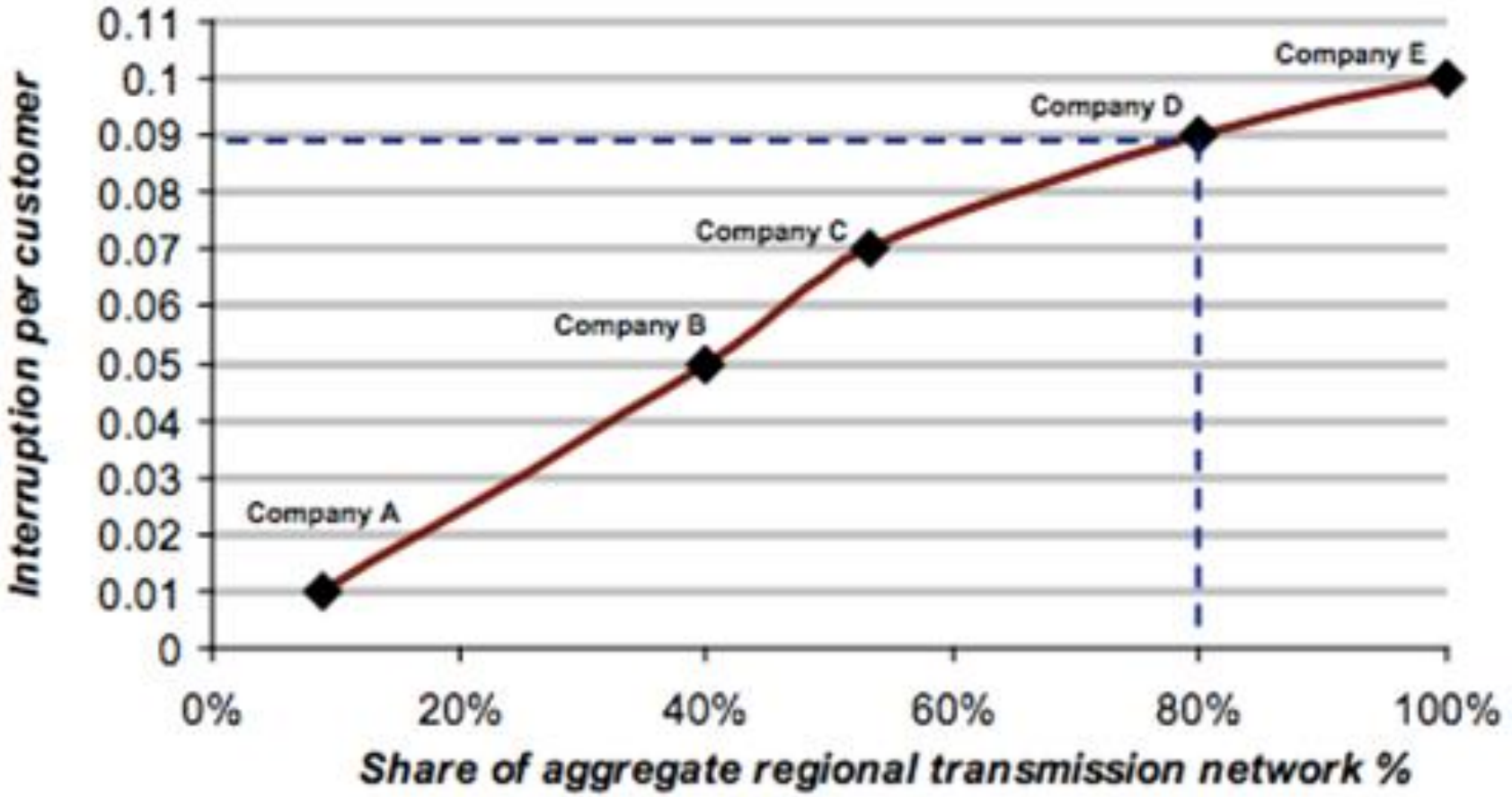


Source: Mitchell, C. (2016). US Regulatory Reform: NY utility transformation. US Regulatory Reform Series. Retrieved from: http://projects.exeter.ac.uk/igov/us-regulatory-reform-ny-utility-transformation/

5. PBR in Europe

PBR in Denmark
Benchmarking model: outages / quality of delivery & efficiency

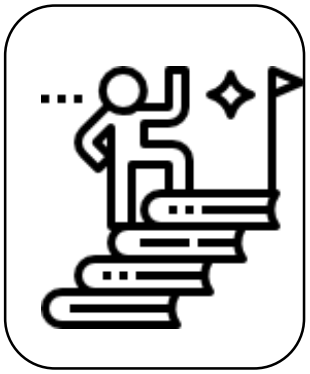
Danish PBR for Reliability



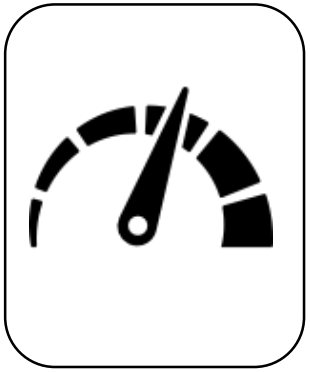
Source: DERA (2009)

PBR for Reliability in Denmark

Efficiency benchmarking model

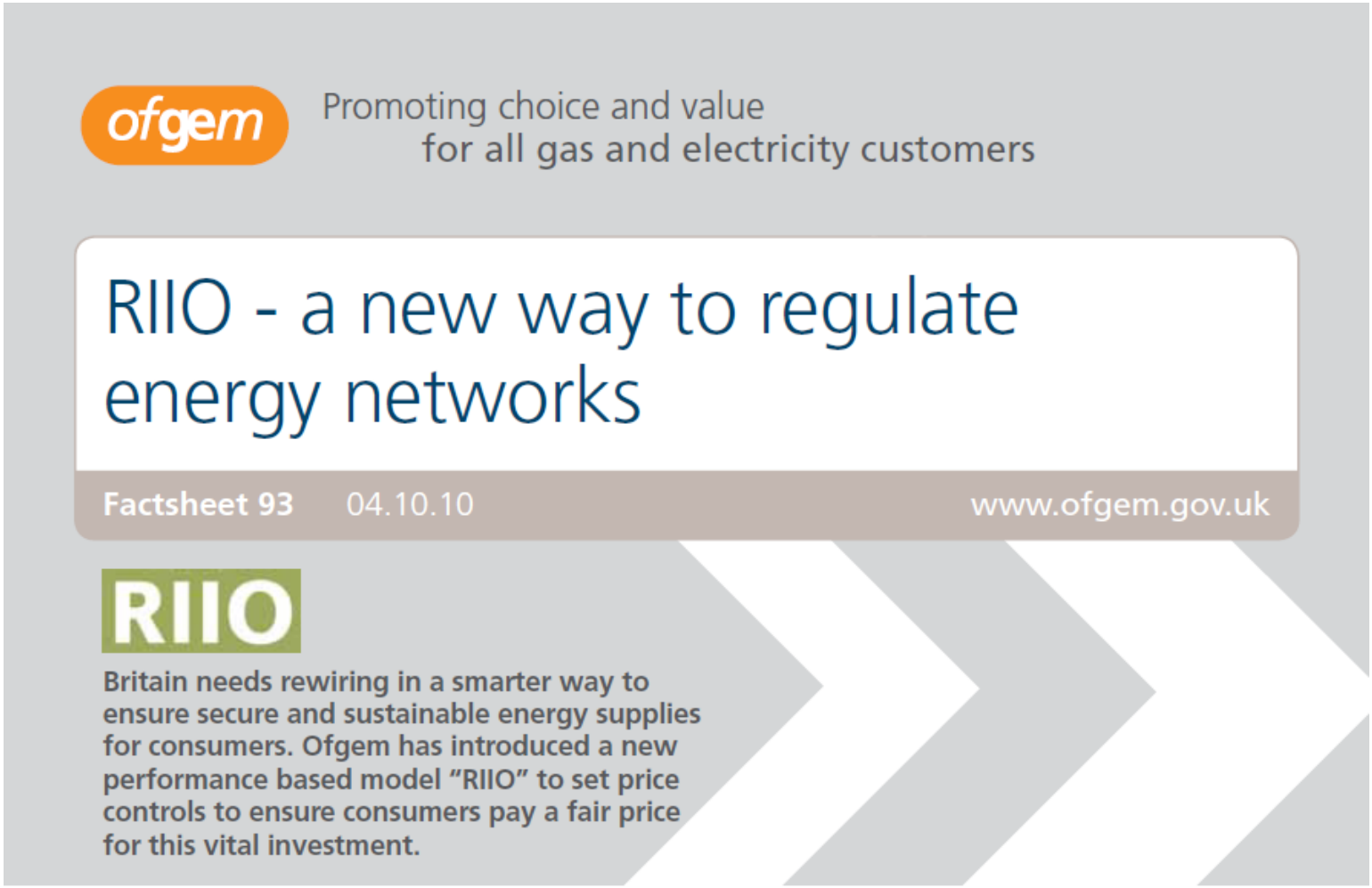


Goal: to encourage the most inefficient Distribution System Operators (DSOs) to become as efficient as the top 10% of DSOs within a four-year period



How measured? Efficiency index comparing the actual cost incurred by a DSO in operating its grid with the costs incurred by an “average” DSO.

RIIO in the UK



Electricity Distribution Networks Operators

Customer

Key

- green ✓ Met target in year 1 or RIIO-ED1
- amber ■ Failed part of target in year 1 or RIIO-ED1
- red ✗ Failed full target in year 1 or RIIO-ED1

Safety

	ENWL	NPgN	NPgY	WMID	EMID	SWALES	SWEST	LPN	SPN	EPN	SPD	SPMW	SSEH	SSES
Compliance with HSE Legislation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Environmental[1]

	ENWL	NPgN	NPgY	WMID	EMID	SWALES	SWEST	LPN	SPN	EPN	SPD	SPMW	SSEH	SSES
Oil leakage	■	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	■	✓	✓
Business carbon footprint	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SF_6 emissions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Customer Service (scores out of 10)

	ENWL	NPgN	NPgY	WMID	EMID	SWALES	SWEST	LPN	SPN	EPN	SPD	SPMW	SSEH	SSES
Interruptions survey	8,08	8,68	8,69	8,88	8,97	9,14	8,86	8,52	8,63	8,88	8,79	8,86	9,06	8,39
Connections survey	7,75	8,03	7,95	8,7	8,79	8,75	8,73	8,13	8,34	8,10	8,36	8,43	8,55	7,88
General enquiries survey	8,52	8,93	8,76	9,14	9,35	9,29	9,18	8,86	9,12	9,16	8,84	9,24	8,72	8,53
Complaints metric[2]	7,65	8,00	7,19	1,70	1,92	3,04	2,41	5,18	6,10	5,60	3,60	3,37	4,08	4,65

Connections

	ENWL	NPgN	NPgY	WMID	EMID	SWALES	SWEST	LPN	SPN	EPN	SPD	SPMW	SSEH	SSES
Time to quote	✓	✓	✓	✓	✓	■	✓	✓	✓	✓	✓	✓	✓	✓
Time to connect	✓	✓	■	✓	✓	✓	✓	✓	✓	■	✓	✓	✓	✓

Reliability

	ENWL	NPgN	NPgY	WMID	EMID	SWALES	SWEST	LPN	SPN	EPN	SPD	SPMW	SSEH	SSES
Customer interruptions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Length of interruptions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Social obligations (scores out of 10)

	ENWL	NPgN	NPgY	WMID	EMID	SWALES	SWEST	LPN	SPN	EPN	SPD	SPMW	SSEH	SSES
Stakeholder engagement	6.90	← 6.50 →		←		8.75	→	←	7.53	→	← 6.78 →		← 5.73 →	

Customer Bill Impact

	April 2015	→	April 2017
ENWL	£89	-11.2%	£79
NPgN	£97	-6.2%	£91
NPgY	£84	-9.5%	£76
WMID	£80	3.8%	£83
EMID	£76	0.0%	£76
SWALES	£96	6.3%	£102
SWEST	£107	5.6%	£113
LPN	£66	1.5%	£67
SPN	£86	5.8%	£91
EPN	£76	3.9%	£79
SPD	£96	-5.2%	£91
SPMW	£121	-14.0%	£104
SSEH	£122	2.5%	£125
SSES	£80	1.3%	£81
GB	£87	-1.1%	£86

[1] No formal targets were set for environmental outputs. The performance score reflects the change from the previous year.
[2] Target score should be below 8.33.

Source: Ofgem (2016). RIIO-ED1 Annual Report 2015-16.

6 Takeaways

Takeaways

- Recognize PBR is a powerful tool in the regulator's toolbox
- PBR can align utility, ratepayer, and public interests
- PBR succeeds where it is clear, transparent at each step, and aligns rewards and incentives for utilities and customers

About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

David Littell, Principal
U.S. Team
The Regulatory Assistance Project®

Camille Kadoch, Publications Manager
U.S. Team
The Regulatory Assistance Project®

Jan Rosenow, Senior Associate
Europe Team
The Regulatory Assistance Project®