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Performance-Based Regulation: The Power of Outcomes

RAP/CESC Webinar, Part 1

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1 What is PBR?

“All regulation is incentive regulation”

- Incentives of traditional regulation
  - Build and own to grow rate base
  - Increase volume of sales and electricity usage to enhance profits
  - Avoid disallowances

PBR 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.

Guiding Goal

Photo: Heidi Sandstrom

Status quo: will it work?

- Identify, articulate, prioritize goals
- Does conventional regulation meet those goals?

  Assess existing incentives for goals

Directional Incentives

Photo: Shirley Niv Marton

Operational Incentives

Metrics

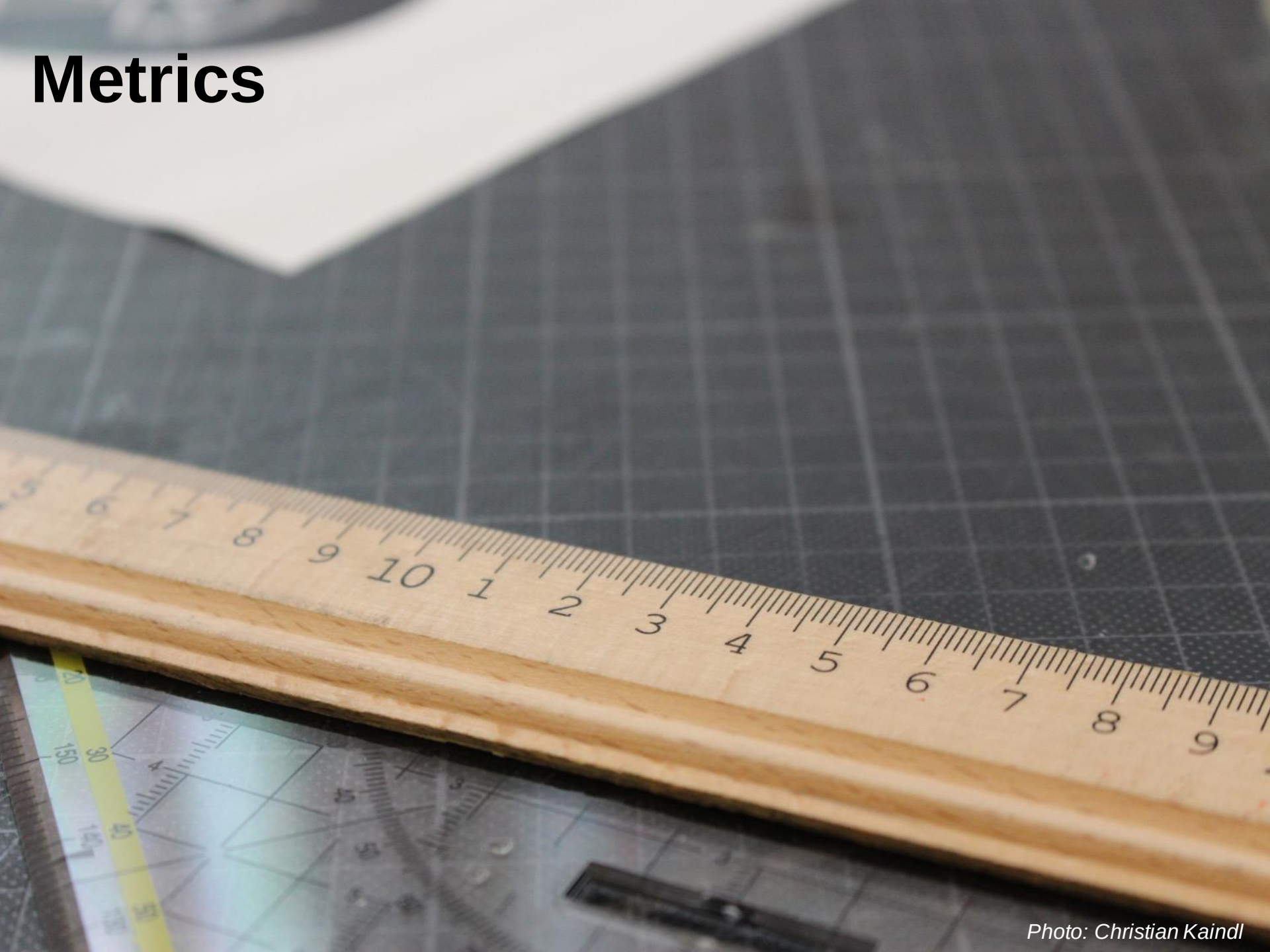


Photo: Christian Kaindl

Measurable Performance Criteria

Photo: Braden Collum

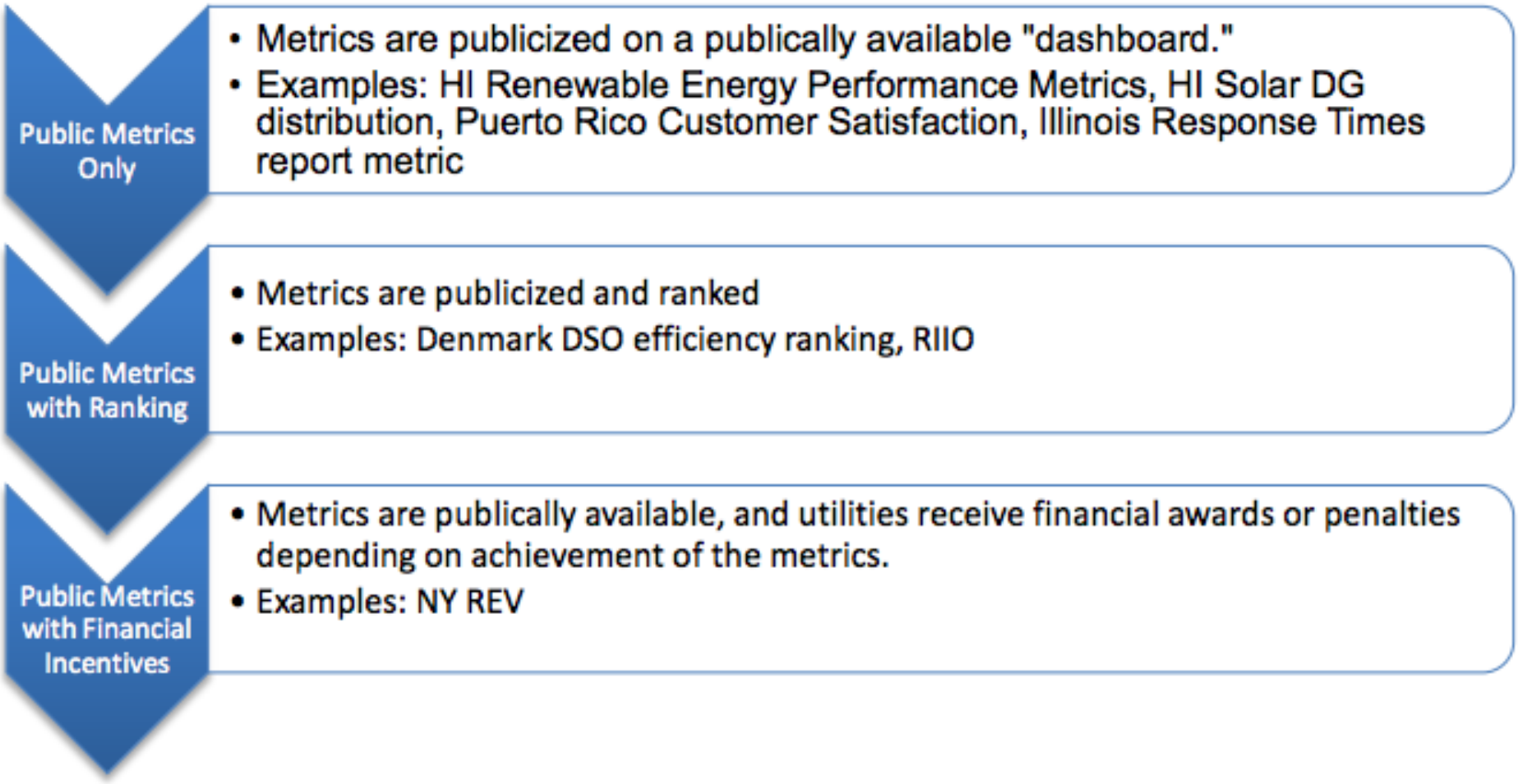


Figure 6. Metrics continuum

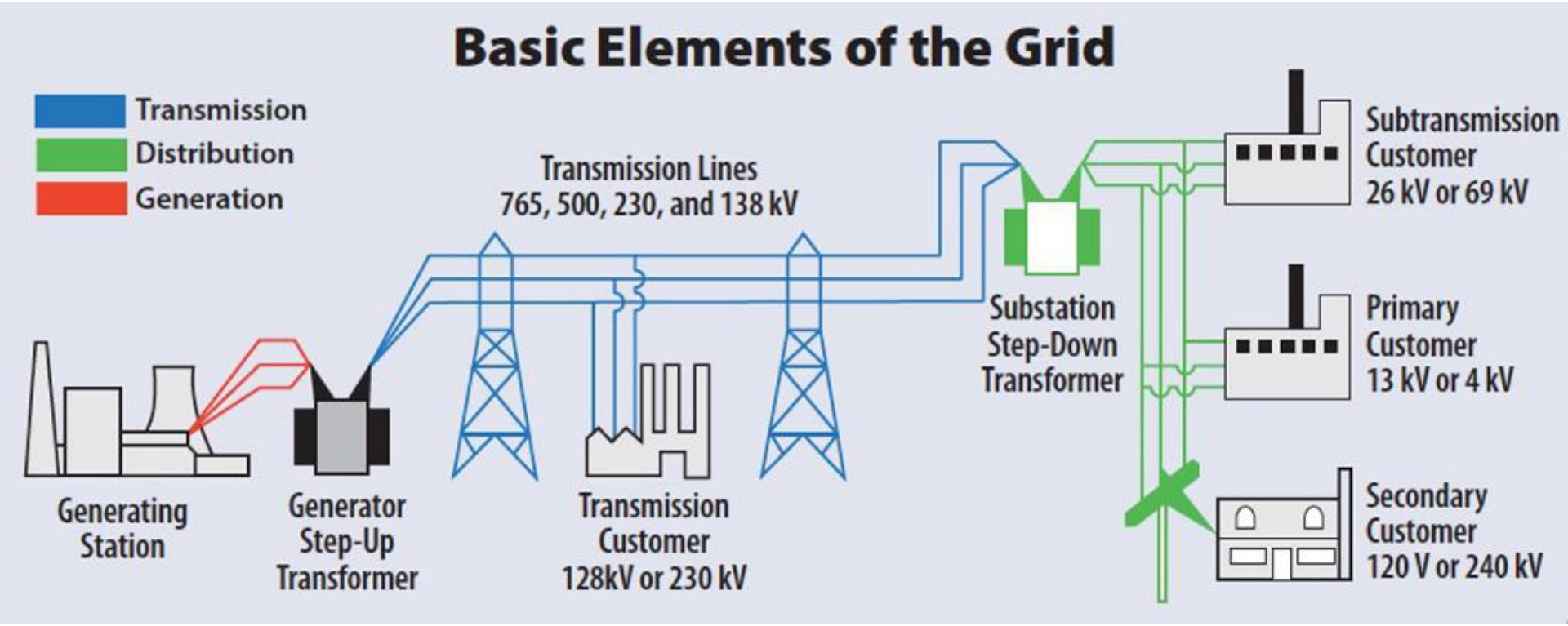
Outputs, Outcomes

- Outputs are specific results of utility actions, often measured as a measurable performance criteria or metrics
- Outcomes are how utility services affect ratepayers and society and are generally the desired results from a specific guiding goal, directional incentive and/or operational incentives.

Output	Outcome
Certain SAIFI result	Reliable service
Calls to call center answered in less than 20 seconds	Responsive customer service
Disconnections at less than x per month	Universal service
Interconnection of DG averaging $X in user costs on average in under Y days	Supported customer generation

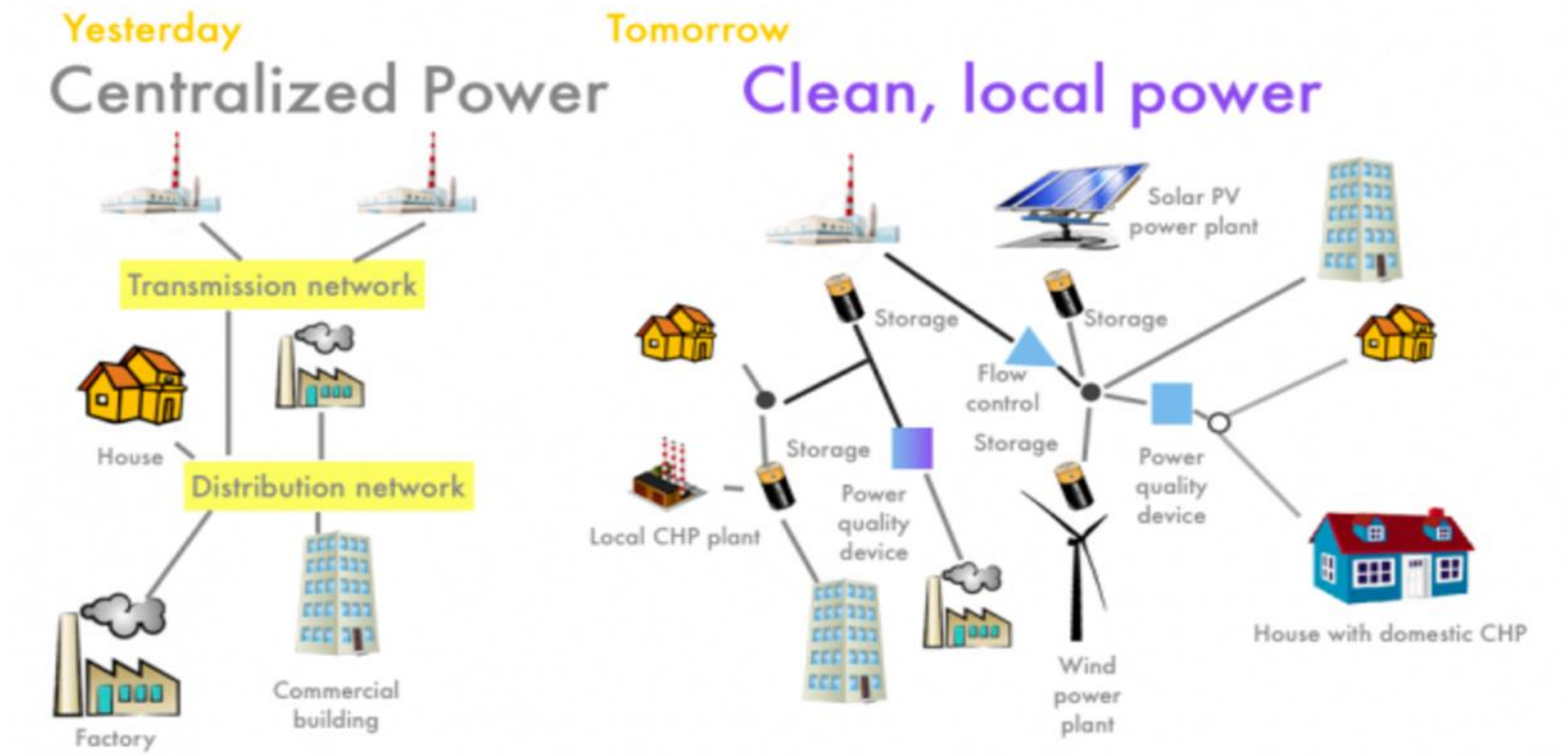
2 Why is PBR important?

PBR enables reform of 100-year old regulatory paradigm



Source: US-Canada Power System Outage Task Force final report, April 2004.

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

PBR can identify and 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

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 harness disruption

Recent history is full of transformative technology changes that were not foreseen by experts.

PBR is versatile

Investor-owned utilities

municipalities

State-owned entities

Cooperatives

3 What can be achieved through PBR?

More focus on outcomes, less focus on inputs (costs)

- But costs in cost of service regulation form basis for PBR so COS regulation is often the solid basis on which PBR is built
- PIMs are often added to traditional regulation
- PBR can take a broader approach to modify the regulatory incentives inherent in traditional regulation

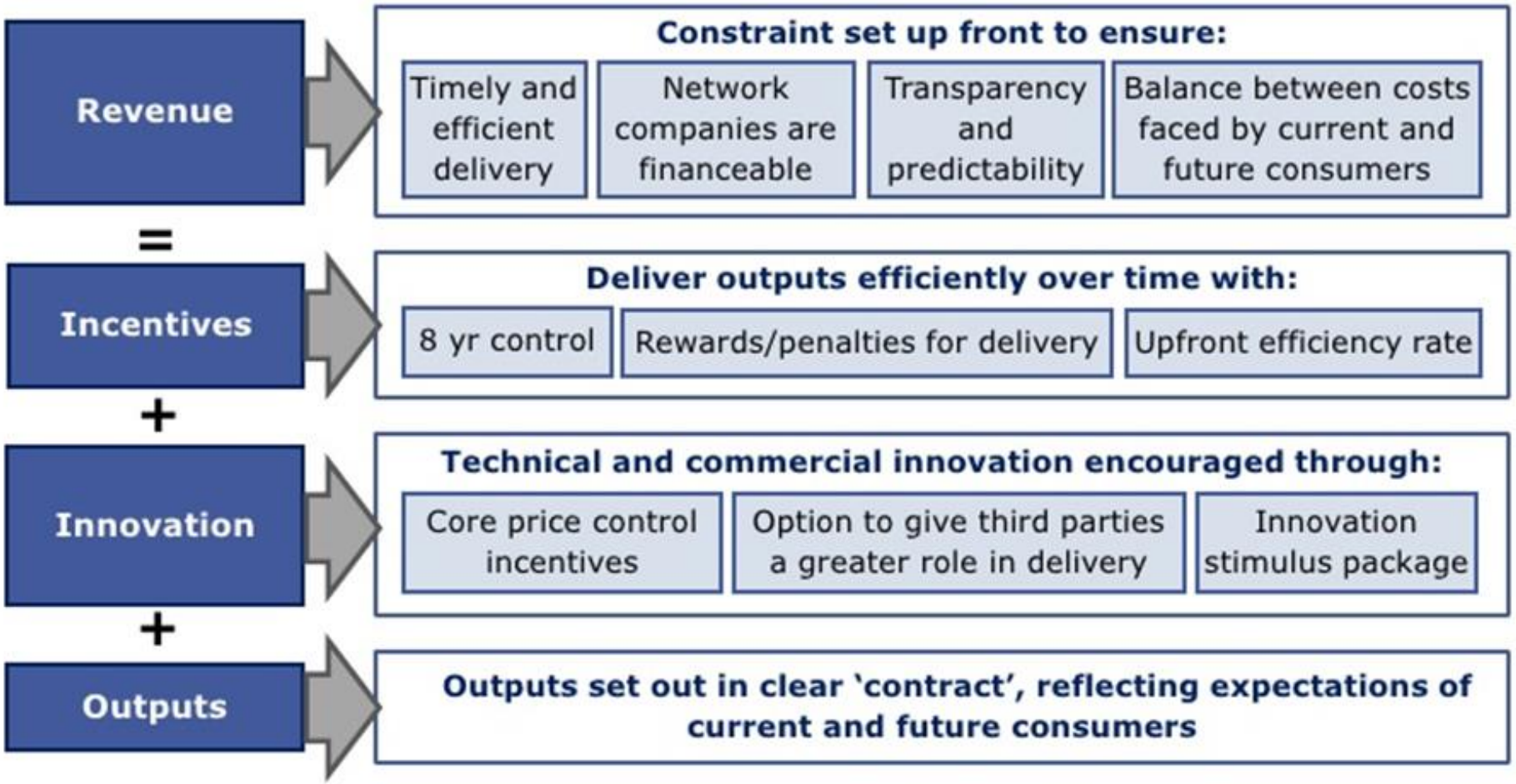
Incentives

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

Clarifying Questions?

4 Example: Revenues = Incentives + Innovation + Outputs (RIIO), United Kingdom

RIIO



Source: Buchanan, A. (2012). Moving Energy and Climate Change to a Better Place in 2012. Ofgem.

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.

5 Example: Cost Control

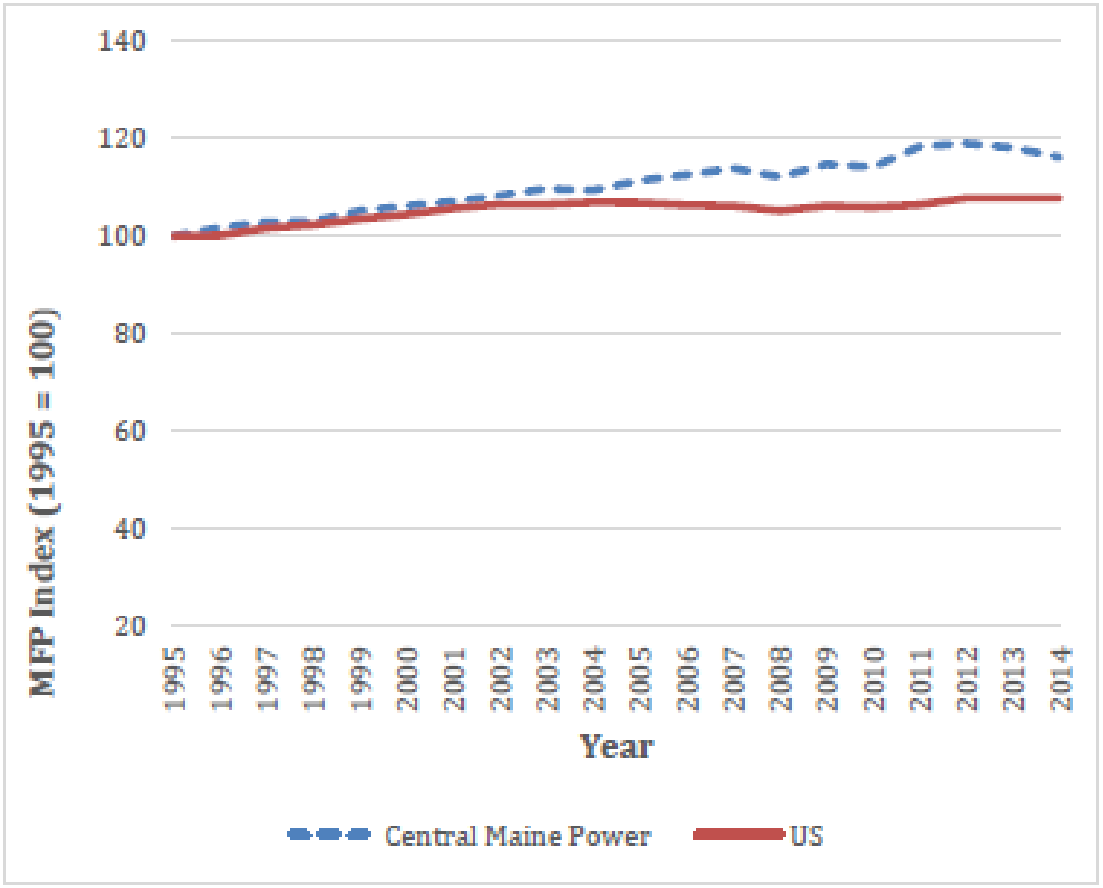
Multi-Year Rate Plans

- Set rates for longer period
- Allow utility to keep some/all savings if efficient
- First used in CA, NY, New England
- Common now in Australia, UK, Germany, New Zealand, Canada

Multi-Year Rate Plans can:

- Reduce frequency of rate cases, freeing up commission for other needs
- Improve culture of utility management
- Improve utility performance and lower utility costs
- Strengthen incentives for utilities to improve performance (Benefits ideally are shared between utilities and their customers)
- Often need customer service and reliability metrics

Productivity growth of CMP and other U.S. utilities, 1992-2014



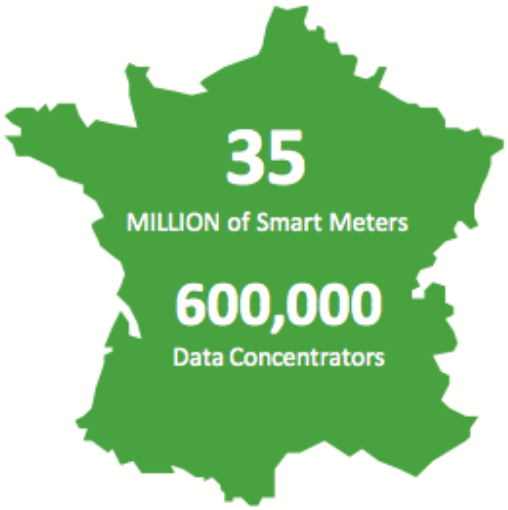
Source: M. Lowry et al. State PBR Using Multi-Year Rate Plans for U.S. Electric Utilities, July 2017.

6 Example: Smart Meter Rollout, France

DAILY COLLECTION RATE TARGET REQUIRED BY FRENCH ENERGY REGULATOR

kWh

95%



AN INDUSTRIAL ROLLOUT

6 YEARS

2015→ 2021

€ 5 B

Billion of current Euros of investment by 2021

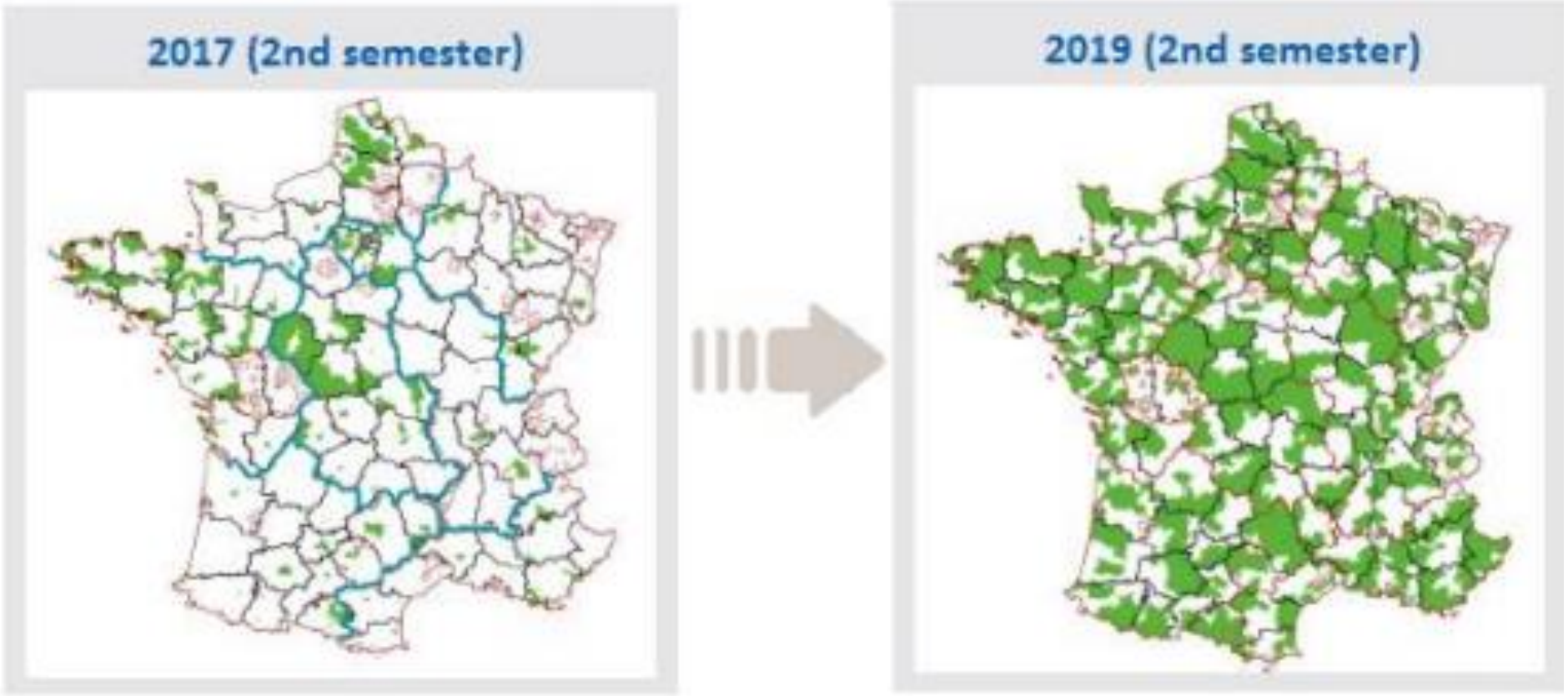
10 ,000 jobs created in France

(direct or indirect)

(5,000 jobs for mass rollout)

Source: Chauvenet, C. (2016) G3-PLC, the standard of the LINKY roll-out and beyond. ERDF.

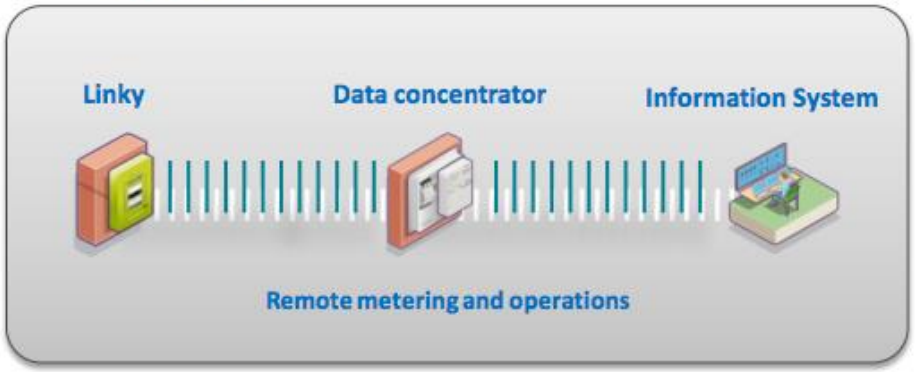
How does it work? (2 parts)



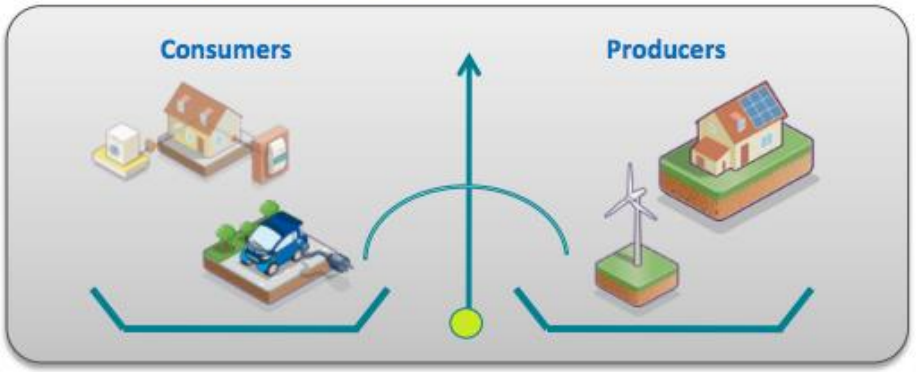
Source: Chauvenet, C. (2016) G3-PLC, the standard of the LINKY roll-out and beyond. ERDF.

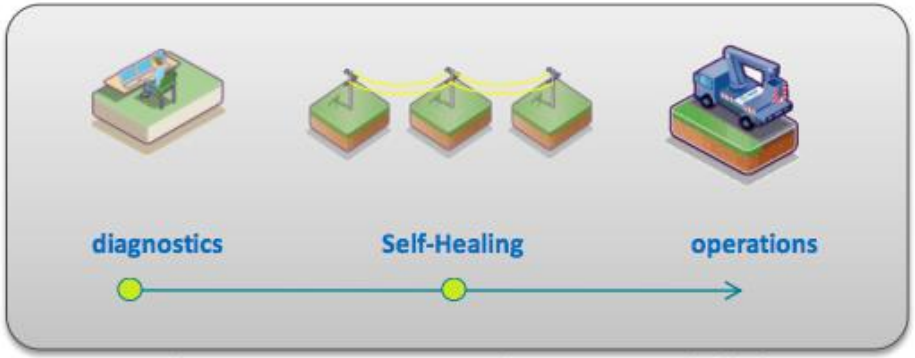
How does it work (continued)

Remote Control
through AMM



Local balance adjustment
production / consumption





- Meter reading system (Linky) and data management
- Risk management and predictive maintenance

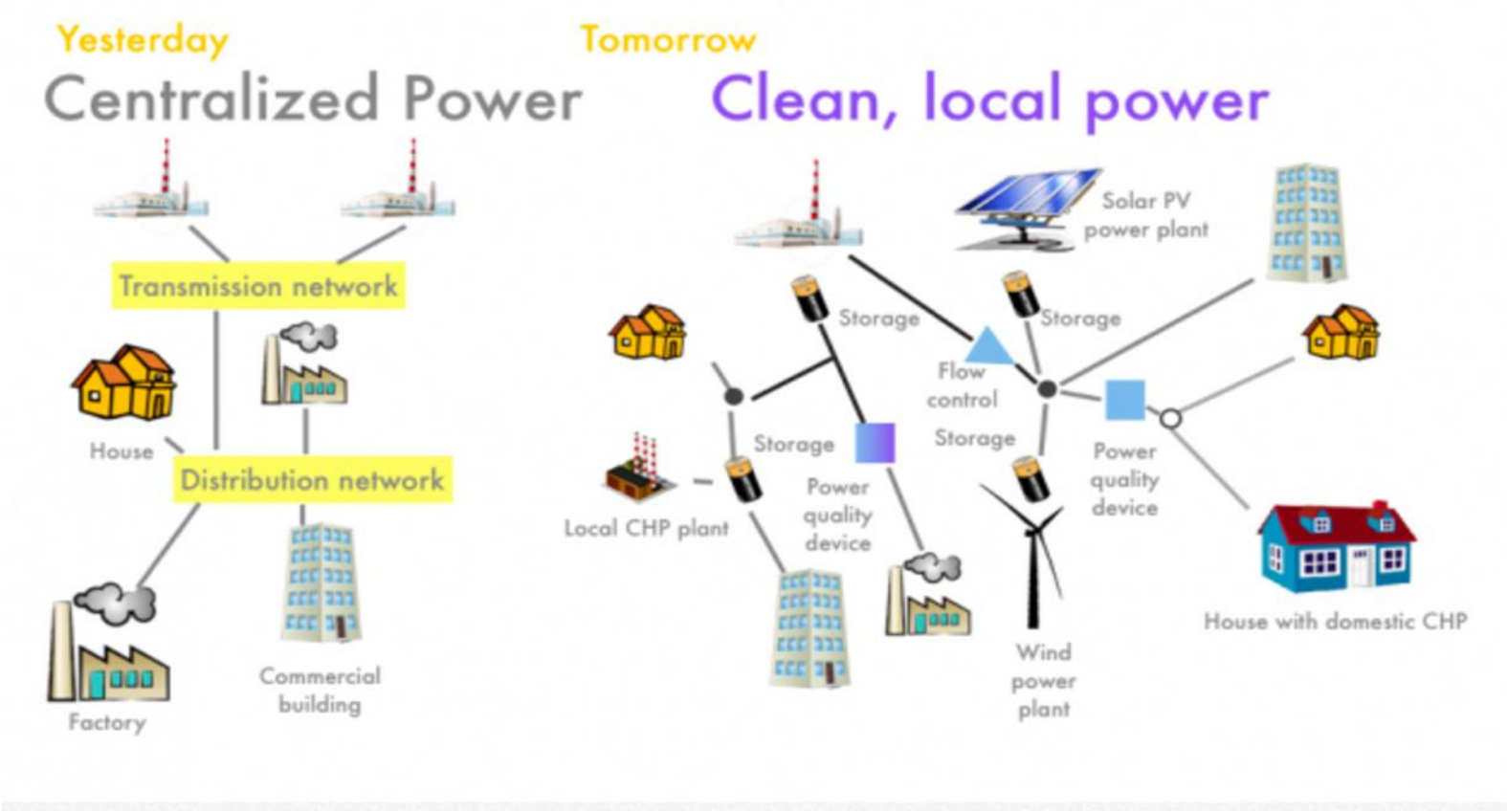
Reduce operational cost and delays on the grid

Adjust investments efficiency on the grid

7 Example: Distributed Energy Resources

Measuring DER deployment

NY REV transition



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

Is there a DER deployment baseline?

- How would DERs be deployed in a competitive market?
- How much DERs and what types can the distribution and transmission system accommodate? At what costs?
- What is the right (efficient, least-cost) level of DER deployment?

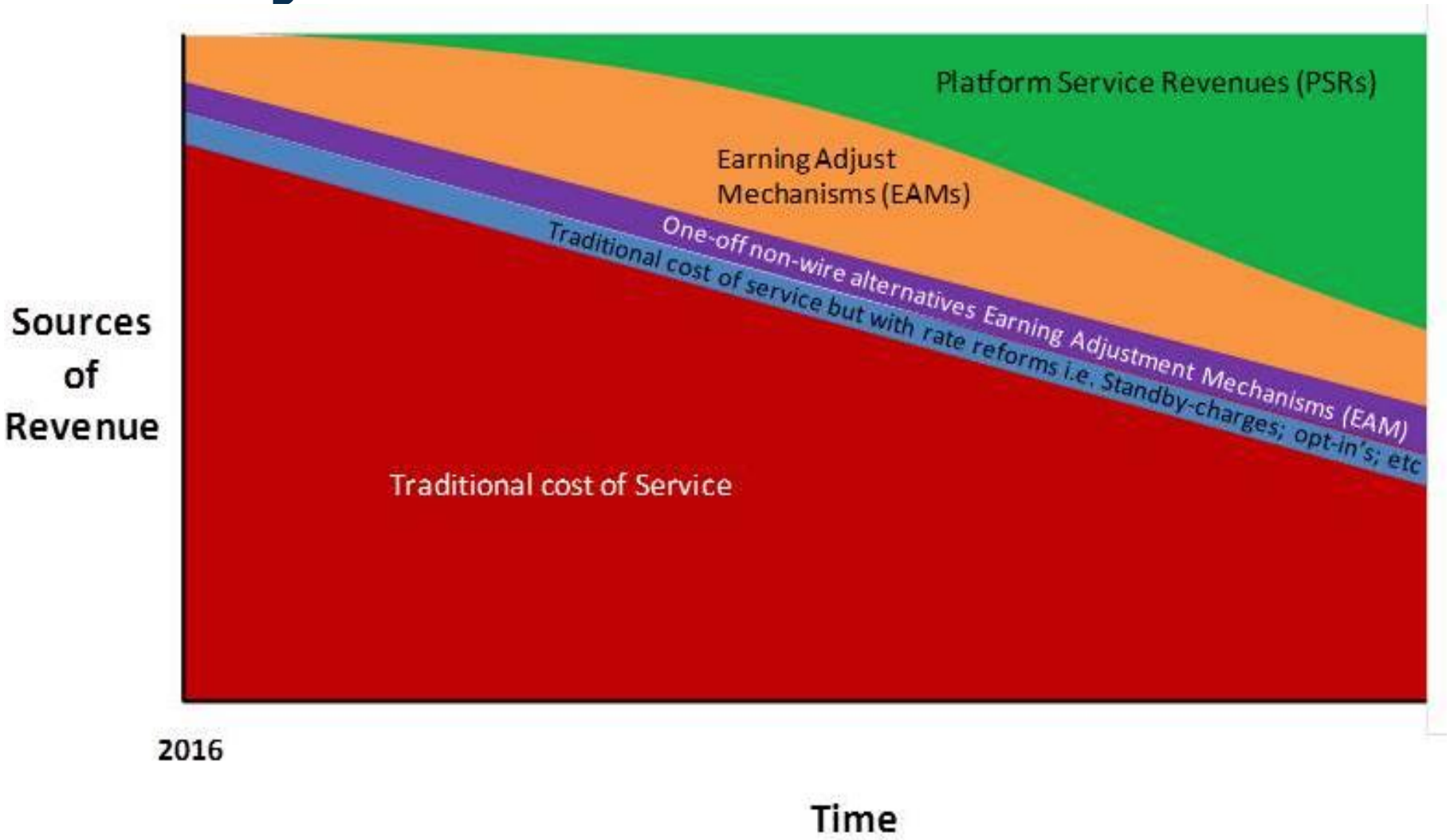
What to measure?

- Number of DER systems deployed
- Total installed capacity of DER on a particular system, or
- Total amount of energy produced from DER units
- Number of units
- Capacity measure in kW or MW, and
- Energy measured in kWhs or MWhs

New York “REV”

- Survey to assess utility performance in DER facilitation avoids the challenge of developing a baseline
- Avoids baselining
- Avoids using exogenous factors to measure
- Avoids detailed interconnection review

Utility revenue within NY REV



Source: Mitchell, C. (2016). US Regulatory Reform: NY utility transformation.US Regulatory Reform Series.

8 Takeaways

Takeaways

- PBR aligns interests of utilities, regulators, customers
- PBR can provide cost containment incentives to utilities
- Poorly designed PBR mechanisms exist, and provide debatable benefits.
- PBR could help reform regulation for the “next generation” utility

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

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