Harnessing Performance-Based Regulation to address 21st Century Challenges

Webinar, Edison Electric Institute
1 What is PBR?
“All regulation is incentive regulation”
PBR provides a regulatory framework to connect goals, targets, and measures to utility performance or executive compensation.
Guiding Goal
Directional Incentives
Measurable Performance Criteria
Metrics

Photo: Christian Kaindl
Metrics continuum

**Public Metrics Only**
- Metrics are publicized on a publicly available "dashboard."

**Public Metrics with Ranking**
- Metrics are publicized and ranked
- Examples: Denmark DSO efficiency ranking, RIIO

**Public Metrics with Financial Incentives**
- Metrics are publicly available, and utilities receive financial awards or penalties depending on achievement of the metrics.
- Examples: NY REV
2 Why is PBR important?
PBR and smart transformation of power sector

Old system = barrier to new technologies, policies
PBR can identify, target positive incentives and outcomes

- Solar distributed generation
- Improved power plant performance
- Peak load reduction via demand response
- Reliability
- System efficiency
- EV rate education and charging station deployment
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
PBR and different institutional arrangements
China - transmission & distribution PBR

Photo: Baycrest
## India – UDAY, Operational Incentives Progress

<table>
<thead>
<tr>
<th>S.No</th>
<th>Parameter</th>
<th>Unit</th>
<th>Total No. to be achieved (Base year + post-UDAY)</th>
<th>Achievement</th>
<th>% age Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Feeder Metering (R)</td>
<td>(In no.)</td>
<td>81110</td>
<td>78178</td>
<td>96</td>
</tr>
<tr>
<td>2</td>
<td>Feeder Metering (U)</td>
<td>(In no.)</td>
<td>28887</td>
<td>28746</td>
<td>99</td>
</tr>
<tr>
<td>3</td>
<td>DT Metering (U)</td>
<td>(In no.)</td>
<td>985161</td>
<td>514776</td>
<td>52</td>
</tr>
<tr>
<td>4</td>
<td>DT Metering (R)</td>
<td>(In no.)</td>
<td>2998120</td>
<td>1292763</td>
<td>43</td>
</tr>
<tr>
<td>5</td>
<td>Rural Feeder Audit</td>
<td>(In no.)</td>
<td>77113</td>
<td>87966</td>
<td>100</td>
</tr>
<tr>
<td>6</td>
<td>Ujala</td>
<td>(In Lakh)</td>
<td>1144.65</td>
<td>1357.60</td>
<td>100</td>
</tr>
<tr>
<td>7</td>
<td>Street Light LED</td>
<td>(In no.)</td>
<td>860057</td>
<td>335590</td>
<td>39</td>
</tr>
<tr>
<td>8</td>
<td>Name Shame Campaign</td>
<td>(In no.)</td>
<td>22088</td>
<td>21768</td>
<td>99</td>
</tr>
</tbody>
</table>

* Data is as per information provided by DISCOMs, for almost 15 out of total 18 UDAY States

* Achievements may be more than targets as DISCOMs / States may have pre-achieved targets set for further period of UDAY Domain

Example: France
DAILY COLLECTION RATE TARGET REQUIRED BY FRENCH ENERGY REGULATOR

95%

35 MILLION of Smart Meters
600,000 Data Concentrators

10,000 jobs created in France
(direct or indirect)
(5,000 jobs for mass rollout)

€ 5 B Billion of current Euros of investment by 2021

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

Reduce operational cost and delays on the grid

Adjust investments efficiency on the grid

Remote metering and operations

Consumers

Producers

Diagnostics

Self-Healing

Operations

Meter reading system (Linky) and data management

Risk management and predictive maintenance
6 U.S. Examples
Illinois Metrics for Time-of-Use 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
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 plans, multiple benefits
Productivity growth of CMP and other U.S. utilities, 1992-2014

ConEd’s Brooklyn-Queens Demand Management Project
Localized DERs to Achieve Lowest Cost service
New York’s “Reforming the Energy Vision”
Markets, regulation, customers, and DER developers

- 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 incents utility support of 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.
Non-Wires Alternatives

CPUC December 2016 Order

Photo: Tobias Kleinlercher / Wikimedia
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
7 PBR in Europe
PBR in Denmark
Benchmarking model: outages / quality of delivery & efficiency
Danish PBR for Reliability

Source: DERA (2009)
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

Promoting choice and value for all gas and electricity customers

RIIO - a new way to regulate energy networks

Factsheet 93 04.10.10 www.ofgem.gov.uk

RIIO

Britain needs rewiring in a smarter way to ensure secure and sustainable energy supplies for consumers. Ofgem has introduced a new performance based model “RIIO” to set price controls to ensure consumers pay a fair price for this vital investment.
Electricity Distribution Networks Operators

Customer

Safety
- Compliance with HSE Legislation
  - ENWL
  - NPGN
  - NPqY
  - WMID
  - EMID
  - SWALES
  - SWEST
  - LPN
  - SPN
  - EPN
  - SPD
  - SPMW
  - SSEH
  - SSES

Environmental
- Oil leakage
- Business carbon footprint
- SFs emissions

Customer Service (scores out of 10)
- Interruptions survey
  - ENWL
  - NPGN
  - NPqY
  - WMID
  - EMID
  - SWALES
  - SWEST
  - LPN
  - SPN
  - EPN
  - SPD
  - SPMW
  - SSEH
  - SSES
- Connections survey
  - ENWL
  - NPGN
  - NPqY
  - WMID
  - EMID
  - SWALES
  - SWEST
  - LPN
  - SPN
  - EPN
  - SPD
  - SPMW
  - SSEH
  - SSES
- General enquiries survey
  - ENWL
  - NPGN
  - NPqY
  - WMID
  - EMID
  - SWALES
  - SWEST
  - LPN
  - SPN
  - EPN
  - SPD
  - SPMW
  - SSEH
  - SSES
- Complaints metric

Connections
- Time to quote
- Time to connect

Reliability
- Customer interruptions
- Length of interruptions

Social obligations (scores out of 10)
- Stakeholder engagement

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.

Conclusions

- PBR is a powerful tool in the regulatory 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