Performance-Based Ratemaking Metrics

Mid-Atlantic Distributed Resources Initiative

Exploration of Emerging Revenue Recovery Models

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Synapse Energy Economics

http://www.synapse-energy.com/project/performance-based-regulation-high-distributed-energy-resources-future

http://www.synapse-energy.com/project/performance-incentives-utilities

Performance-Based Regulation

Objective	• Provide financial incentive for utility to increase efficiency and reduce utility costs. Reduced costs should ultimately benefit customers.
Key Components	• Rate case moratorium • Attrition relief mechanism (ARM) provides automatic relief for increasing cost pressures but is not linked to a utility's actual costs • Performance incentive mechanisms for reliability, safety, etc.
Optional Components	• Revenue decoupling • Earnings sharing mechanism • Efficiency carryover mechanism • Cost trackers

Regulatory Models (simplified comparison)

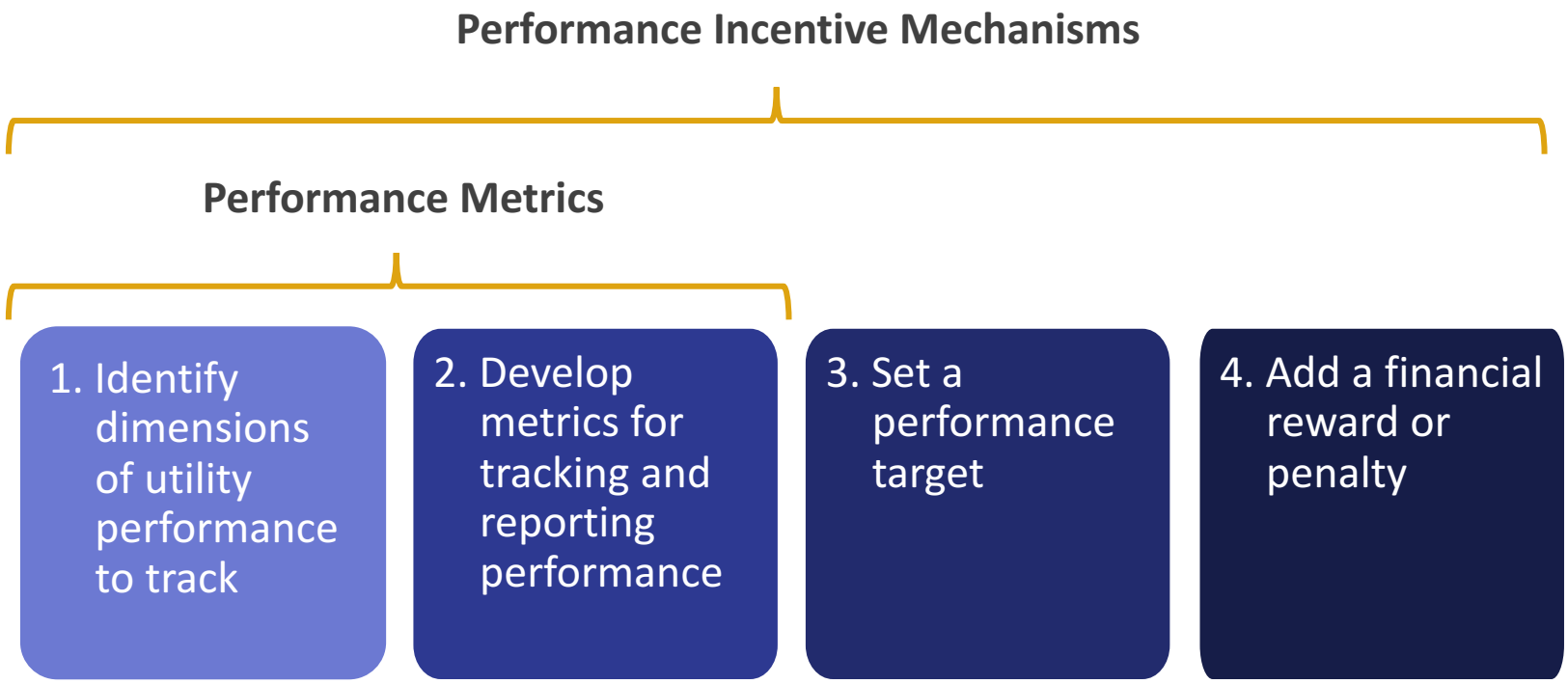
Regulatory Element	Cost-of-Service Regulation	Multi-Year Rate Plans (A component of PBR)
Frequency of rate cases	As needed (Typically determined by utility)	Pre-determined, fixed period (e.g., 5 years)
Revenue adjustments between rate cases	Generally none (Some revenues are reconciled through riders)	Attrition relief mechanisms
Performance Incentive Mechanisms (One element of PBR, but also used in COSR)	If implemented at all, generally narrowly focused on safety, reliability, and customer service	• Traditionally focused on areas that may experience service degradation due to cost reductions • Increasingly designed to create incentives to achieve a broad set of desired outcomes.

The Regulatory Context and PIMs

- PIMs can be implemented in any regulatory structure: Cost of service, PBR, etc.
- Each regulatory model has its own embedded incentives. It is critical to assess the incentives that currently exist when designing PIMs.
  - Are there unintended incentives embedded in the current system?
    - Increasing sales (throughput incentive)
    - Utility capital investments (due to ability to earn a return on rate base)
    - Little incentive to innovate (inadequate risk and reward opportunity)
  - Are there regulatory goals that are not fully addressed in the current system?
    - Interconnecting DG, reducing carbon, new customer services for the evolving grid
- PIMs can be applied in an incremental fashion

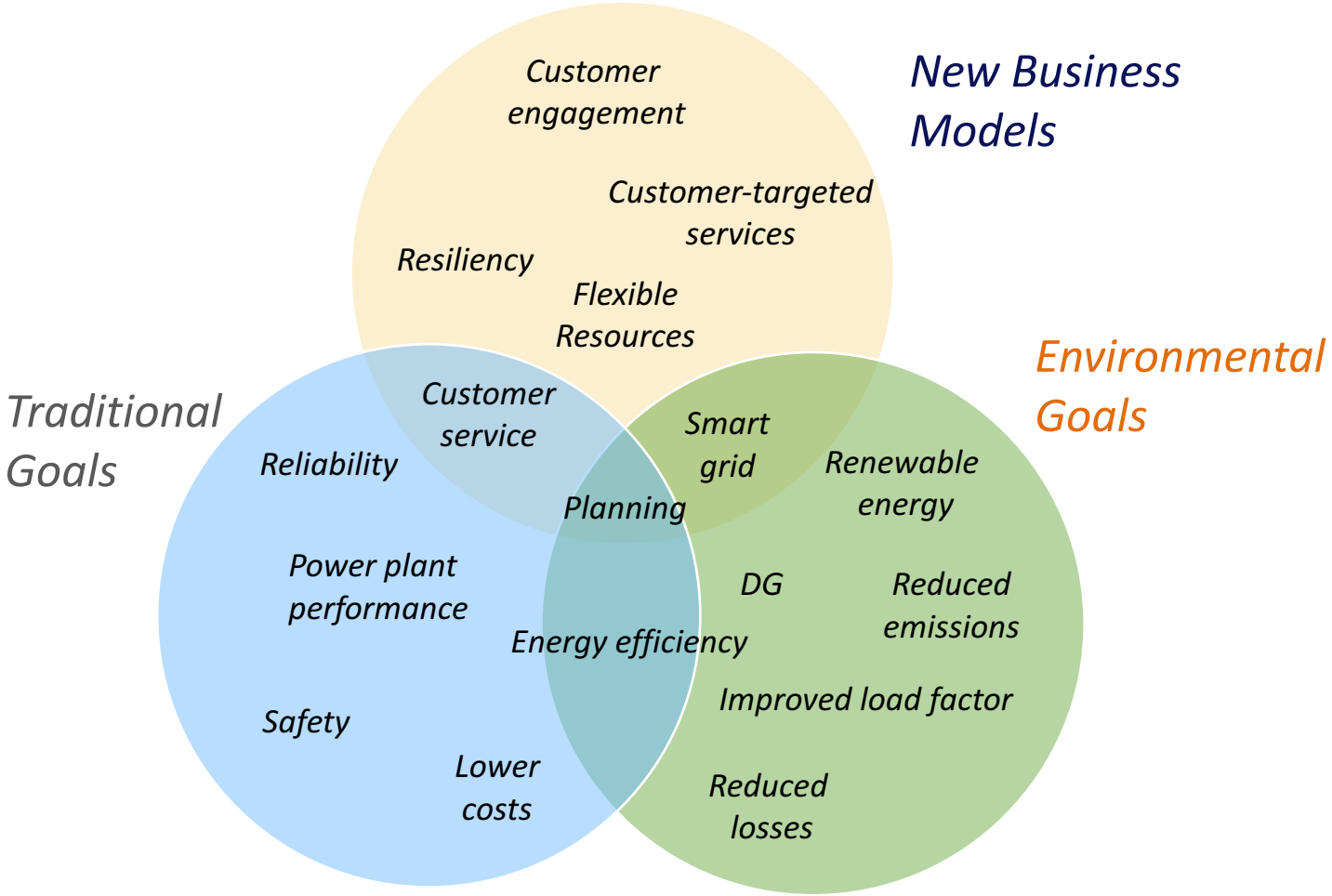
Four Discrete Steps

PIMs can be implemented incrementally, allowing for flexibility



1. Identify Areas of Performance to Track

Should be linked to policy goals



2. Develop Metrics

- Ensure the metric is tied to the policy goal and will provide useful information about whether the goal is being attained
- Define metrics precisely, using regional or national definitions where possible
- Choose metrics that are largely free from arbitrary influence
- Choose metrics that are easily measured and interpreted
- Use independent parties to collect or verify data

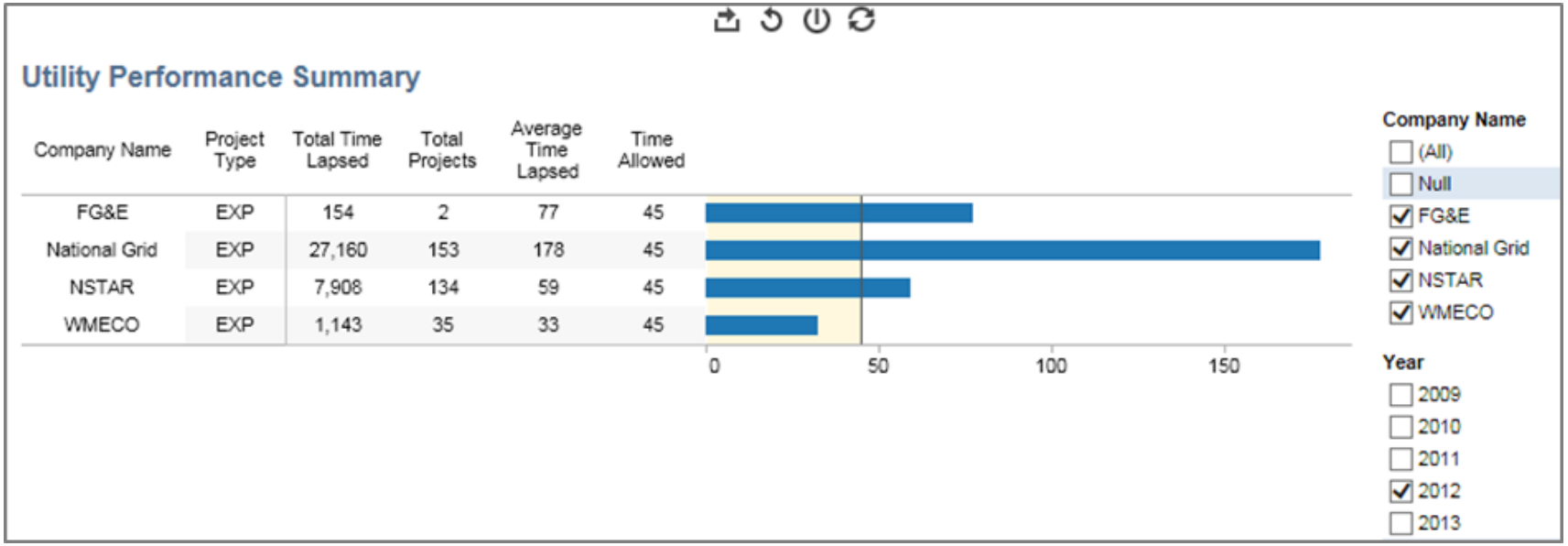
Examples of Possible Performance Metrics

Metric	Purpose	Metric Formula
Line losses	Indication of reductions in losses over time	Total electricity losses / MWh generation, excluding station use
Demand response (DR)	Indication of participation and actual deployment of DR resources	Potential and actual peak demand savings (MW)
Distributed generation (DG)	Indication of the technologies, capacity, and rate of DG installations, and whether policies are supporting DG growth	Number of customers with DG
		MW installed by type (PV, CHP, small wind, etc.)
Non-Wires Alternatives	Avoidance of costly utility infrastructure through energy efficiency, storage, demand response, etc.	Net savings to customers

Data Dashboards

Data dashboards enable regulators and other stakeholders to quickly review utility performance across a large number of performance areas and over time

Example: Interactive website displaying utility performance



3. Set Performance Targets

- Balance the costs of achieving the target with the benefits to ratepayers
- Set a realistic target
- Use deadbands to mitigate uncertainty
- Adjust targets only slowly and cautiously

4. Set Financial Rewards and Penalties

- Symmetric vs. Asymmetric
- Avoid “cliff effects” – sharp changes in penalty or reward due to small change in performance
- Ensure a reasonable magnitude for incentive
- Start with small incentives; increase only if necessary

Pitfalls to Avoid

Regulatory burden	• Metrics (and PIMs) can be too costly, time-consuming, or too much of a distraction. • Can be a problem for utilities, regulators, and stakeholders. • *Potential solutions:* • Streamline using existing data, protocols, and simple designs.
Uncertainty	• Metrics that are not clearly defined increase uncertainty. • *Potential solutions:* • Carefully specify metric (and target) definitions, soliciting utility and stakeholder input where possible.

Gaming and Manipulation	• Utilities may have an incentive to manipulate results.
	• *Potential solutions:*
	  • Identify verification measures.
	  • Consider using independent third parties (that are not selected or paid by the utility) to collect or verify data.
	  • Avoid complex data analysis techniques that are difficult to audit and reduce transparency.

Reforming the Energy Vision (NY REV)

- Goals:
  - Reduce emissions
  - Innovation and new technologies
  - Empower customers with energy choices
  - Affordability
  - Resiliency
- Actions:
  - Improving DG interconnection
  - Improved management of the distribution system & DERs
  - Optimizing distributed energy resource location
  - Avoiding costly traditional infrastructure investments:
  - “Animating the market” – marketplaces for energy efficiency, solar+storage, etc.

BQDM Performance Incentive

Deferral of ~$1 billion in traditional solutions

BQDM Program

- Demand growth in 3 networks in Brooklyn-Queens would have required ~$1 billion in capital upgrades.
- Instead, Con Edison is planning to use a $200 million program to enable deferral of the upgrades.
  - Customer-side (41 MW, $150 million)
  - Utility-side (11 MW, $50 million)
- Utility expenditures treated as 10-year capital assets with regulated return, with performance incentive on ROE.

BQDM Geography

Source: Con Edison

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- Synapse Energy Economics is a research and consulting firm specializing in energy, economic, and environmental topics.
- Since its founding in 1996, Synapse has been a leader in providing rigorous analysis of energy, environmental and regulatory issues, for public interest and government clients.