Performance Incentive Mechanisms

Presentation to the e21 Initiative – Phase II Meeting

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Background

- Report for the Western Interstate Energy Board:
  Utility Performance Incentive Mechanisms (PIMs):
  A Handbook for Regulators

  Available at *www.synapse-energy.com*

- Scope of the report:
  - The role of PIMs in different regulatory contexts
  - Principles of designing metrics, targets and financial incentives.
  - Traditional performance areas
  - Emerging performance areas
  - Potential pitfalls and solutions to them
  - Case studies

Regulatory Models (simplified comparison)

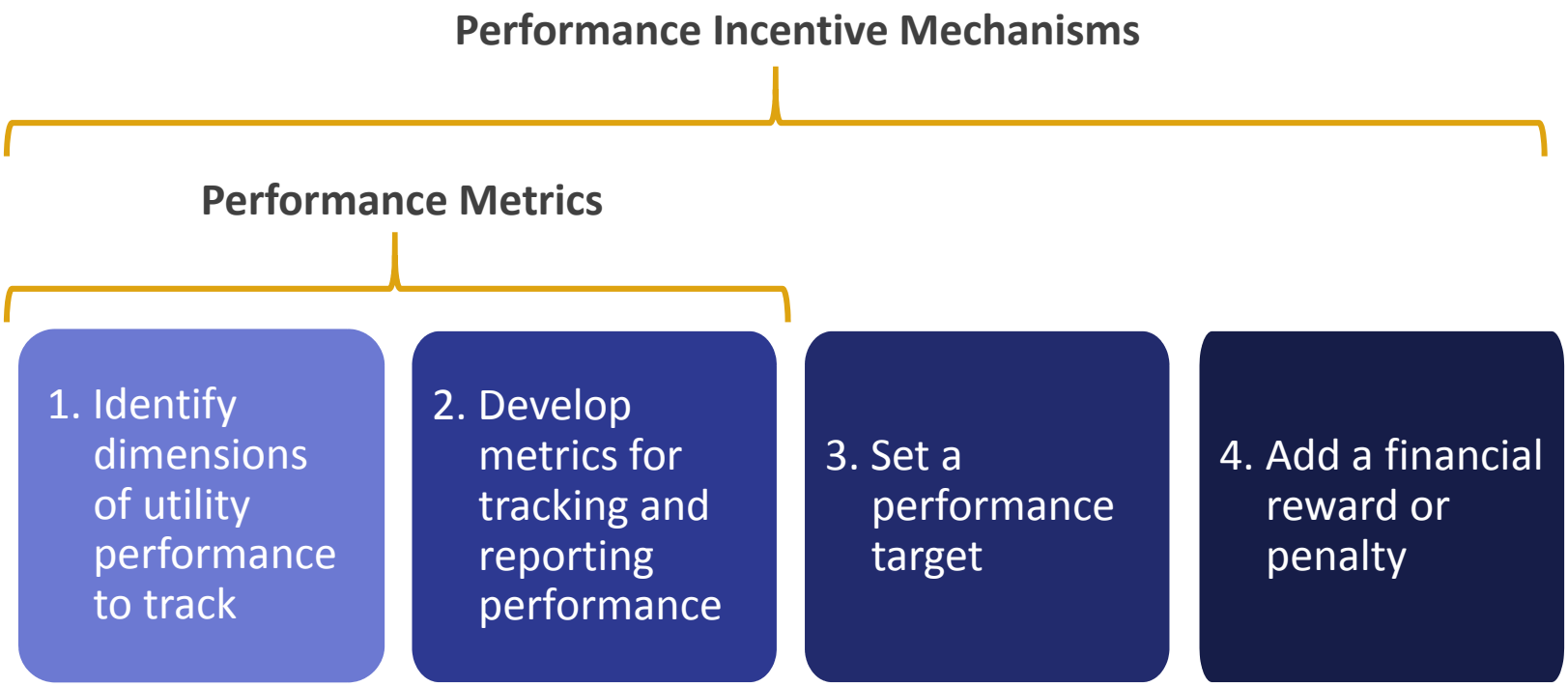
Regulatory Element	Cost of Service Regulation	Performance-Based Regulation	New Regulatory Models
Basis for initial rates	Based on cost-of-service studies using a test year	Based on cost-of-service studies using a test year	Based on cost-of-service studies and/or utility business plans
Frequency of rate cases	As needed	Pre-determined, fixed period (e.g., 5 years)	Pre-determined, fixed period (e.g., 8 years)
Revenue adjustments between rate cases	Generally none	Price cap (or revenue cap) modified to account for factors such as inflation and productivity	Allowed revenues may be modified for inflation, productivity, or business plan costs
Resource Planning	Integrated resource planning (optional)	Integrated resource planning (optional)	Business plans used to inform allowed revenues
Performance Incentive Mechanisms	Typically include safety, reliability, and customer service	Focus on areas that may experience service degradation in response to pressure to reduce costs	Designed to create incentives to achieve a broad set of desired outcomes

The Regulatory Context and PIMs

- Each regulatory model has its own embedded incentives. It is critical to assess the incentives that currently exist before designing PIMs.
  - Are there unintended incentives embedded in the current system?
    - Example: increasing sales
    - Example: innovation (risk and reward opportunities?)
  - Are there regulatory goals that are not fully addressed in the current system?
    - Example: interconnecting DG, reducing carbon, new customer services
- PIMs can help to articulate goals and provide the right incentives

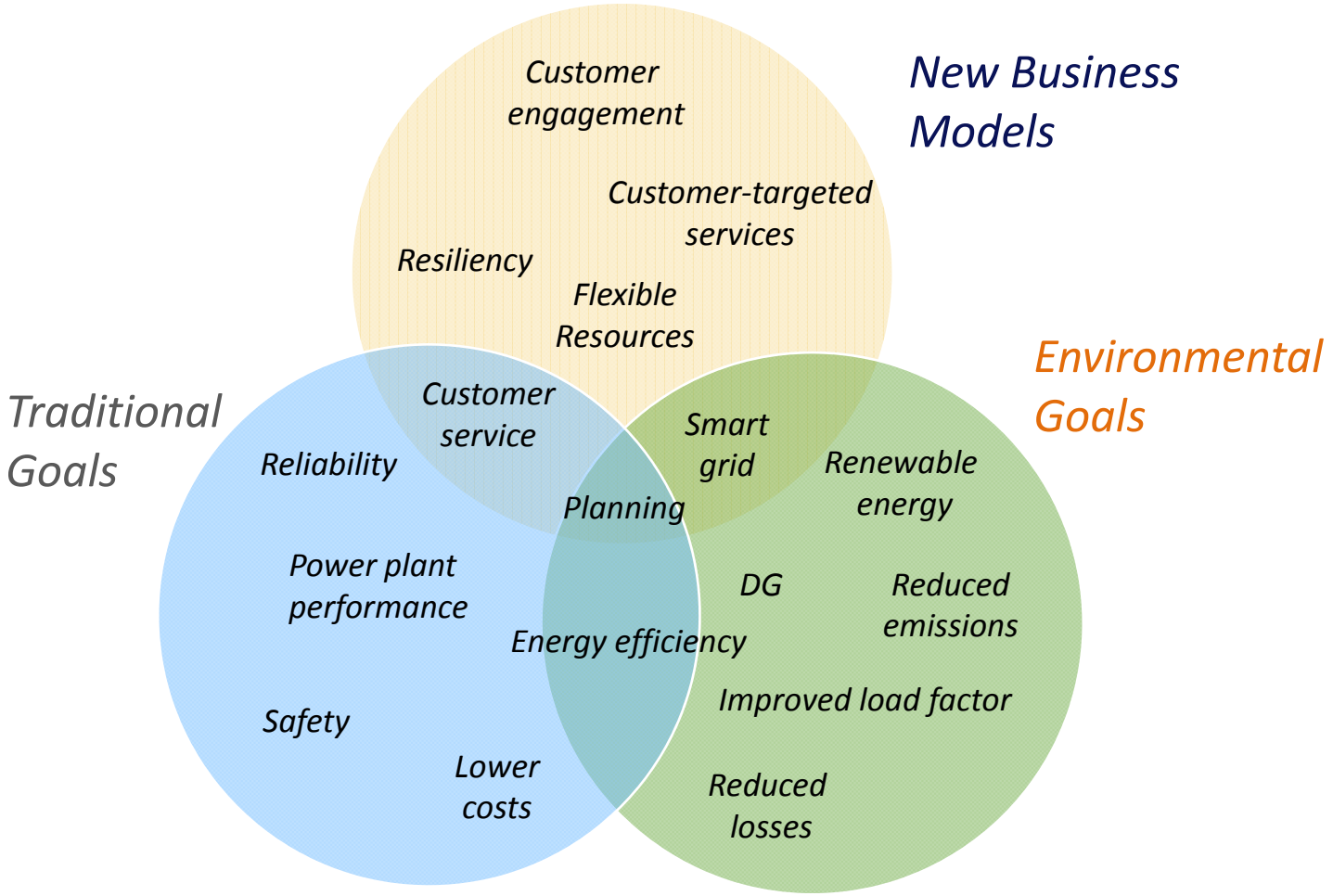
Four Discrete Steps

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
  - Helps avoid contention, and facilitates comparisons over time and across jurisdictions
  - Utilities already report a large amount of data to the EIA, FERC, EPA, NERC, and other entities
- Choose metrics that are largely free from arbitrary influence
- Choose metrics that are easily measured and interpreted
  - Complex data analyses reduce transparency
- Use independent parties to collect or verify data

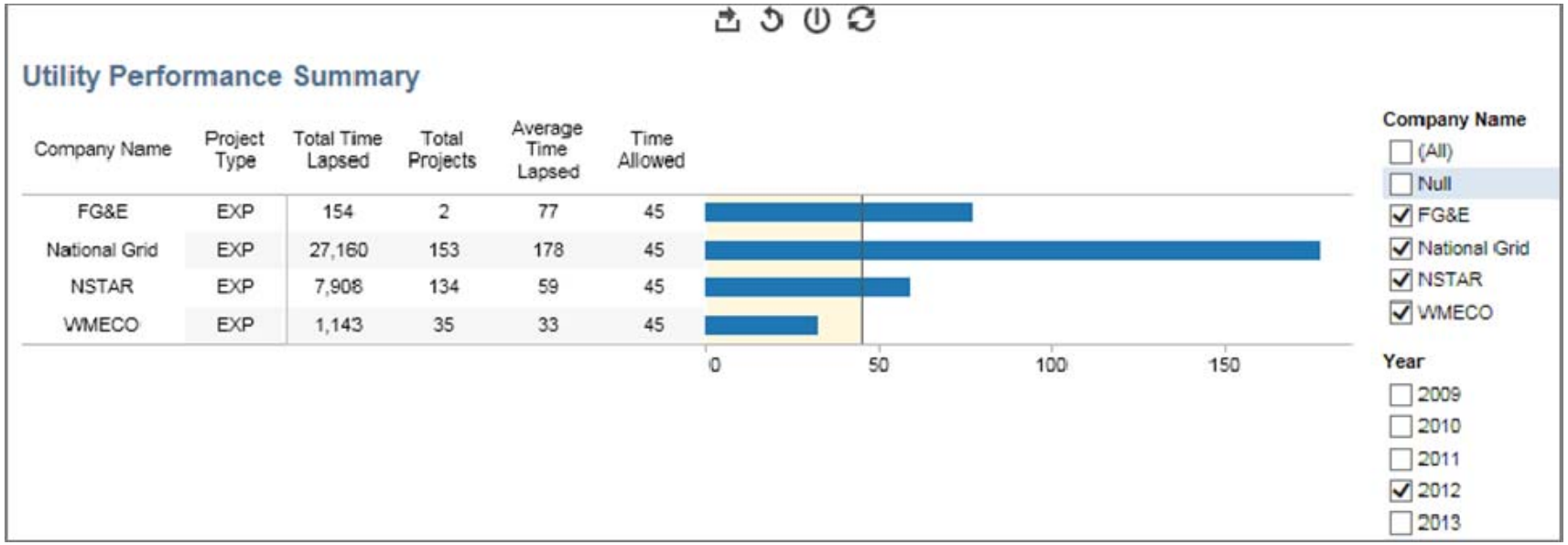
Examples of possible metrics

Metric	Purpose	Metric Formula
System load factor	Indication of improvement in system load factor over time	System average load / peak load
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.)
Information availability	Indicator of customers' ability to access their usage information	Number of customers able to access daily usage data via a web portal
		Percent of customers with access to hourly or sub-hourly usage data via web
Time-varying rates	Indication of saturation of time-varying rates	Number of customers on time-varying rates
Fossil generation	Indication of reduction in fossil fuel use	Fossil MWh percent of total generation

Data Dashboards

- Data dashboards enable regulators and other stakeholders to quickly review utility performance across a large number of performance areas
- Publicly accessible (website)
- Show historical trends, possibly comparison across utilities

Example: Interactive website displaying utility performance



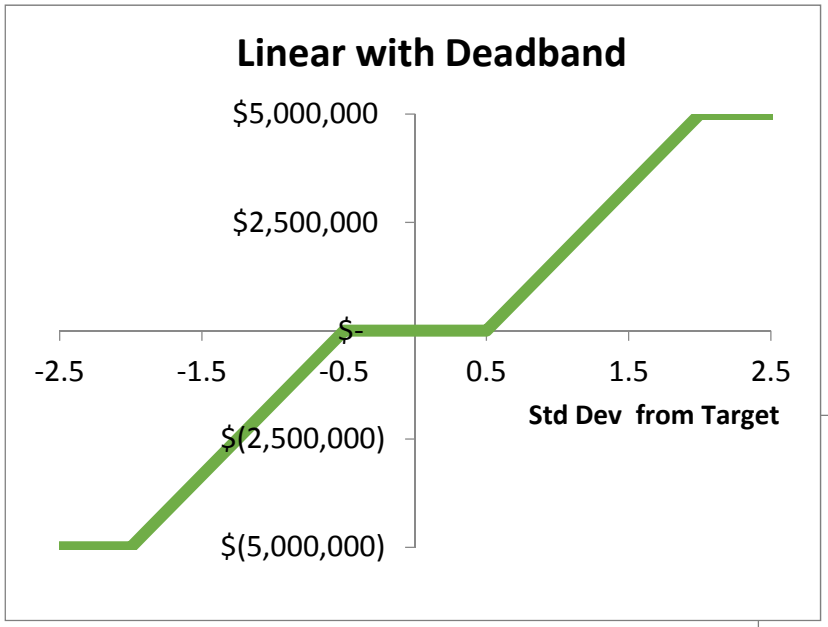
3. Set performance targets

- Balance the costs of achieving the target with the benefits to ratepayers
  - Customer surveys can help determine value to customers (e.g., is extra reliability worth the additional cost?)
- Set a realistic target. Various analytical techniques can help:
  - Historical performance (*if still relevant)*
  - Peer utility performance (*if inherent differences between utilities can be controlled for)*
  - Frontier methods (*measures technical efficiency of various firms*)
  - Utility-specific studies (*IRPs and engineering studies can be useful*)
- Use deadbands to mitigate uncertainty
- Adjust targets only slowly and cautiously

4. Set Financial Rewards and Penalties

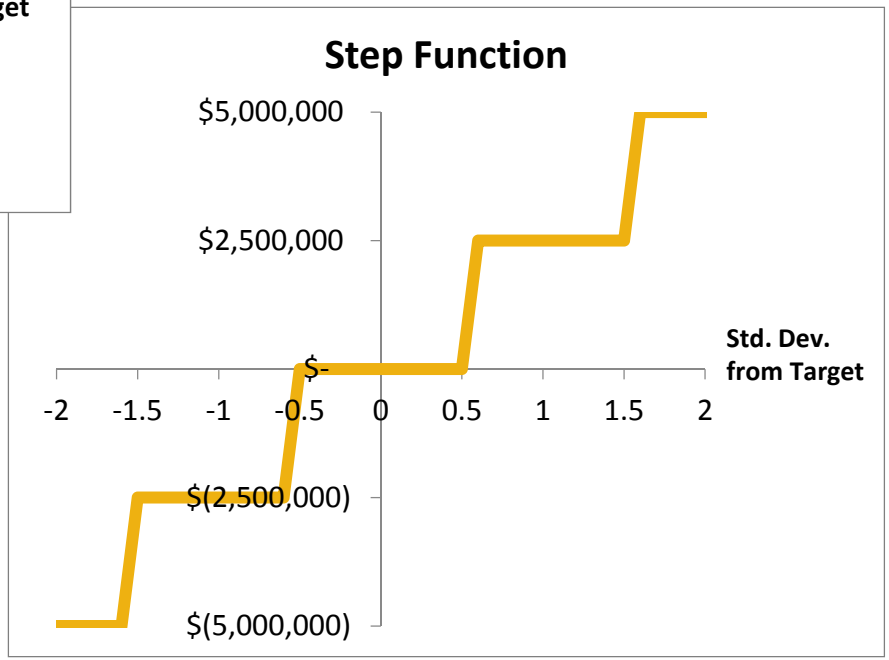
- Symmetric vs. Asymmetric
  - Symmetric rewards/penalties are common
  - Reward-only incentives tend to encourage utilities to be more innovative, and may result in more collaborative and less adversarial processes
  - Penalty-only incentives are sometimes appropriate when the outcome is an essential requirement for the utility, or when performance above the target provides little additional benefit to customers.
- Avoid "cliff effects" – sharp changes in penalty or reward due to small change in performance
- Ensure a reasonable magnitude for incentive
  - Large enough to capture utility management's attention
  - Should not overly reward or penalize utility
  - Use a cap on maximum reward or penalty to ensure it remains within a reasonable bound
- Start with small incentives; increase only if necessary

Types of Incentive Formulas



Use deadbands to mitigate uncertainty

Avoid such cliff effects



Pitfalls to Avoid

Undue rewards or penalties	• Excessive rewards (or penalties) undermine the whole concept of incentive mechanisms.
	• *Potential solutions:*
	  • Use an incremental approach: start low and monitor over time.
	  • Careful PIM design (e.g., shared savings).

Unintended consequences	• An incentive for one performance area may cause the utility to under-perform in areas that do not have incentives.
	• *Potential solutions:*
	  • Focus on performance areas that are isolated from others.
	  • Be cautious of implications for other performance areas.
	  • Consider implementing a diverse, balanced set of incentives.

Regulatory burden	• 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.
	  • Reduce the amount of money at stake.

Pitfalls to Avoid

Uncertainty

- Metrics, targets, and financial consequences that are not clearly defined reduce certainty, introduce contention, and are less likely to achieve policy goals.
- *Potential solutions:*
  - Carefully specify metric and target definitions, soliciting utility and stakeholder input where possible.
  - Adjust targets and financial consequences only cautiously and gradually so as to reduce uncertainty and encourage utilities to make investments with long-term benefits.

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.

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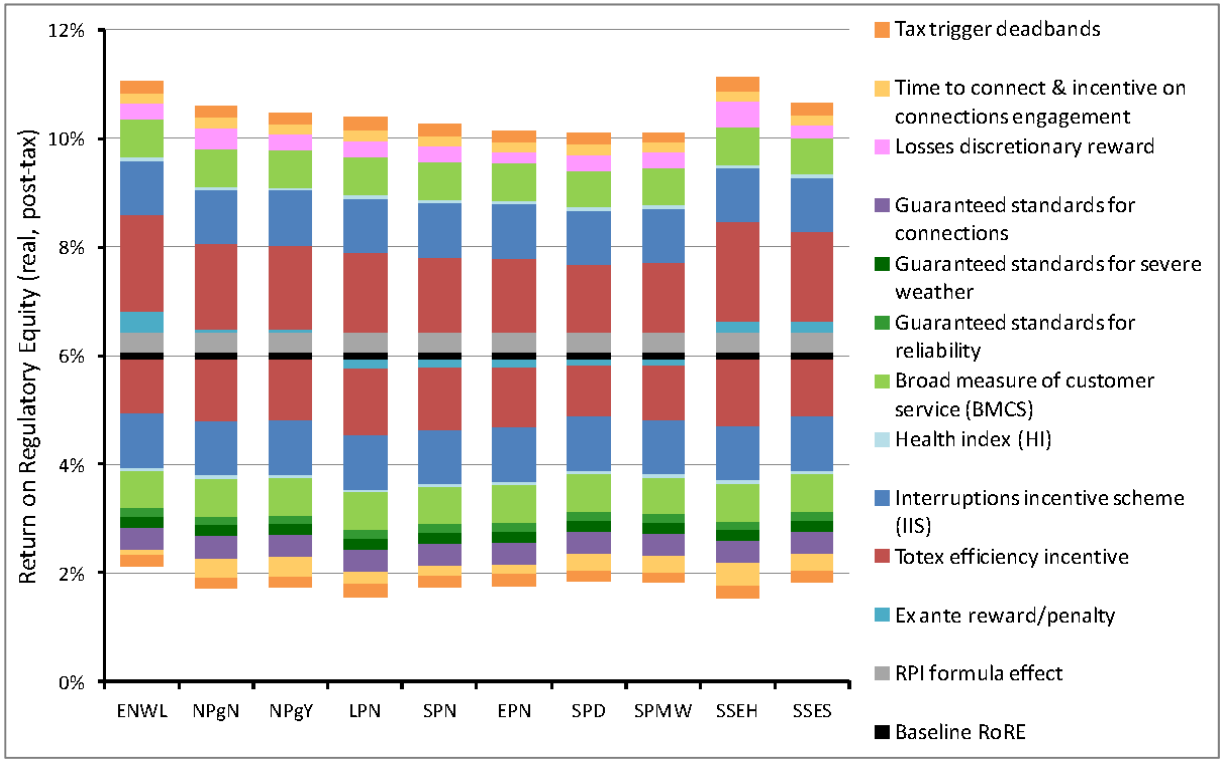
- Synapse Energy Economics is a research and consulting firm specializing in energy, economic, and environmental topics.
- Since its founding in 1996, Synapse has been a leader in providing rigorous analysis of energy, environmental and regulatory issues, for public interest and government clients.

Appendix

How big should financial incentives be?

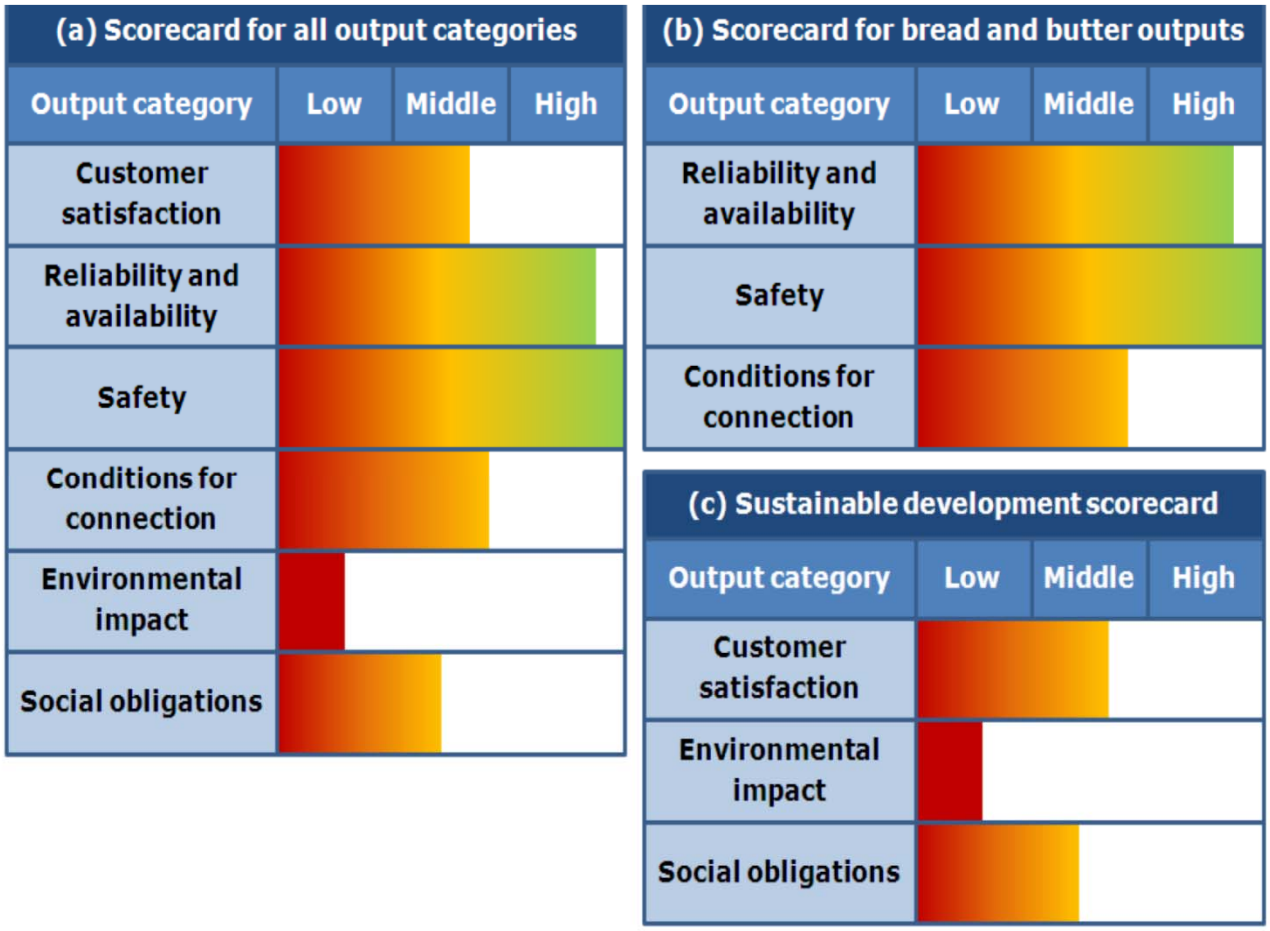
- In the United States, the total maximum of all financial rewards/penalties has often been set at approximately 1% - 3% of base revenues.
- In the UK, the RIIO model could have an impact greater than 5% of base revenues (equivalent to +/- 500 basis points on ROE).



What units should financial incentives be in?

- ROE basis points (but can encourage maximizing rate base)
- Avoided costs (but can vary too much)
  - Example: energy efficiency rewards tied to avoided costs of energy are volatile
  - Example: Diablo Canyon windfall
- Percent of base revenues
- Percent of pre-tax earnings

Appendix: RIIO



Selected RIIO Outputs

- Environment:

Deliverable	Penalty or Reward	Metric and Target Description
Electricity losses	Discretionary reward of up to £4 million in year 2, £10 million in year 4, and £14 million in year 6 for utilities that exceed the loss reduction commitments in their business plans.	Utilities report annually on loss reduction activities undertaken, improvements achieved, and actions planned for the following year. Performance will be measured according to multiple criteria, including the effectiveness of actions taken to reduce losses, engagement with stakeholders, innovative approaches to loss reductions, and sharing of best practices with other companies.
Business Carbon Footprint (BCF)	Reputational	Annual reporting requirement on CO_2 equivalent emissions, actions taken to reduce emissions over the past year and their effectiveness. All utilities' performance on this metric summarized in one table.

RIIO Outputs, cont.

- Customer satisfaction and social obligations

Deliverable	Penalty or Reward	Metric and Target Description
Customer satisfaction survey	Reward or penalty up to 1% of annual base revenue	A survey is used to measure the satisfaction of customers who have required a new connection, have experienced an interruption to their supply, or have made a request for a service or job to be completed. Performance is measured based on the response to the question: "Overall how satisfied were you with the service that you received?" The target score will be set at a level that "can be objectively assessed to represent a good level of performance."
Complaints	Penalty of up to 0.5% of annual base revenue. No reward.	Complaints and their weightings are measured based on: (a) percentage of complaints that are outstanding after one day (10% weighting); (b) percentage of complaints that are outstanding after 31 days (30% weighting); (c) percentage of complaints that are repeat complaints (50% weighting); and number of Energy Ombudsman decisions that go against the utility as a percentage of total complaints (10% weighting). An industry target is set.
Stakeholder engagement	Reward of up to 0.5% of annual base revenue. No penalty.	The regulator will develop a mechanism for assessing the utilities' use of data and customer insight to understand and identify effective solutions for vulnerable consumers, as well as their ability to integrate this into core business activities.

RIIO Outputs, cont.

- Connections (including DG)

Deliverable	Penalty or Reward	Metric and Target Description
Time to Connect Incentive for Small Connections	Reward of up to 0.4% of annual base revenue. No penalty.	Measures the time taken from initial application received to the issue of a quotation and the time taken from quotation acceptance to connection completion. Target based on historical performance data, and target will become more stringent over the period.
Incentive on Connection Engagement (ICE) for Large Connections	Penalty of up to 0.9% of annual base revenue. No reward.	Each utility must submit evidence of how they have identified, engaged with, and responded to the needs of their customers. These submissions will be compared to a set of minimum requirements, which will likely to require each utility to demonstrate how they have engaged with a broad range of customers, established relevant performance indicators, and developed a forward-looking work plan of actions to improve performance (with associated delivery dates). Separate submissions will be required for different market segments, including distributed generation customers. A penalty will be assessed for failing to meet the minimum requirements for that market segment. The regulator will also continue to engage with stakeholders to identify key issues and gather feedback on utility performance.