# PIMs for Progress

## Using Performance Incentive Mechanisms to Accelerate Progress on Energy Policy Goals

BY CARA GOLDENBERG, DAN CROSS-CALL, SHERRI BILLIMORIA, AND OLIVER TULLY

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# Executive Summary

# Executive Summary

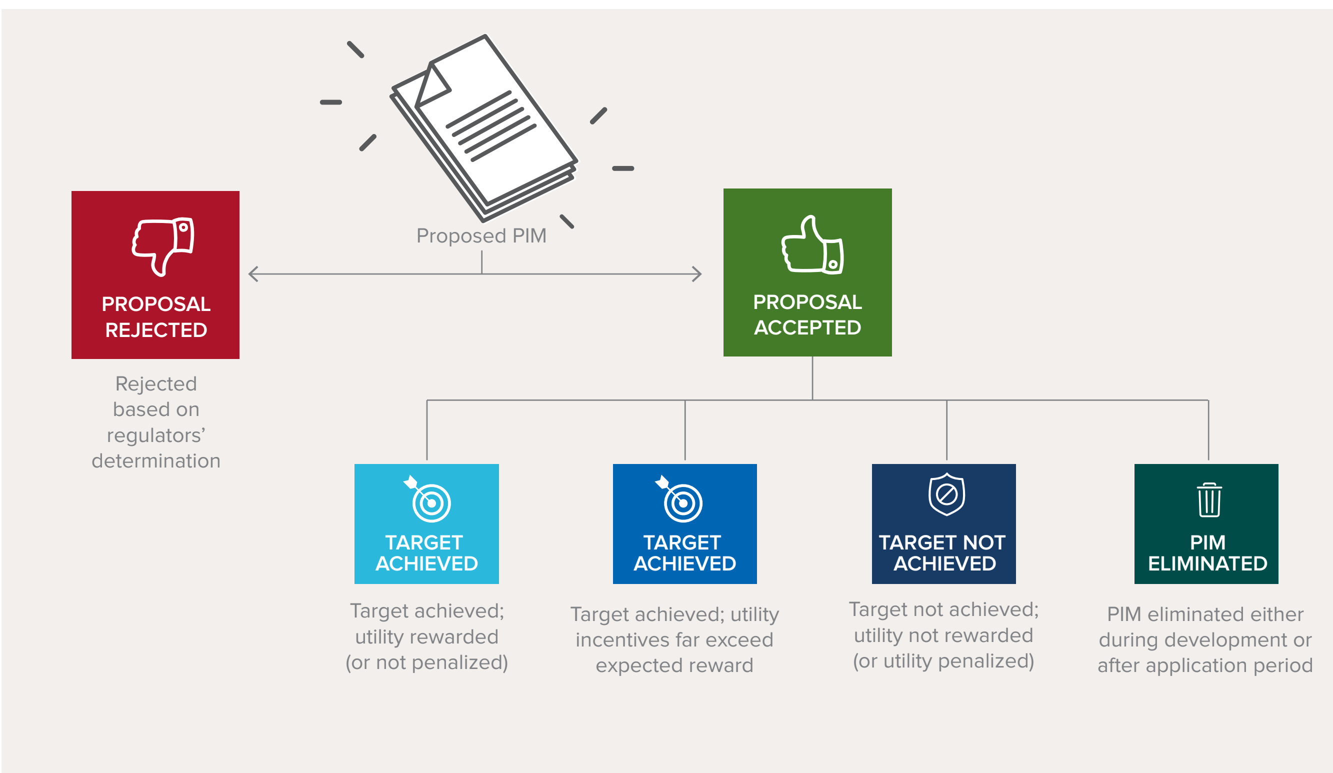
Performance incentive mechanisms (PIMs) are receiving increased attention for their ability to better align utility incentives with new social and environmental policy goals. By transitioning to business models where an increasing share of revenues rely on utility efforts to build a clean, reliable, and affordable energy economy, utilities have the opportunity to better meet evolving customer, policy, and technological demands emerging from the transformation taking place in the power sector.

From a historical perspective, PIMs have a mixed track record in delivering effective and sustainable changes to utility performance. For example, although energy efficiency PIMs in Rhode Island have resulted in meaningful efficiency improvements for many years, in 2018 the Rhode Island public utilities commission (PUC) rejected six out of seven PIMs proposed in a National Grid settlement agreement. The Rhode Island case is emblematic of both the promise and the potential pitfalls of PIMs; their development, approval, and implementation are not always straightforward.

Given the potential of well-designed PIMs to advance policy goals, we reviewed a selection of past PIM examples and interviewed more than a dozen stakeholders who have participated in PIM implementation to identify what characteristics of PIMs make them successful. In this paper, we provide a simple taxonomy of the results from these past PIM experiences, represented in Exhibit 1.

**EXHIBIT 1**

Results Commonly Associated with Proposed PIMs




Source: RMI

Through our research, we find that successful PIMs have the following characteristics:

- They are aligned with public policy goals and desired regulatory outcomes.
- They support new or improved services that utilities would not otherwise pursue.
- They balance utility financial rewards with customer and societal benefits.
- They do not disproportionately reward the utility for an action they are already incented to undertake.
- They avoid gaming and unintended consequences.

We do not suggest that an eliminated PIM is necessarily a failure, nor for that matter should a PIM where targets were achieved always be considered a success. Rather, evaluation of the relative success of PIMs should be considered through a more nuanced lens, asking questions that include:

- *What was learned or what insights were gained?*
- *What new skills or functions did the utility develop?*
- *Did the PIM produce customer or societal value?*

Understanding historical experiences through these questions, including the oftentimes qualitative lessons that result from PIM experiences, provides essential insight that can inform how current and future PIM development is undertaken.

Based on this work, we offer eight recommendations for regulators, utilities, and other stakeholders who are considering using PIMs in their regulatory frameworks:

**1. Determine what role PIMs can play in supporting public policy goals.**
Where in the past, US utility regulators primarily tied performance incentives to traditional service obligations, PIMs are now being considered as a potential tool to support important policy goals, such as increasing clean energy adoption or improving grid operations. Given PIMs are only one lever available to regulators to advance policy priorities, an assessment of PIMs' interactions with other mandates and directives is required to make sure rewards or penalties complement existing requirements.

**2. Evaluate how PIMs can work within current regulatory frameworks.**
Assessing how PIMs function alongside existing earnings opportunities can ensure PIMs are not added to the existing utility revenue model in a piecemeal manner. Although PIMs may be conservatively used in conjunction with a more traditional utility business model by narrowly applying to specific programs or services, PIMs offer an opportunity to more fundamentally change how utilities make spending decisions to support regulatory objectives.

**3. Consider how PIMs can support utility growth into new service areas.**
PIMs are an effective tool to incent utilities to develop innovative programs and services beyond their day-to-day operations. For example, PIMs can support the design of electrification programs or the utilization of distributed energy resources (DERs) to promote grid flexibility. PIMs can also make explicit the areas of performance that utilities should focus on or grow into, aligning utility priorities with regulator and stakeholder goals.

### 4. Strive for outcome-based PIMs where possible.

Outcome-based PIMs provide new opportunities to leverage utilities' unique knowledge of the grid to benefit customers. Although activity- and program-based PIMs have been used for years to motivate utilities to make discrete reforms, outcome-based PIMs allow the utility more flexibility to choose which portfolio of programs and investments best produce desired outcomes most cost-effectively.

### 5. Leverage data to better understand utility operations.

PIMs can reduce information asymmetry between utilities and other stakeholders by making data on utility programs or services transparent. States should consider what is the right portfolio of performance mechanisms that best measures progress for identified goals—for example, which metrics should be publicly reported, which should also have a target or benchmark associated with it, and which should have a financial reward or penalty attached. PIMs should be designed to motivate utilities to utilize the growing amount of data that now can be collected to achieve efficiencies and other improvements.

### 6. Align incentive structures with expected benefits.

PIMs should be designed so that their benefits outweigh the cost to customers, in terms of both the potential reward paid to the utility and the spending and investment needed to meet the performance target. Several states have struggled with putting a number to qualitative benefits and determining the quantitative value of benefits for newer PIMs when methodologies may evolve over time. Given these challenges, it is important to find a balance between requiring enough analysis to validate the risk and reward, while not being paralyzed by a perceived need to iron out every detail that could potentially be included in these types of analyses.

### 7. Prioritize flexibility and learning.

Given the complexity of utility operations, grid dynamics, and ratemaking, PIMs will likely need to be adjusted over time to ensure they are working to achieve desired outcomes. Integrating a level of flexibility into PIM implementation so that PIMs can be adjusted at appropriate milestones can make regulators and stakeholders more comfortable supporting more emergent PIMs that may carry higher risk or uncertainty.

### 8. Design effective approaches for stakeholder participation.

If a wide range of stakeholders are not included in discussions, PIM development risks overlooking important dynamics or tradeoffs. Regulators should consider structuring PIM design processes to optimize collaboration, data sharing, and innovative thinking. Regulators should also provide clear vision and guidance at the outset of PIM development then continue to give direction throughout the process to ensure stakeholder efforts stay in line with expectations.

# Introduction

# Introduction

## Context

As utilities play a central role in the clean energy transition, they require updated incentives to align their investment and spending decisions with changing public policy, market conditions, and customer needs. Performance incentive mechanisms (PIMs) are a set of regulatory tools that tie a portion of utilities' earnings to desired regulatory outcomes, offering utilities opportunities to create the programs and services needed to advance emerging priorities.

In the past, US utility regulators primarily tied performance incentives to traditional service obligations such as reliability and service quality, worker safety, power plant performance, and customer satisfaction. However, PIMs are now being used to drive outcomes that reach beyond the traditional regulatory compact. These outcomes include deploying and utilizing distributed energy resources (DERs), ensuring resilience, promoting customer equity and empowerment, and delivering greenhouse gas (GHG) emissions reductions. As utilities and regulators try to balance these new expectations with existing utility responsibilities, PIMs can be a promising tool to allow utilities the flexibility to meet both traditional and emerging demands, while still serving shareholder interests.

PIMs also can reduce information asymmetries between utilities, regulators, and other stakeholders inherent in traditional regulatory processes by revealing new information about utility operations. In a time where more data can be collected and analyzed than ever before, there is a growing desire to leverage it to better understand utility performance and promote improvements where applicable. Well-designed PIMs can provide this needed transparency to motivate utilities to leverage their unique knowledge of energy systems for the benefit of customers.

However, the ability of PIMs to change the way the utility does business depends on their development, design, and implementation. From a historical perspective, PIMs have had a mixed track record. Although there are plenty of success stories, there are also many examples of PIMs that have not motivated desired utility behavior, have created perverse incentives, or have either over- or under-compensated utilities relative to the customer benefits created. Given the impact potential of well-designed PIMs, there needs to be a better understanding of their past results to identify what characteristics make a PIM successful.

## What Makes a PIM a Success?

PIMs offer the opportunity to incentivize new and improved utility services. However, measuring their success during sectoral transformation is not straightforward.

The definition of success can vary by jurisdiction, by stakeholder group, and by person. Success can depend on state laws and regulations that define the roles and services provided by utilities. Within jurisdictions, stakeholder groups are likely to have different perceptions of success driven by inherent interests. And even within groups, customers can view success differently, depending on who receives benefits and who incurs costs.

For example, a PIM that rewards a utility for providing electric vehicle (EV) owners with new in-home controllable EV chargers may be deemed successful by those that receive a charger and directly benefit from the incentive. Regulators also would view this PIM a success if they seek increased flexible load to benefit grid operations. Likewise, utility shareholders would likely consider the PIM a success if the utility is sufficiently rewarded through the incentive.

From a ratepayer perspective, however, this PIM could result in a disproportionate increase in some customers' rates if the incentive is not sized commensurate with the program's benefits. Additionally, a competitive EV charger company might be priced out of this market due to utility subsidized chargers and would likely not benefit from such a PIM. At the end of the day, should this PIM be considered successful?

Considering these questions, and from our review of past PIM experiences and interviews with stakeholders, we find that successful PIMs have the following characteristics:

- **They are aligned with public policy goals and desired regulatory outcomes.** PIMs should be designed to support states in achieving their public policy goals; for example, PIMs focused on distributed energy resource deployment and utilization, beneficial electrification, or customer engagement can support clean energy legislation.
- **They support new or improved services utilities would not otherwise pursue.** Successful PIMs can incent the utility to design programs or services for emergent outcomes. By realigning incentives, PIMs can allow utilities to innovate while appropriately balancing risk.
- **They balance utility financial rewards with customer and societal benefits.** Although the exact approach to assessing costs and benefits varies by state, successful PIMs thoughtfully balance benefits to utilities, customers, and society, without placing undue risk on any stakeholder.
- **They do not disproportionately financially reward the utility for an action they are already incented to undertake.** PIMs should not unduly reward utilities for taking actions that they would do in the absence of new incentives.
- **They avoid gaming and unintended consequences.** PIMs should not incent utilities to take actions to meet a target without meaningfully improving performance.

Recent world events introduce new complexities to regulatory reform, including how to design regulations that are durable under changing conditions. In particular, the COVID-19 pandemic has raised new considerations for PIM design and development that provide lessons for future unanticipated events. The virus has had a range of unforeseen impacts on the energy sector, including, but not limited to, changes to energy demand and supply, postponement of new infrastructure projects, and an increase in customers' inability to pay electricity bills. Stay-at-home orders due to the virus have also impacted regulatory procedures and processes by limiting in-person interactions. To respond to these conditions or prepare for future events, regulators should consider:

1. How baselines and targets for PIMs can reflect longer-term trends than what has been observed for the immediate past, to better capture what is business as usual.

2. Options to consider external factors outside utility control, which have a significant impact on grid dynamics or how utilities do business, when assessing utility performance against pre-determined targets and making incentive payments (or penalties).

3. New approaches to engage non-traditional stakeholders, including use of virtual collaboration platforms, to ensure necessary perspectives are able to contribute to PIM development discussions.

## Objectives of This Report

This report reviews a selection of historical PIM examples, including PIM proposals that have been implemented as well as those that have been rejected. These experiences identify important lessons for future PIM development. By exploring why some PIM proposals are rejected by regulators and others are accepted, as well as what happens to PIMs after acceptance, we can develop a better understanding of how these regulatory tools can be best used in a shifting electricity landscape.

Given the varied history of historical PIM results, we suggest methods to improve PIMs and strengthen their role in accelerating desired utility performance. To do so, the report:

- Considers the different processes through which PIMs can be developed and the varying roles that PUCs have in supporting PIM development.

- Identifies key barriers to successful PIM implementation and recommendations to overcome those.

- Explores the range of results of proposed PIMs to draw key lessons on what has worked well and what has not.

- Analyzes the experience of PIM design in Hawaii, Minnesota, Rhode Island, and New York to better understand how context and stakeholder engagement can affect PIM results.

# Why PIMs?

# Why PIMs?

Where traditional utility regulation ties utility revenues exclusively to costs and a rate of return on capital expenditures, PIMs tie a portion of utility compensation to the achievement of performance targets. Either as a new earnings opportunity or a penalty, well-designed incentives can motivate a utility to pursue a desired outcome that it would not otherwise prioritize.

The steps to develop PIMs include identifying key regulatory and policy outcomes, establishing quantitative metrics and targets to measure progress towards meeting those outcomes, and tying financial incentives to targets to motivate a change in how the utility makes decisions around operations, programs, and other investments. PIMs can also support greater transparency in utility operations, as associated metrics can record and communicate performance in new ways that don't involve laborious data discovery processes common to more traditional regulatory processes.

PIMs can reward a utility for strong performance, penalize a utility for poor performance, or both. A penalty-only incentive might be useful to address areas that are considered basic service obligations or other more traditional outcomes that have been ingrained in utility regulations for many years, such as maintaining reliable service.

Rewards, on the other hand, are useful to encourage exemplary utility performance on current utility responsibilities or to encourage growth into new or emergent outcome areas. Emergent outcomes include regulatory priorities that need attention as the electricity system becomes more decarbonized and distributed and as utilities pursue opportunities for non-traditional investments and services. It is emergent outcomes that reflect the technological disruption and clean energy policy goals that are largely driving the need to update utility regulatory frameworks.[1]

PIMs also help motivate utilities to prioritize spending or programs that might not be in the financial interest of the utility under traditional cost of service regulation. For example, because the traditional utility business model benefits from increased electricity sales and resulting capital expenditures, there is a disincentive to pursue programs that reduce energy use. Because of this, a number of states have used PIMs to support energy efficiency. According to the American Council for an Energy-Efficient Economy, all states that have a PIM for energy efficiency have seen energy reductions since the PIM was implemented.[2]

**This paper focuses on regulated, investor-owned utilities. Municipal and cooperative utilities also need to evolve in light of changing policy and regulatory goals, for which PIM-like approaches may be useful in some cases. PIMs or these other approaches require adaptation to the context of different utility structures and business models.**

Despite the positive results that PIMs can produce, some find it controversial to pay utilities for actions which they believe utilities should already do as part of their regulatory compact. Stakeholders also have raised questions over the extent to which PIMs are necessary in light of the direction that policy mandates already provide—for example, a PIM rewarding procurement of renewable generation may be redundant with a renewable portfolio standard that requires the utility to meet certain targets. To address this concern, a key first step in PIM development is to review desired regulatory outcomes and identify those which the utility does not have sufficient incentives to achieve or those that may conflict with the utility's existing business model.

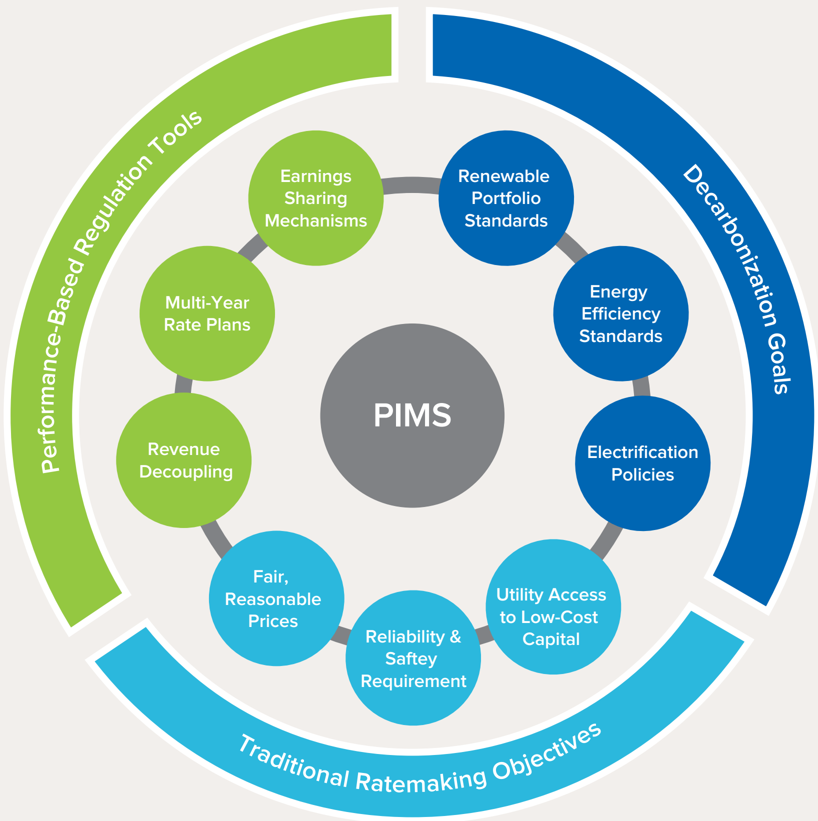
PIMs can be implemented in a range of regulatory contexts to support policies that drive utility performance. PIMs may be conservatively used in conjunction with a traditional utility business model—for example, as incentives for reliability improvement without addressing more structural components of the utility business—or they can play a more fundamental role in how utilities make decisions to support policy goals and meet regulatory objectives.

As such, PIMs can be developed for one-off programs or investments, can support a portfolio of programs, or can be oriented towards broader outcomes. Although other regulatory or policy tools might also lead to desired results and can be considered alongside PIMs, PIMs provide a unique method for aligning utility actions with policy goals in certain contexts.

Exhibit 2 shows how new incentives can interact with various regulatory and policy levers, including traditional ratemaking objectives, other performance-based regulation (PBR) mechanisms, and new public policies for decarbonization. Attention to how PIMs interact with existing regulations and policy directives can help ensure that new incentives are not simply bolted onto the current utility regulatory framework in a piecemeal, disconnected manner.

**EXHIBIT 2**

Performance Incentives' Interaction With Other Policies and Regulatory Tools




| | Policies and Mandates | Interaction with New Incentives | Examples |
|---|---|---|---|
| Traditional Ratemaking Objectives | Fair, reasonable prices | • PIMs can result in rates that better reflect the benefits customers receive rather than utility costs.<br>• PIMs should motivate utility behavior at the lowest cost to customers. | • Shared savings mechanisms can ensure both customers and utilities receive financial benefits from reduced utility costs.<br>• Hawaii, Massachusetts, and Rhode Island have established guiding principles for PIM development outlining how costs and benefits should be shared between customers and utilities.[3] |

| | Policies and Mandates | Interaction with New Incentives | Examples |
| --- | --- | --- | --- |
| Traditional Ratemaking Objectives | Reliability & safety requirements | • PIMs can penalize utilities for not meeting safety or reliability standards or incent utilities to provide a level of service beyond what is required. | • Several states have PIMs for reliability, including Hawaii, Minnesota, and California.[4]<br>• Incentives for safety may not be appropriate given past experiences of underreporting, but performance metrics used to track this information could provide needed transparency. |
| | Utility access to low-cost capital | • Thoughtfully designed PIMs can reward or penalize utilities commensurate with potential risk, which could impact their revenues, return of equity (ROE), and credit rating. | • Illinois has symmetrical return on equity incentives for Ameren and Commonwealth Edison to meet their energy efficiency targets.[5] |
| Decarbonization Policies | Renewable portfolio standards | • PIMs can encourage utility investment in an optimized portfolio of resources to meet state clean energy goals.<br>• PIMs can improve the interconnection process and procurement of third-party renewable resources. | • Hawaii has implemented a shared savings mechanism for lower-cost PPAs targeting renewable energy, storage, and grid services from DERs.[6]<br>• New York has a DER Utilization earning adjustment mechanism (EAM) to accelerate DER integration.[7] |
| | Energy efficiency standards | • PIMs can address economic disincentives to pursue energy efficiency traditionally faced by regulated utilities.<br>• PIMs can provide financial rewards or earnings opportunities in return for energy savings. | • Demand reduction PIMs have been used in many states, including Hawaii, Vermont, Rhode Island, Michigan, Texas, and New York.[8]<br>• Energy efficiency PIMs can be designed to specifically support energy efficiency resource standards (EERS) and decarbonization goals, as in Massachusetts.[9] |
| | Electrification policies | • PIMs can support the electrification of transportation and buildings to meet greenhouse gas targets and promote grid flexibility. | • New York has incentives in place for greenhouse gas reductions resulting from heat pump installations and electric vehicle adoption.[10] |

Source: RMI

## Cost of Service Regulation, PBR, and PIMs

Together, the growth of DERs and the critical need to decarbonize the electricity sector challenge the traditional utility business model. Cost of service (COS) regulation, where investor-owned utility revenues are based on costs, plus a rate of return on capital expenditures, does not provide sufficient incentives for utilities to become more efficient, to innovate, or to meet changing customer and societal demands.[11]

Although the COS approach made sense in the context of building power plants and electric infrastructure, it does not adequately incent the decisions needed to support an increasingly clean and distributed electricity system with a more diversified set of technologies, services, and market players. PBR can be an effective method to overcome some of the limitations of COS regulation by incenting improved utility performance rather than investment in capital and the growth of energy sales.[12]

## The Role of PIMs in Utility Incentive Frameworks

There is no one right way to implement PBR across jurisdictions, but its application depends on existing regulatory structures, prioritized goals, and desired regulatory outcomes. Performance incentives can be used conservatively in conjunction with COS regulation, focusing on particular programs or services, or they can fundamentally change utilities' day-to-day operations and decision-making.

States have yet to associate a large portion of utility revenue to performance, but many are acknowledging a need to move in this direction as they continue to decentralize and decarbonize their electricity systems. Exhibit 3 illustrates some conceptual models for how PBR, including PIMs, can be incorporated to lesser or greater degrees to alter utility revenues and business incentives. Exhibit 4 further illustrates these approaches in terms of how they can affect utilities' allowed return on equity.

**EXHIBIT 3**

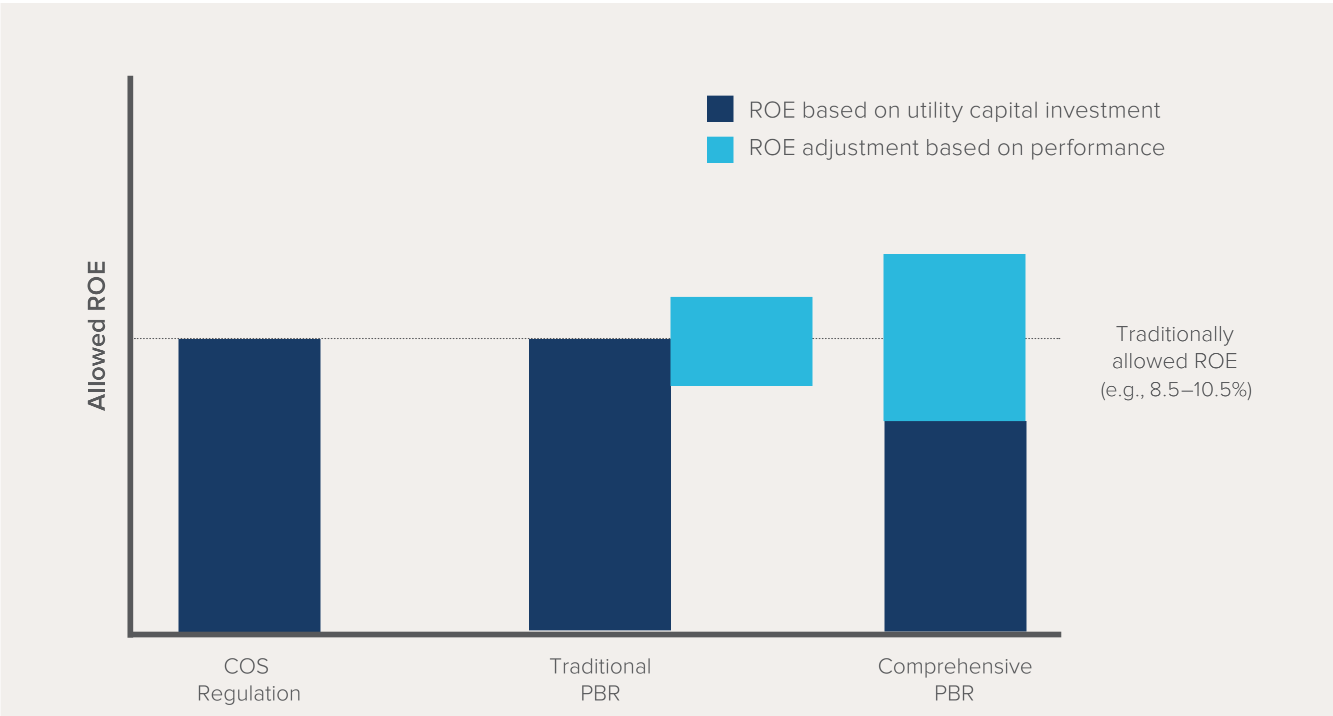
Conceptual Approaches to PBR and Revenue Formulas

| Regulatory Framework | Simplified Illustrative Revenue Formula |
|---|---|
| Cost of Service Regulation | Allowed Revenues = Operating Expenses + (ROR * Rate Base) |
| Incremental PBR | Allowed Revenues = Operating Expenses + (ROR * Rate Base) ± Performance Revenue |
| Comprehensive PBR | Allowed Revenues = (Target Revenue ± Performance Revenue) ± Earnings Sharing |

Source: RMI

**EXHIBIT 4**

Impact on Return on Equity (ROE) from Different Approaches to PBR




Source: RMI

Decisions over sizing incentives and establishing reasonable targets for PIMs highlight a fundamental question underlying PBR: should utilities be able to earn a reasonable return on equity (ROE) without meeting targets set by PIMs? To date, PBR has been mostly incremental, layered on top of COS regulation. Although utilities might face a penalty for underperformance or earn a relatively small bonus for meeting a target, earning a reasonable ROE has not required utilities to meet specific performance standards. In other words, earning a reward from a PIM has been additive, rather than necessary for the financial integrity of the utility.

As PIMs are both designed and evaluated, it should be clear how PIMs fit in with other opportunities for earnings and revenues. If maintaining adequate financial standing requires successful performance on a set of PIMs, targets and incentives should be calibrated appropriately. However, if PIMs are intended to incent actions towards a stretch goal in exchange for "bonus" earnings, targets that are too easily met might indicate poor PIM design.

## Relationship of PIMs to Other PBR Mechanisms

Beyond PIMs, PBR typically includes a range of regulatory tools, including revenue decoupling, multi-year rate plans, and earnings sharing mechanisms, designed to promote energy efficiency, contain utility costs, lower administrative burdens, and maintain utility's access to low-cost capital. Exhibit 5 shows these other common PBR tools, which may be used in conjunction with PIMs to make PBR more effective.

**EXHIBIT 5**

PIMs and Other PBR Mechanisms

| | Regulatory Tools | Interaction with New Incentives | Examples |
|---|---|---|---|
| Performance-Based Regulation Tools | Multi-year rate plans[i] | • Backstop PIMs can penalize utilities for failing to provide core functions like reliability, safety, and customer service during longer time periods between rate cases. | • Minnesota and Hawaii have Reliability and Customer Service PIMs to ensure service isn't impacted as utilities reduce costs during multi-year rate plan periods.[13] |
| | Revenue decoupling[ii] | • PIMs can create positive incentives to invest in energy conservation measures once decoupling removes the throughput incentive. | • Many of the 18 states that have adopted electric decoupling also have energy efficiency incentives, such as Michigan and Rhode Island.[14] |
| | Earnings sharing mechanisms (ESMs)[iii] | • ESMs that include PIMs can mitigate unintended earnings impacts on customers and the utility from PIMs; however, these ESM structures also may dilute the effectiveness of PIMs if rewards are bounded.<br>• Alternatively, PIMs may also fall outside an ESM, not subject to sharing requirements. | • Eversource in Massachusetts and National Grid in Rhode Island have ESMs for utility overearning, with varying sharing ratios.[15] However, PIMs are not included.<br>• In Hawaii's current PBR proceeding, several stakeholders are proposing revenues from PIMs be included in the state's updated ESM.[16] |

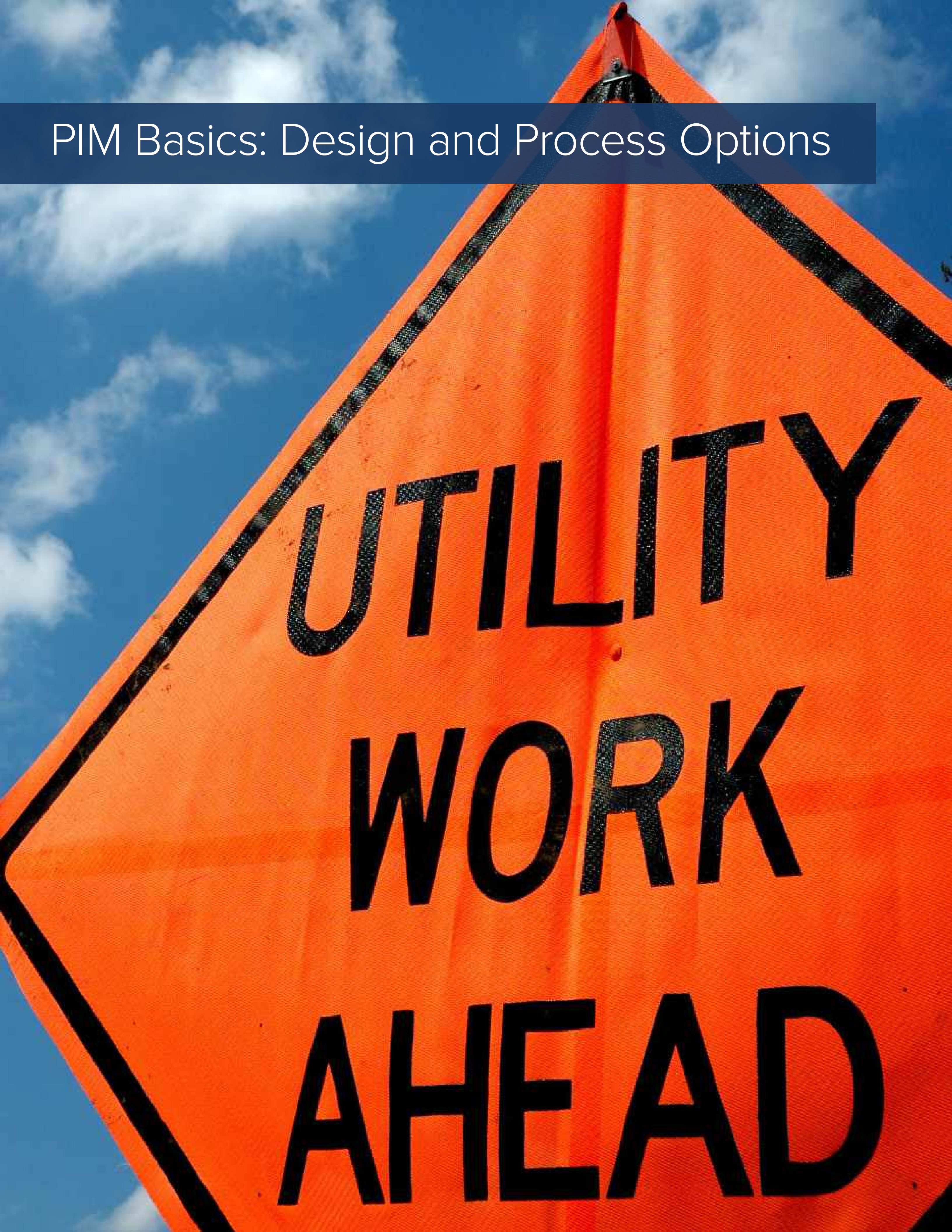
Source: RMI

[i] Under multi-year rate plans (MYRPs), utility revenue requirements are set for multiple years (typically 3–5 years). Utility compensation is usually based on forecast efficient expenditures rather than the historical costs of services. MYRPs often consist of moratoriums on general rate cases for a number of years and automatic adjustments to rates or revenue requirements in interim years to reflect changing conditions, such as inflation, population growth, and utility productivity.

[ii] Decoupling is a mechanism to break the link between the amount of energy a utility delivers to customers and the revenue it collects. Instead, rates are adjusted so that utilities receive fair compensation to cover utility costs and to provide a fair return to shareholders delinked from fluctuations in sales.

[iii] Earnings sharing mechanisms serve to "share" amounts of utility company earnings that deviate substantially from the levels of earnings determined to be reasonable in setting utility revenues and rates. ESMs can be designed to include or exclude revenues or penalties from PIMs.

# PIM Basics: Design and Process Options



# PIM Basics: Design and Process Options

Under PBR, PIMs sit within a subset of regulatory tools specially designed to track and incentivize utility performance. In this section, we provide a brief overview of the key components of PIMs to provide context for the examples and case studies that follow. We also describe important design considerations for the *process* of PIM design—that is, how regulators, utilities and stakeholders establish regulatory objectives, collaborate on PIM development, and review PIM proposals. For a fuller introduction to the design options for PIMs, see Synapse's *Utility Performance Incentives: A Handbook for Regulators.*[17]

## Anatomy of a PIM: Goals, Outcomes, and Metrics

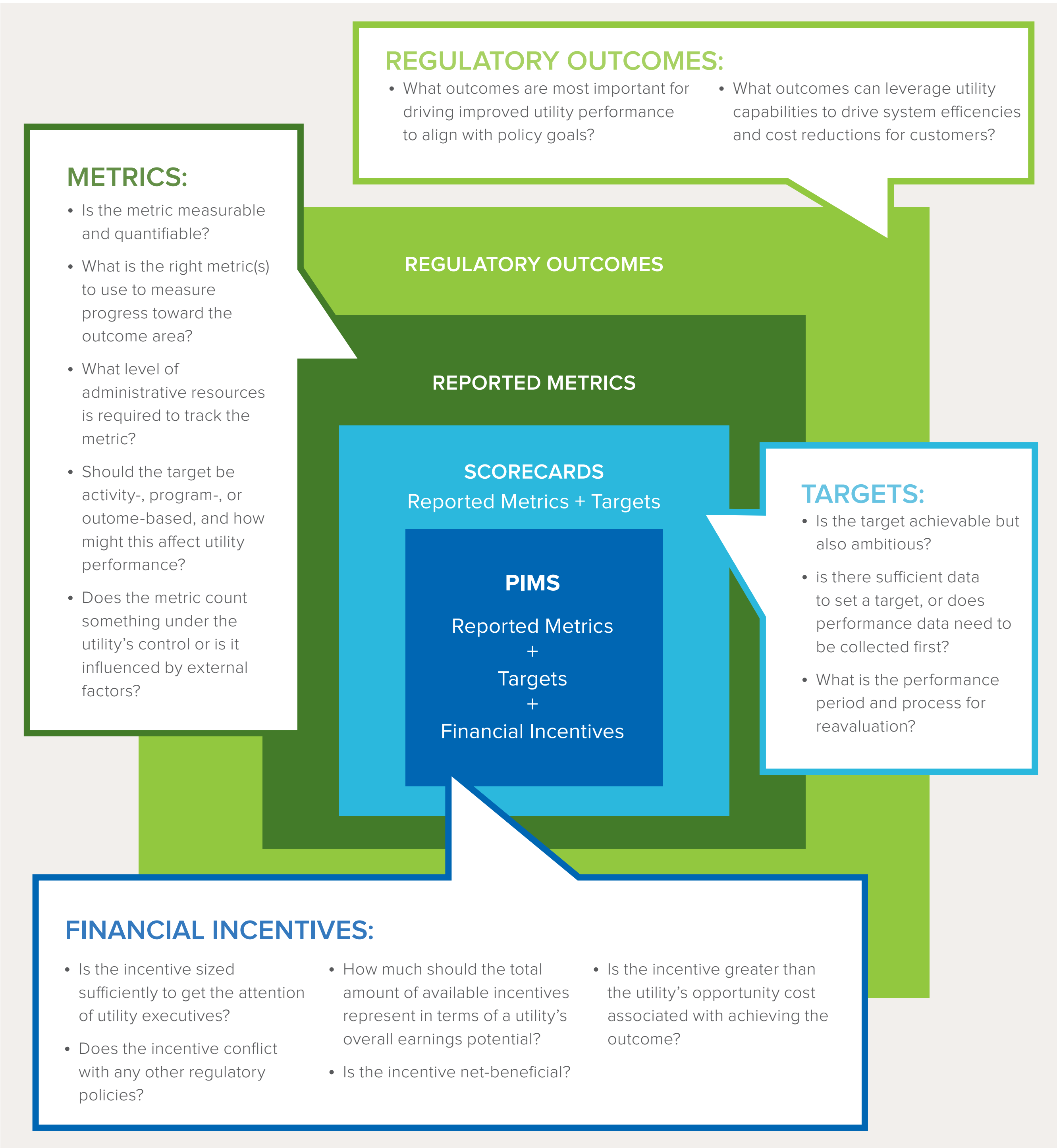
Performance mechanisms consist of a hierarchy of goals, outcomes, and metrics. Goals represent the highest-level objectives for utility regulation. Outcomes are a more specific set of factors that derive from utilities' operations and business decisions. Although the line between outcomes and goals is not always clear, outcomes more narrowly represent how the power sector is experienced by customers and market participants, as well as in the larger economy and society.[18]

Although an outcome describes the topic of regulatory interest, associated metrics reflect how performance in achieving that outcome may be tracked. Metrics can be used in several ways to encourage improved utility performance. These can be broken down according to three primary applications: (1) *reported metrics;* (2) *scorecards*; and (3) *PIMs*, as shown in Exhibit 6. Below, we illustrate this hierarchy and offer key questions and considerations.

**Reported metrics,** when used alone, are simply without a target or financial incentive. Reported metrics can still be useful in developing a more detailed understanding of utility performance, establishing baselines and initial data, and creating public pressure to motivate improved performance. Reported metrics can be considered as a "first step" in the development of PIMs—for example, Minnesota has decided to first track a number of performance metrics before determining which could benefit from targets and incentives.

**EXHIBIT 6**

Relationship between Regulatory Outcomes, Reported Metrics, Scorecards, and PIMs




Source: Adapted from Decision and Order No. 36326, 2018-0088, Hawaii Public Utilities Commission (2019), https://dms.puc.hawaii.gov/dms/DocumentViewer?pid=A1001001A19E24A83601C00601

## Activity-, Program-, and Outcome-Based Metrics

Metrics can be categorized as activity-, program-, or outcome-based, depending on what they are measuring. It could be helpful to consider what data is available for these three types of metrics to see what can be accurately tracked for a specific outcome. In some cases, a portfolio of metrics may be warranted to best reflect performance. In Exhibit 7, we provide examples of what activity-, program-, and outcome-based metrics might look like for an outcome focused on reducing peak demand.

**EXHIBIT 7**

Activity-, Program-, and Outcome-Based Metrics

| Type of Metric | Description | Examples for Peak Demand Reduction |
|---|---|---|
| **Activity-based** | • Track specific utility actions or decisions<br>• Do not necessarily reflect the achievement of a desired outcome because focused on intermediate steps toward achieving an outcome<br>• Could be helpful if direct measurement of an outcome is not possible<br>• May not support development of effective programs | Number of marketing materials announcing a time-varying rate sent to customers<br><br>Percentage of households with advanced meters installed |
| **Program-based** | • Measure performance of specific utility programs<br>• Can be easier to measure than system-level metrics<br>• Risk emphasizing specific programs, not allowing utility to optimize portfolio of options to support a particular outcome<br>• Are more likely to interact and overlap with each other | Percentage of households enrolled in a time-varying rate<br><br>MW of load participating in a demand response program |
| **Outcome-based** | • Focus on whether or not an outcome is achieved rather than the specific actions that were taken to deliver that outcome<br>• Help address information asymmetry issues by allowing the utility flexibility in choosing which programs and technologies should be used for achieving outcomes most cost-effectively<br>• Cost recovery for all utility actions may not be guaranteed<br>• May be difficult to determine whether utility actions or external factors have led to desired outcomes | MW of total system peak demand |

Source: RMI

Scorecards are reported metrics paired with a target or a benchmark. Targets signify a desired or expected performance, while benchmarks compare current performance to peers or historical trends. Scorecards are commonly published in a public, widely accessible manner, allowing regulators and the public to easily understand whether utility performance is meeting expected or desired standards. Performance targets also can be used to motivate utility behavior for metrics related to new utility services or products where there is a lack of historical data or understanding of costs and benefits to substantiate financial incentives.

PIMs are metrics that are paired with a performance target and a financial incentive. PIMs can offer rewards for achievement of regulatory outcomes, penalties for underperformance, or both. Choosing between these options could depend on whether the outcome is an established core utility function (such as reliability), or a new outcome that will require innovation (such as utilizing grid services from DERs). The choice also could depend on existing earnings opportunities and how PIMs fit into the broader regulatory framework.

Targets established for PIMs may be tied to state energy goals or other established regulatory priorities and should balance the costs of achieving the target with the potential benefits to ratepayers. Incentives can also be designed in a variety of ways—incentives may align linearly with utility performance, there may be tiered incentive levels, or the calculation may be based on more complicated formulas. Whatever the calculation, PIMs should be designed to ensure that small changes in utility performance do not result in large differences in rewards or penalties. Incentives may also use "deadbands," a neutral zone around a target, as a way to avoid rewarding or penalizing utilities for slight deviations from a performance target.

Performance incentives usually take four forms: shared savings or shared net benefits, percentage adders on investments, fixed rewards, and adjustments to utility's ROE. Each design option has advantages and disadvantages, and some PIMs incorporate aspects of more than one design.

**EXHIBIT 8**

Types of Incentive Structures

| Type of Incentive | Advantages | Disadvantages | Examples |
|---|---|---|---|
| **Shared net benefits/ shared savings:** Utility earns a share of the net benefits or savings that are created by the achievement of a performance target. Net benefits are calculated using the avoided costs that a utility would have spent without the program as well as the cost of the program itself. | Creates opportunities for utilities to share the benefits of a lower-cost program or investment with customers | Difficult to set baselines; creates incentive to inflate avoided costs | In Texas, utilities could earn up to 10% of the net benefits of peak demand reduction programs[19] |
| **Percentage adders:** Utilities can receive a rate of return on their investments in particular programs, such as energy efficiency or DER initiatives | Allows utilities to earn a rate of return on expenses that would otherwise be a pass-through<br><br>Can be less burdensome than establishing a baseline or avoided costs | Can create perverse incentives to overspend, as earnings are based on program costs | In Vermont, the utility earns up to 2.5% of total program budget if it meets peak demand reduction target[20] |
| **Fixed reward:** Utilities can earn a fixed amount based on achievement of targets | Easy to understand and may be simpler to administer | Difficult to determine appropriate size of reward | In Wisconsin, the utility earns $100,000 for meeting a minimum of savings goals[21] |
| **ROE basis points:** Utility incentives or penalties are realized through a basis point adjustment of the utility return on equity | By adjusting a utility's ROE, PIMs can more fundamentally impact utility investment decisions and can shift utility earnings to be more meaningfully based on performance, rather than costs<br><br>In some cases, PIMs can create earning opportunities for non-traditional resources similar to capital assets | Can be difficult to determine appropriate number of basis points<br><br>May contribute to utility capital bias, as utility earnings continue to be based on the size of rate base | The customer service PIM in Hawaii offers a reward or penalty of eight basis points, based on call center performance[22] |

Source: RMI

## Process Options for PIM Development

Good process design is a key determinant of the success of PIMs, yet process approach and design decisions frequently receive less attention than the technical and economic details of these mechanisms.[23] As a result, PIM development can get mired in adversarial debates that produce inadequate results. To address this, regulators, utilities, and related stakeholders are employing broader, more participatory processes to help shape PIM proposals as well as other PBR reforms.

Regulators have considered a variety of approaches to PIM development, depending on the role they see for themselves in driving the creation of new incentives for utilities. Some states' regulatory commissions have approached establishing performance incentives by responding to PIMs proposed by stakeholders rather than choosing to spearhead the process of PIM development from the start. Other states, such as Hawaii, have taken a more proactive approach, with the public utilities commission (PUC) opening an investigatory proceeding designed to not only develop new PIMs for the state, but to update a large part of the utility's regulatory framework in tandem.

Both reactive and proactive processes can be focused on either specific needs or wider opportunities. A need-based process is based on areas where utilities are underperforming or where utilities may need an alternative incentive to pursue a particular solution. These needs could be system-based (providing better reliability), customer-based (increasing levels of customer satisfaction), or project-based (seeking a lower-cost substitute for a large infrastructure project).

If successfully designed, project-based PIMs could potentially be expanded over time. For example, the incentive designed for New York's Brooklyn-Queens Demand Management Program (BQDM) is an example of a PIM implemented to support a specific solution—the procurement of alternative resources to avoid a potential costly grid upgrade. Due to its success, New York has subsequently made incentives available for other non-wires solutions in the state (BQDM and New York's incentives for other non-wires solutions are discussed further on pages 34-35).

Alternatively, an opportunity-based process could consider how PIMs support new utility services or programs. For example, PIMs can provide the impetus for a new utility program focused on utilizing grid services from DERs or leveraging customer consumption data in innovative ways. Opportunity-based processes also provide the flexibility to consider how PIMs fit with more comprehensive reforms to the utility business model.

## PUC Guidelines for PIM Design: Uses and Limitations

As states begin to explore how performance mechanisms can play a role in their regulatory frameworks, regulators have an opportunity to clearly articulate criteria or requirements for PIMs. This guidance can establish the scope of regulatory outcomes PIMs could support and set expectations for what PIMs should accomplish. Although some states explicitly name these beliefs or approaches as "principles" to *inform* PIM development, others have established design criteria or threshold requirements for PIMs. A list of different guidelines from several states can be found in the appendix.

Guidelines are most useful when introduced in advance of utilities' or other stakeholders' PIM filings. For example, Hawaii included a set of "PIM-specific design considerations" in its Phase 1 Decision and Order in the state's ongoing PBR proceeding prior to stakeholder discussions around specific PIM proposals in the second phase of the proceeding.[24] Similarly in Minnesota, the PUC established principles before the development of a set of performance metrics, many of which were proposed by stakeholders in party comments to the Commission.[25]

However, guidelines may be introduced because rejected PIM proposals have uncovered a disconnect between stakeholder and commission expectations. For example, Rhode Island and Massachusetts introduced principles after rejecting several PIM proposals.[26] The principles are now being used to surface disagreements, improve transparency of PUC decision-making, and guide the development of stronger proposals going forward.

When establishing principles, regulators should consider how they may be misinterpreted or may lead to unintended outcomes. For example, one of the threshold principles in Massachusetts states that PIMs are appropriate when they "positively influence distribution company behavior in the advancement of important public policy goals that are not directly aligned with a distribution company's public service obligations."

However, not defining what is in and out of a utility's public service obligations is likely to cause confusion among stakeholders and can result in potentially beneficial PIMs not being proposed. Blanket statements like this can risk promulgating murky discussions about the appropriate use of PIMs, potentially stifling innovative ideas in the process.

PUC guidelines can also uncover differences in how states view the role and goals of PIMs. For example, although both Hawaii and Rhode Island have principles focused on customer sharing of net benefits, the difference in phrasing may have a significant impact on which PIMs could be eligible for consideration. Rhode Island's principles state that PIMs should *maximize* customer share of net benefits, while Hawaii states that PIMs should be designed to reflect *some sharing* of net benefits [emphasis added].

This difference in philosophy may allow for a wider range of potential PIMs in Hawaii than in Rhode Island. By requiring *maximization* of customer benefits, the Rhode Island PUC may need specific results from a benefit-cost analysis in order to approve PIMs, thus narrowing the range of appropriate PIMs.

Creating space for dialogue, whether through party comments or stakeholder workshops, can support a common understanding of guidelines and other criteria. For example, the Rhode Island PUC has shared several guidance documents to clarify and elaborate on their principles in response to stakeholder comments. This process has allowed stakeholders to discuss underlying differences in approaches to and motives for PIM development *before* proposing additional PIMs. Rhode Island's most recent guidance also makes clear that perfect alignment with the PIM principles is not necessary for approval and principles should not be treated as strict rubrics.

## Obstacles to Effective PIM Design

In this section, we provide an overview of common obstacles that must be overcome in order to design successful PIMs. Evaluating and addressing these potential obstacles, along with various tradeoffs, should be a key part of PIM design processes. Many of these obstacles are further explored through the historical examples and case studies discussed later in this paper.

First, it can be difficult to know **which metrics are most appropriate** to measure achievement of regulatory outcomes. For example, advancing DER expansion may require metrics tracking interconnection (time to fulfill interconnection requests) and adoption (% increase in installed capacity above a forecasted baseline). However, an outcome focused on DER utilization should require metrics focused on how DERs are actually being used by utilities (avoided generation, capacity, and T&D costs due to grid services from DERs).

Moreover, metrics for certain outcomes could likely overlap. For example, system efficiency, DER adoption, and peak demand reduction are all interrelated. When setting metrics and targets for interrelated outcomes, it is important to ensure that the utility is not being rewarded multiple times for the same action.

Arriving at **the right number of metrics** can be another challenge. One option might be to have a larger number of metrics, each tied to smaller incentive amounts, which could allow for more trial and error. However, tracking and measuring many metrics can create an administrative burden and could be costly for utilities. Another option might be fewer metrics tied to larger incentive amounts, increasing the relative weight of each metric in terms of utility risk and reward. This decision depends on the relative importance of different metrics in reflecting desired outcomes and the level of confidence in PIM design to produce expected utility behavior.

It also can be difficult to **identify the right targets** for utility performance that appropriately balance costs and benefits, especially if historical data is not extensive. Targets should be designed to motivate the utility to go beyond what it might have achieved regardless of the incentive. They should also align with performance periods to allow utilities sufficient time to change behavior. Creating a deadband around a target can help to mitigate the risks of setting a target that is too challenging or insufficiently ambitious.

**Benchmarking across utilities**, which could inform target setting, could be another risk to successful PIM development. It is not always straightforward to pull out useful points of comparison across specific performance metrics between utilities that operate in varied geographies, with different energy resources, regulatory frameworks, and customer profiles. A utility also might measure performance differently.

For example, data around service interruptions might be captured differently by one utility than by another utility in a different state, so using comparisons of past performance between the two companies to define a target may be irrelevant or misleading. One way to overcome this obstacle is through normalizing data to make it more comparable, controlling for certain aspects that might affect PIM results.

Once a metric and a target are chosen, stakeholders must **correctly size financial incentives** on an individual and a portfolio basis to motivate desired utility behavior without over- or under-compensating the utility. If an incentive is too small, the amount of investment required to meet the performance target might be larger than the potential reward or penalty, and utilities may not choose to alter their behavior. If the incentive is too large, it could undermine customer benefits by disproportionately increasing rates.

Effectively navigating all these obstacles requires data availability and access. **Information asymmetries and lack of data sharing** between regulators, customers, and other stakeholders can prevent the thoughtful creation of new utility incentives. Given utilities have deeper insight into their own operations and some data is more often publicly available (i.e., service interruptions, energy consumption, peak demand) than others (i.e., system-level emissions, customer satisfaction scores, DER utilization, etc.), clear data sharing processes can support a shared understanding of the technical potential for utility performance across stakeholders.

Access to data about the costs and benefits of utility performance also allows stakeholders to understand whether there is a compelling need for a PIM, what the target should be, and what level of incentive is appropriate. Data sharing should be a core part of the stakeholder process, with clear expectations for utilities and protective orders in place for sharing confidential information if needed.

It is also important to **consider how PIMs fit in with other earnings opportunities.** If PIMs are considered a "bonus" to utilities, they should be designed to motivate utility behavior beyond what would have occurred under traditional COS regulation and reward exemplary performance. However, if earnings from PIMs are necessary to ensure utilities reach a reasonable ROE, targets might be set at levels easier to achieve and incentives should be sized appropriately.

Additionally, it is crucial to **avoid perverse incentives**. PIMs could potentially counteract or clash with components of traditional utility regulatory models, risking confusion and sending mixed signals to utilities. Thinking through how a PIM might be gamed or manipulated, or how it would fare given varied grid and market conditions, also should be a key part to any development process.

In anticipation of these obstacles, PUCs should design PIM development processes that support innovative ideas, constructive vetting, and sufficient analysis. Inclusive stakeholder engagement with protocols and expectations for data sharing, coupled with clear guidance and feedback from commissions, can help to avoid these potential pitfalls.

# Historical PIM Results

# Historical PIM Results

Beyond considering different design options for PIMs, understanding their historical experiences provides important lessons for future PIM development to support both emergent and traditional outcomes.

In Exhibit 9, we share a summary of rejected and accepted PIM proposals, as well as key reasons for these results.

**EXHIBIT 9**

Historical PIM Results

| | Result | Likely Explanations for Result | Examples |
|---|---|---|---|
| PROPOSAL REJECTED | Rejected based on regulators' determination | • Inadequate metric to measure progress toward outcome<br>• Lack of engagement with critical stakeholders<br>• Unclear assumptions about costs and benefits<br>• Insufficient historical data to establish correct target and incentive | • Rhode Island (National Grid rate case settlement)[27]<br>• Massachusetts (National Grid rate case settlement)[28]<br>• Hawaii (communications with DER providers)[29] |
| PROPOSAL ACCEPTED | Target achieved; utility rewarded (or not penalized) | • Motivates desired behavior<br>• Strikes the right balance between utility rewards and customer benefits<br>• Effective stakeholder engagement and thorough vetting in PIM development | • New York (non-wires solutions)[30]<br>• Massachusetts (energy efficiency)[31]<br>• Rhode Island (energy efficiency)[32]<br>• Minnesota (reliability)[33] |
| | Target achieved; utility incentives far exceed expected reward | • Targets not ambitious enough<br>• Incentives not designed to accurately reflect performance | • Vermont (energy efficiency)[34]<br>• Texas (energy savings)[35]<br>• California (nuclear capacity factor)[36] |
| | Target not achieved; utility not rewarded (or utility penalized) | • Incentive not high enough<br>• Insufficient historical data to set appropriate target<br>• Performance period too short<br>• Inadequate performance | • Hawaii (demand response)[37]<br>• New York (reliability)[38]<br>• New York (energy efficiency)[39]<br>• Colorado (nuclear capacity factor)[40] |
| | PIM eliminated either during development or after application period | • Unintended consequences<br>• Gaming/manipulation<br>• Administrative burden<br>• Outcome/policy goal achieved without PIM | • New York (DER interconnection)[41]<br>• Washington (energy efficiency)[42]<br>• California (customer satisfaction and employee health and safety)[43] |

Source: RMI


## Rejected PIM Proposals Based on Regulators' Determination

PIM proposals may be rejected for several reasons, ranging from insufficient stakeholder input to inadequate benefit-cost analyses. If different market actors have not been meaningfully engaged in the process of developing a PIM, the PIM may not reflect the diverse perspectives necessary to ensure its success. Another concern is that regulators may not have confidence in a PIM metric's ability to accurately measure progress toward a broader policy outcome or reflect the utility's contributions to that progress. Incentives proposed might be appropriate in theory but supporting data may not be able to demonstrate that an incentive is appropriately sized relative to a target and will result in public benefits.

One notable example of rejected PIM proposals occurred in 2018 in **Rhode Island**. The PUC rejected six PIM proposals put forward by National Grid, including those focused on the time to interconnect DERs, heating electrification, and installing energy storage, stating that the commissioners were not satisfied with the data provided to prove that the incentives were net beneficial *(more detail on Rhode Island's recent experience with PIMs is provided in a case study).*[44]

Rhode Island's PIM proposal process highlights a common challenge for incentives for more emergent outcomes—how do you establish a correct baseline from which to measure performance when data has not been tracked for a long time? Relatedly, how do you quantify benefits for emergent outcomes? One option is to take Minnesota's approach and first establish reported metrics without incentives to collect data for a period of time. This new data can then be leveraged to better inform PIM design down the line.

However, for other states that need to act more immediately, a staged approach may take too long. Although it is important to ensure that all PIMs are in the public's interest, it is important to find the right balance between requiring sufficient enough analysis to validate PIM's risk and reward, while acting swiftly enough to get PIMs in place to help accelerate achievement of policy goals.

Similarly, the **Massachusetts** Department of Public Utilities (DPU) rejected four PIMs proposed by National Grid as part of a larger PBR package in September 2019.[45] In its order, the DPU defined threshold principles and design guidelines for PIMs and stated that the proposed PIMs did not meet these principles and therefore would not be approved.

**Key Recommendation: Align incentive structures with expected benefits**

For example, the DPU found that a proposed Customer Ease PIM, intended to reward the utility for achieving positive customer survey responses to a question about "how easy it is to do business with National Grid," would have inappropriately rewarded the utility for behaviors that are part of its public service obligation. Other PIMs were rejected for not meeting other design guidelines, such as rewarding the utility for factors outside of utility control or relying on metrics that cannot sufficiently be monitored, quantified, or verified. A list of Massachusetts's threshold principles and design guidelines can be found in the appendix.

Although the additional clarity around expectations for PIMs provided by DPU will hopefully better position National Grid to propose PIMs going forward, there likely will need to be continued dialogue to clarify intent and applicability of the DPU's guidance similar to the discussions taking place in Rhode Island. This experience highlights the value of regulators explicitly articulating their vision and expectations prior to stakeholder PIM development.


## Accepted PIM Proposals, with Different Results


### Target achieved; utility rewarded (or not penalized)

If a target is achieved and motivates desired utility behavior without a disproportionate impact on ratepayers, it is likely that the PIM reflects the right balance between financial rewards and customer benefits. Even if targets are achieved, they may continue to evolve to become more ambitious to further improve utility performance. Depending on how PIMs fit into the utility's broader revenue formula, a utility may need to earn performance incentives to achieve a reasonable ROE. If this is the case, utilities regularly achieving or exceeding targets would become necessary to ensure the utility's financial viability, rather than a sign that the targets were insufficiently rigorous.

Several states have designed successful energy efficiency PIMs over the years. For example, **Massachusetts**' energy efficiency incentive is based on a combination of the dollar value of the energy savings benefits and the dollar value of net benefits. The utility earns an incentive only if energy savings are between 75% and 125% of these projected benefits and net benefits. The total shared incentive pool is set at $100 million for the state's electric utilities and $18 million for gas utilities.[46] A diverse group of stakeholders convenes regularly to assess Massachusetts' energy efficiency PIMs and makes updates as needed.

**Rhode Island's** energy efficiency incentives also highlight the importance of PIMs evolving over time. Rhode Island has increased both targets and allowed incentive amounts several times since 1990. That is, the pool of incentive money has grown, from 4.25% to 5% of spending, but the threshold requirement to achieve a financial reward has become more challenging, increasing from 45% of the targeted annual energy savings to 75%.[47]

Both Massachusetts and Rhode Island have continuously achieved some of the highest levels of energy savings in the country, implementing new programs to achieve more ambitious targets for a bigger payout. These examples illustrate that changing performance targets is not always a sign that targets were first set incorrectly; in fact, many PIMs are designed to evolve over time as more data is collected and there are higher expectations for performance. In light of this, it is important to build flexibility into PIM implementation to continue to drive technological and programmatic innovation.

**Key Recommendation: Prioritize flexibility and learning**

PIMs also have been successful in incentivizing more emergent outcomes. For example, the well-cited Brooklyn-Queens Demand Management (BQDM) project in **New York,** and the state's broader incentives for non-wires solutions reflect the potential of PIMs to drive innovative utility performance.[48]

The BQDM program was designed to reduce peak load in a number of distribution networks. Con Edison, one of the state's investor-owned utilities, had notified the New York Public Service Commission

(PSC) about anticipated demand growth that would exceed the utility's existing distribution capacity and overload a number of electrical networks in the Brooklyn-Queens area.

The utility had originally identified $1 billion worth of system upgrades, including construction of a new distribution substation to address this issue. However, the Commission approved Con Edison's proposed non-wires solutions to reduce the demand through alternative, less capital-intensive resources. By combining energy efficiency and various DERs, the BQDM program was able to meet Con Edison's projected demand growth for the service territory, while avoiding the need for the utility's proposed $1 billion capital investment.

To incentivize Con Edison's BQDM program, the Commission allowed Con Edison to earn a return on DER investments and an additional 100 basis points contingent on performance.[iv] The BQDM program quickly became a model for non-wire solutions statewide, but the incentive structure was updated to a shared savings mechanism where New York utilities could retain as earnings up to 30% of the total net benefits from a non-wires project. The PSC also allowed amortization of expenditures supporting non-wires solutions over 10 years.[49]

**Key Recommendation: Consider using PIMs to support utility growth into new service areas**

**TARGET ACHIEVED**

## Target achieved; utility incentives far exceed expected reward

Given the challenges inherent in designing performance metrics, targets and incentives, it is possible to implement PIMs that don't accurately reflect historical utility performance or that are not ambitious enough relative to what is actually achievable. If a utility exceeds targets by large margins or receives unexpectedly high rewards, this can often be a sign that the utility is being overcompensated for the effort required to meet the performance target.

For example, a Texas' PIM for energy (MWh) and peak demand (MW) savings was originally designed such that the utility was able to earn up to 20% of program costs, with the possibility of a bonus if the utility achieved higher than 120% of the demand reduction goal. In 2011, the cap was changed to 10% of net benefits. Changing the structure of the incentive effectively resulted in a doubling of incentive payments compared to the prior period. Utilities have also far exceeded goals.[50] For example, Southwestern Electric Power Company met 194% of its energy goal and 238% of its demand goal in 2012.[51]

[IV] Metrics for the additional 100 basis points on top of the rate of return included "45 basis points tied to achieving performance of 41 MW or more of alternative measures; 25 basis points tied to performance in increasing diversity of DER in the market place (more contracts with a greater number of small DER providers); and 30 basis points tied to the utility's ability to assemble a portfolio of solutions that achieves a lower $/MW value than the traditional investment solution." See Advanced Energy Economy, America's Power Plan, and Rocky Mountain Institute, *Navigating Utility Business Model Reform Case Study: Brooklyn Queens Demand Management Program—Employing Innovative Non-Wires Alternatives,* 2018.

At this time, some stakeholders expressed concerns that the rewarded incentives were not commensurate with program results; however, others argued that these incentives were necessary because Texas utilities are not decoupled and do not have another mechanism to recover lost revenues from energy efficiency programs. This example emphasizes the importance of considering other components of utilities' revenue models when sizing incentives. It also highlights the need to reassess targets when modifying incentive structures to protect ratepayers from unexpected rate impacts.

**Key Recommendation: Evaluate how PIMs can work within current regulatory frameworks**

Another example of unexpectedly high incentives are **California's** PIMs for nuclear power plants in the 1980s and 1990s. The California PUC set rates for the Diablo Canyon Power Plant based on an avoided cost calculation that was intended to protect ratepayers from the plant's significant cost overruns, while encouraging the plant to operate efficiently. Instead of allowing the utility to recover all of costs automatically, regulators decided that cost recovery would be based on the amount of electricity that would be generated by Diablo Canyon above a set capacity factor.[52]

However, there were several flaws with this design. First, the target capacity factor was set based on an average of capacity factors in the industry, which was much lower than the average capacity factor of Diablo Canyon. Second, the financial reward for PG&E was set at a fixed price, rather than being responsive to changing market conditions.[53] As a result, ratepayers continued to pay a fixed price per kWh of electricity from Diablo Canyon even when it was less expensive to use energy from alternatives, such as oil or gas.[54]

Learning from this experience, the PUC then set the avoided cost for replacement power payment for the Palo Verde nuclear power plant at the market-based cost of replacement power. Ultimately, this PIM proved to be unstable as well as the cost of replacement power escalated to 10 times what was expected during the energy crisis in 2000. In response, stakeholders pushed for an upper limit on incentive payments and the California PUC set a cap of $0.05/kWh.[55]

This example shows how difficult it can be to calculate baselines and avoided costs for PIMs given the unpredictability of markets and dynamics of the grid. Ensuring there are mechanisms built in for updating PIMs based on experience can mitigate unintended consequences in the future.

**TARGET
NOT ACHIEVED**

### Target not achieved; utility not rewarded (or penalized)

If a target is not achieved, it could be a sign that the PIM metric insufficiently measures progress towards the desired outcome, the incentive is too low to draw the needed attention of utility decision makers to actually change utility behavior, or targets may not be set correctly. Common factors that could result in miscalculated targets include limited stakeholder engagement, insufficient data, or a lack of consideration of external factors that impact performance during the PIM development process.

For example, **Hawaii's** one-time 2018 Demand Response PIM established a positive-only target incentive for the timely acquisition of cost-effective demand response contracts with third-party aggregators. The program-based performance incentive was set at 5% of the aggregate annual contract value with a cap of $500,000. The Hawaiian Electric Companies (HECO Companies), the state's only investor-owned utility, was unable to complete contracts with the demand response aggregators by the deadline determined by the Hawaii PUC and did not receive the reward.[56]

This result was likely because the timeline was too short to allow contracts with third-party aggregators to be signed in time. The PUC declined to renew the demand response PIM but left open the possibility of establishing incentives for demand response in the future. This example underlines the importance of designing performance periods that provide sufficient time for the utility to achieve targets.

**New York's** energy efficiency Earnings Adjustment Mechanisms (EAMs) include both outcome-based and program-based metrics.[v] Through these mechanisms, utilities have been able to earn incentives based on net gigawatt-hour (GWh) and net megawatt (MW) reductions from specific programs, and they also have the opportunity to earn rewards based on megawatt-hours (MWh) of DER utilized, and reduced kilowatt-hour (kWh) sales per customer.

According to Con Edison's 2017 achievement report, it earned the maximum incentive for the programmatic EAMs, based on energy efficiency, system peak reduction, and EV programs. However, Con Edison did not meet the minimum performance threshold to receive a reward for the outcome-based metrics—DER utilization and energy intensity.[57]

It has been argued that uncertainty over whether or not the incentive would adequately cover the costs of achieving the targets and the short duration of the performance period were largely responsible for this result. For the energy intensity PIM, specifically, there was also some disagreement over whether the metrics accurately reflected actions within the utility's control. In 2018, Con Edison was able to meet the targets set for the DER utilization EAM, but once again failed to meet the targets established for energy intensity.[58]

Another example of a target not being met is **California's** energy efficiency performance incentives from the mid-to-late 2000s. This experience shows the importance of establishing clear methodologies for setting counterfactuals and metrics before a program begins in order to get alignment from all parties.

Between 2006 and 2008, the California Public Utilities Commission (CPUC) established performance incentives for energy efficiency, with the reward contingent on meeting energy savings targets.

[v] New York uses the term "Earnings Adjustment Mechanism," or EAM, to describe PIMs.

However, the metrics or targets under the Risk-Reward Incentive Mechanism (RRIM) against which the CPUC assessed utility performance had not been established before the program was implemented and were only developed while the CPUC conducted its *ex post* review. This caused disagreements over the actual savings received and the calculated net benefits. Ultimately, the California utilities received roughly 10% of the incentive amount that they were expecting.[59]

This case highlights several key problems that subsequent programs in California sought to avoid. First, the performance metrics were not determined before the program began, resulting in an unclear methodology for assessing performance when determining the size of the reward. At the same time, stakeholders were disgruntled that utilities still received a financial reward at all, even one lower than expected, given that their performance was seemingly poor.

**Key Recommendation: Design effective approaches for stakeholder participation**

Moreover, tiered incentives meant small differences in performance resulted in large swings in the incentive amount, as well as between rewards and penalties. As a result of these challenges, the RRIM program was updated between 2010 and 2012, and in 2013 the Energy Savings Performance Incentive (ESPI) was implemented as a replacement.[60] The ESPI addressed the issues with the tiered incentive mechanism and set out a clear process for implementing evaluations of utility performance based on actual performance data.[61]

Lastly, an example from **Colorado** shows how not meeting a PIM target actually led to a desirable outcome. During the 1980s, the Fort St. Vrain nuclear plant was not being effectively utilized. Significant mechanical issues resulted in the plant operating at a very low capacity factor but still incurring significant maintenance costs.[62] Noting the risk to ratepayers, the PUC designed a performance standard; if the utility could keep the capacity factor of the plant above 50%, the utility would earn a reward. If the capacity factor remained below 50%, the utility would pay a penalty.

Ultimately, the utility could not keep the power plant operating at the desired capacity factor, and the nuclear plant was closed. In this case, the utility not meeting the target was not a sign of bad design as the intended result—the retirement of an under-utilized asset—was in the public’s interest.

**Key Recommendation: Determine what role PIMs can play in supporting public policy goals**

**PIM ELIMINATED**

### PIM eliminated during development or after application period

PIMs are often developed knowing that regulators and stakeholders don't have perfect information about utility operations and costs and PIMs are only one of many possible solutions for achieving regulatory outcomes. For these reasons, regulators may establish PIMs with the assumption that they can change over time and might ultimately be eliminated. If a PIM is eliminated, it is usually for one of the following reasons:

- PIMs produce unintended results (including overcompensation, gaming, manipulation, or other perverse incentives for the utility)
- PIMs create large administrative burdens and strain utility/PUC relationships because of the resources required to track metrics and adjust utility earnings accordingly
- The PIM itself has become redundant given other programs or solutions that are more cost-effectively producing the same desired result

**New York's** experience with energy efficiency incentives reveals some of the difficult considerations behind designing symmetrical versus non-symmetrical incentives. Between 2009 and 2011, the New York PSC implemented both financial rewards and penalties under its energy efficiency performance incentives.[63] In 2012, the PSC eliminated the negative incentive, moving to a positive-only incentive and reducing the total incentive size.[64]

The PSC decided that the penalties, rather than motivating utilities to invest in DERs and other innovative solutions, instead increased utilities' risk aversion and negatively impacted the working relationship between the utilities and regulators. Ultimately, the Commission decided that this strained relationship, along with the administrative resources and costs required to track the PIM, were not commensurate with the benefits that would be gained from penalizing utilities for underperforming on their energy efficiency program obligations.

Several years later, **New York's** Reforming the Energy Vision (REV) Track 2 Order stated that utilities should file proposals for interconnection EAMs as a result of significant challenges with the state's DER interconnection queue. However, the PSC ultimately eliminated the interconnection EAM in April 2019 because improvements in other programs made the incentive unnecessary.[65]

**Key Recommendation: Strive for outcome-based PIMs where possible**

The utilities' Distributed System Implementation Plans, which were submitted outside of the requirements of the EAM, helped support the interconnection of DERs and alleviated some of the interconnection queue pressure. Additionally, another EAM focused on DER deployment made the interconnection EAM redundant. PIMs may also get eliminated due to identified perverse incentives. For example, **Washington's** energy efficiency incentive for Puget Sound Power and Light in the early 1990s was eliminated because of gaming and overcompensation concerns.[66] The utility had focused its efforts on only specific metrics that provided high rewards to the utility, avoiding less lucrative measures and leading to an incentive that was not as influential as intended.

Similarly, **California's** customer satisfaction and health and safety performance incentives for Southern California Edison (SCE) established in the mid-1990s also suffered from gaming and resulted in unearned rewards for the utility. SCE's customer satisfaction incentive was eliminated at the end of 2003, while a version of the employee health and safety PIM continued through 2005.

For the prior, customer satisfaction was measured through the use of third-party administered surveys with rewards and penalties in four areas: field services, local business offices, telephone centers, and service planning. Incentives were based on survey scores, with the utility receiving a reward or penalty of $2 million for each percentage point change in the average score outside a deadband, up to a maximum of $10 million per year.[67] However, it turned out that for the six years the PIM was in place, SCE employees manipulated and skewed survey results, artificially inflated survey outcomes, and yet still received PBR rewards.

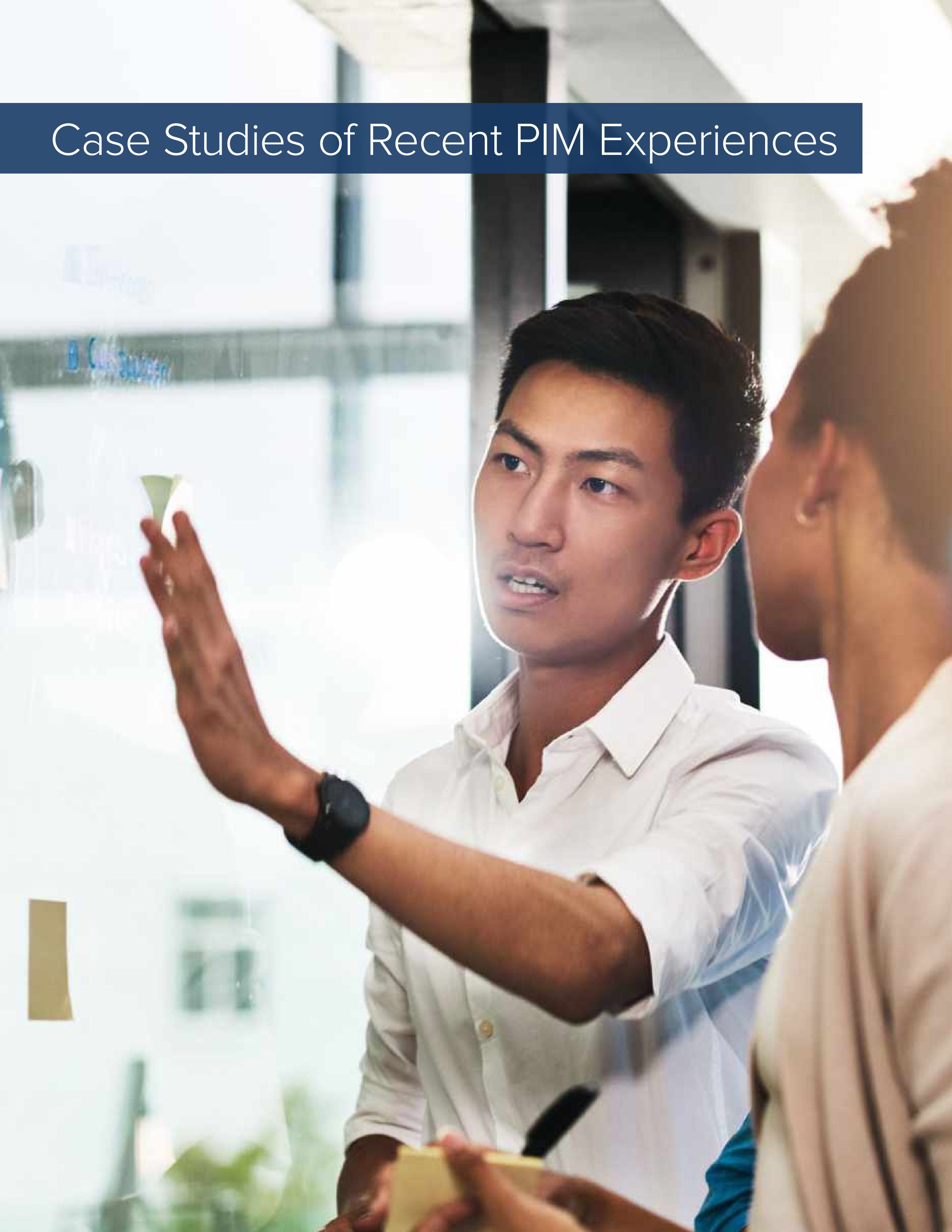
For the employee health and safety PIM, health and safety were measured by the number of first aid incidents and lost hours worked, based on historical averages as reported to the Occupational Safety and Health Administration (OSHA). As with the customer surveys, data was not appropriately collected for both setting the target in the first place and compliance reporting.

**Key Recommendation: Leverage data to better understand utility operations**

As a result, only a small fraction of first aid incidents were reported. The CPUC also found that the existence of the PIM actually discouraged employees from reporting injuries due to their not wanting to jeopardize their incentive compensation not only for themselves, but for the rest of their team.[68]

In 2008, the CPUC ordered the SCE to refund $48 million achieved in rewards, forgo additional rewards requested, and pay a fine totaling $30 million. These experiences underpin the need to think through how metrics may be gamed or manipulated prior to implementation and the importance of establishing processes to validate data frequently.[69]

# Case Studies of Recent PIM Experiences



# Case Studies of Recent PIM Experiences

Although analytical frameworks can clarify design options, and summarized results are helpful to make sense of historical experience, we recognize the limitations of this approach. Many regulations (as well as their results) are responses to a particular event or goal that motivates an intervention, to unique circumstances in a given jurisdiction, or they reflect individuals' personalities and stakeholder dynamics that play out in unique and unpredictable ways.

As a result, generalized incentive structures and recommended "best practices" are only as good as conditions and policy context allow them to be. To shed additional light on how some recent and historical PIMs unfolded as they did, it is useful to consider a fuller context of underlying motivations, design processes, and unique features that are at play.

In this chapter, beginning with Exhibit 10, we provide a narrative summary of PIM experiences in Hawaii, Minnesota, Rhode Island, and New York. These four states each have decoupling and multi-year rate plans for electric utilities, and all have aggressive climate and renewable energy goals. Although all are in the midst of active processes and it is premature to make a final assessment of their results, their attention to current and emerging system needs make these states a useful study to inform PIM development everywhere.

**EXHIBIT 10**

Comparison of PIM Approaches in Four States

| | Hawaii | Minnesota | Rhode Island | New York |
|---|---|---|---|---|
| PIM Process Discussed | PIM development in ongoing PBR investigation (Docket 2018-0088), which is planned to end with a decision and order in December 2020. | Performance metrics development in ongoing PBR proceeding (Docket E-002/CI-17-401). | 2018 National Grid Settlement Agreement informed by the Power Sector Transformation process and RI PUC guidance on PIM Principles. | Con Edison EAM process resulting from Reforming the Energy Vision (REV) effort. |
| Utility Discussed | Hawaiian Electric Companies | Xcel Energy | National Grid | Con Edison |
| Identified Role or Purpose for PIMs | PUC identified PIMs as a significant opportunity to support utility achievement of emergent outcomes including DER asset effectiveness, interconnection experience, and customer engagement. | PUC adopted the following desired regulatory outcomes for PIMs: affordability; reliability, including both customer and system-wide perspectives; customer service quality, including engagement and empowerment; environmental performance, including carbon reductions and beneficial electrification; and cost-effective alignment of generation and load, including demand response. | PIMs may be appropriate to create an incentive to better align utility performance with the public interest, where improved performance will deliver incremental benefits. The PUC defined goals and categories of benefits to be considered for any matter involving the electric company, including PIMs, in Docket 4600: "Investigation into the Changing Electric Distribution System."[70] | REV established EAMs as a bridge to utility earnings being primarily based on platform services and outlined key outcomes that EAMs could support, including interconnection, peak reduction, energy efficiency, customer engagement, and affordability. |

*continued on the next page*

| | Hawaii | Minnesota | Rhode Island | New York |
|---|---|---|---|---|
| Proactive or Reactive PUC Approach | **Proactive**<br>PUC initiated proceeding to update state's performance-based regulatory framework, including other revenue adjustment mechanisms. | **Reactive**<br>e21 process identified need to transition to performance-based regulation.<br><br>2015 legislation gave the PUC authority to implement PIMs for utilities operating under multi-year rate plans.<br><br>PUC opened a proceeding to investigate performance metrics, with the potential to include incentives. | **Reactive at start**<br>PUC has not defined target public policy areas for PIMs.<br><br>PUC began process to develop guiding principles after rejecting a number of PIM proposals . | **Proactive at start**<br>The PSC outlined the areas they wished to see incented, but have since been mostly responsive to individual EAM proposals and continued guidance has been minimal. |
| Stakeholder Process | Collaborative stakeholder process hosted by PUC and facilitated by Rocky Mountain Institute. | Collaborative stakeholder process hosted by PUC and facilitated by Great Plains Institute. | Consumer advocate and energy policy agencies facilitated stakeholder discussion for PST effort.<br><br>Formal intervening parties negotiated 2018 rate case settlement.<br><br>The PUC has been seeking stakeholder input on proposed guidance for PIMs. | Outcome-based EAM Collaborative and rate case negotiations, both facilitated by Con Edison. |
| Current Status | Phase 2 of the proceeding is in progress; facilitated stakeholder process has finished and parties have proposed PIMs in initial statements of position. | Metrics implemented and being used to evaluate the need for PIMs; potential demand response PIM is being developed. | PUC has adopted a final guidance document. | EAMs are in effect, including new EAMs for Con Edison approved in a January 2020 Joint Proposal for 2020–2022 rate case cycle. |

Source: RMI

## Hawaii: Performance-Based Regulation of HECO Companies

### Background

Hawaii is in the middle of its transition away from largely centralized, fossil-fuel-based generation toward an increasingly renewable and distributed system. The state has a 100% by 2045 renewable portfolio standard, as well as other unique considerations including the highest electricity rates in the country, individual island electric systems, and reliance on imported fossil fuels. These conditions have made it necessary to rapidly develop innovative regulatory tools that motivate improved utility performance across emergent policy areas.

Components of PBR have been in place in Hawaii for years, including revenue decoupling, multi-year rate plans, an earnings sharing mechanism, and PIMs for reliability and customer service.[71] In addition, the Hawaiian Electric Companies (HECO Companies), the investor-owned utility that serves all but one island in the state, has publicly reported on several performance metrics, including renewable energy, utility costs, safety, customer service, power supply and generation, and reliability for a number of years.[72]

More recently in late 2017, the Hawaii PUC approved a one-time performance incentive related to the HECO Companies' timely acquisition of cost-effective demand response from third-party aggregators.[73] Also in 2017, the Commission established a short-term shared savings mechanism for the Companies' procurement of renewable generation from competitive providers.[74] The incentive was based on an 80%/20% split between customers and the utility for the estimated first-year savings from each power purchase agreement (PPA) entered into by the HECO Companies, as compared to benchmarks set by market prices for recent renewable energy projects.

In April 2018, the Hawaii PUC opened Proceeding 2018-0088, calling for a broad investigation into opportunities to expand performance-based regulation for the HECO Companies. This was soon followed by legislation, which reinforced the call for performance-based regulation, stating that the PUC must "establish performance incentive and penalty mechanisms that directly tie electric utility revenues to a utility's achievement on performance metrics and break the direct link between allowed revenues and investment levels."[75] Hawaii is now pursuing what may be the most comprehensive examination in any US state of how PBR can help achieve state policy goals and other desired regulatory outcomes.

### Process

In the PBR Proceeding's Opening Order, the PUC set out an ambitious process organized into two phases. Phase 1 established goals and outcomes of the proceeding and examined the current regulatory framework to identify specific areas of focus for further PBR development. Phase 2 is currently underway and focusing on refinement and/or modification to the existing regulatory framework in those specific areas identified in Phase 1.[76]

For Phase 1, the PUC prioritized a robust stakeholder process, which included a number of interactive, facilitated stakeholder workshops designed to build common understanding and collaboration.[vi] The workshops included breakout activities, panels of outside experts, and presentations from the parties themselves. To encourage refinement of PBR mechanisms, each workshop was preceded by a staff concept paper that teed up discussion topics and provided framing and were followed by an invitation for parties to file written comments.

The Phase 1 Decision & Order, released in May 2019, adopted three goals and 12 outcomes to serve as the focus of PBR reforms in Phase 2.

[vi] Rocky Mountain Institute served as the facilitator for the Hawaii PUC's PBR stakeholder process.

**EXHIBIT 11**

Hawaii's Goals and Outcomes for PBR

| Goal | Regulatory Outcome | |
|---|---|---|
| Enhance Customer Experience | Traditional | Affordability |
| | | Reliability |
| | Emergent | Interconnection Experience |
| | | Customer Engagement |
| Improve Utility Performance | Traditional | Cost Control |
| | Emergent | DER Asset Effectiveness |
| | | Grid Investment Efficiency |
| Advance Societal Outcomes | Traditional | Capital Formation |
| | | Customer Equity |
| | Emergent | GHG Reduction |
| | | Electrification of Transportation |
| | | Resilience |

Source: Hawaii Public Utilities Commission, Order No. 36326, Docket No. 2018-0088 (May 2019), **https://dms.puc.hawaii.gov/dms/DocumentViewer?pid=A1001001A19E24A83601C00601**

The Phase 1 Decision and Order invited parties to propose three to six PIMs across three emergent outcomes: interconnection experience, customer engagement, and DER asset effectiveness. The Decision also directed parties to develop shared savings mechanisms (SSMs) to address the outcomes of grid investment efficiency and cost control. Beyond PIMs and SSMs, the PUC directed parties to focus on the development of scorecards with targeted performance levels to track progress against a set of priority outcomes and reported metrics for others.

**EXHIBIT 12**

Hawaii's Performance Mechanisms

| Performance Mechanisms | |
|---|---|
| Performance Incentive Mechanisms (PIMs) | Implement a set of PIMs designed to help drive achievement of the following priority outcomes: *Inerconnection Experience, Customer Engagement*, and *DER Effectiveness* |
| Shared Savings Mechanisms | Develop **shared savings mechanisms** to address priority outcomes including *Grid Investment Efficency* and *Cost Control*, mitigate capex bias, and reward pursuit of cost effective solutions to meet customer needs |
| Scorecards and Reported Metrics | Publish **Scorecards** with targeted performance levels to track progress against the priority outcomes of *interconnection Experience, Customer Engagement, Cost Control,* and *GHG Reduction* and utilize **Reported Metrics** to highlight performance on the priority outcomes of *Affordability, Customer Equity, Electrification of Transportation, Capital Formation*, and *Resilience* |

Source: Hawaii Public Utilities Commission, Summary of Phase 1 Decision & Order Establishing a PBR Framework (May 2019), **https://puc.hawaii.gov/wp-content/uploads/2019/05/PBR-Phase-1-DO-3-Page-Summary.05-23-2019.Final_.pdf**

Alongside these performance mechanisms, the Commission directed parties to focus on developing a comprehensive set of revenue adjustment mechanisms, including an updated multi-year rate plan focused on cost control and an earnings sharing mechanism (ESM). This mechanism is designed to give customers a share of excess utility earnings and to insulate the utility from extreme financial hardship by sharing losses as well. Most parties have proposed that the ESM include any rewards and penalties from performance incentives.

Phase 2, which commenced in June 2019, continued the collaborative approach established in Phase 1.

### Current Status

For 10 months, parties developed and refined individual PIM and SSM proposals as part of monthly performance mechansims working group meetings. Concurrently, parties discussed how performance incentives would interact with other updates to the utility business model in another working group focused on revenue adjustment mechanisms.

Across the two working groups, parties grappled with questions over individual mechanism design and cross-mechanism interactions. These included how to design and size performance incentives such that the utility is motivated to improve operations and customer services while avoiding disproportionate rate impacts to customers and how performance incentives fit into broader utility earnings opportunities.

Multiple program- and outcome-based PIMs have been proposed across the priority outcome areas. Exhibit 13 provides a snapshot of PIMs being proposed.

**EXHIBIT 13**

Sample PIMs Proposed by PBR Working Group Participants in Hawaii

| Outcome | Metric | Target | Incentive Structure |
|---|---|---|---|
| Interconnection Experience | Conditional approval of interconnection application for DER system of <100 kW | 100% of applications within a calendar year conditionally approved within median of 10–30 days | Up to $500K if all applications are conditionally approved on median in under 30 days<br><br>Up to $1M if all applications are conditionally approved on median in under 10 days<br><br>For every 5% of applications that are not conditionally approved within existing tariffed deadlines, the utility would receive a penalty of $100K up to a maximum penalty of $500K |
| DER Asset Effectiveness | Cost of enabled and utilized services offered by DERs | Baseline is the avoided cost of those DER services for the corresponding year | Difference between these two costs would represent the cost savings resulting from each kW utilized each year; customers receive 80% of the savings and the utility receives 20% of the savings |
| Greenhouse Gas Reduction | Avoided greenhouse gas emissions in metric tons of $CO_2$ equivalent | Utility 2020 GHG reduction goal with straight line reduction to 2045 | Reward: $6/MT in 2020, with 2% annual escalation |
| Accelerated Renewable Portfolio Standard | Compliance with RPS (% and year-based milestones) | RPS goals for 2020, 2030, 2040, and 2045, as established by statute | Penalty: failure to meet RPS goal = $20/MWh (based on exiting RPS law)<br><br>Reward: if utility's RPS percentage is higher than RPS goal = $10/MWh; if RPS percentage is above the baseline during the interim period (straight line between statutory years) = $10/MWh |

Source: Hawaii Public Utilities Commission, Docket 2018-0088

The working group process ended in May 2020 and a more formal evidentiary process is now underway. Parties filed formal statements of position in June, with discovery and hearings to follow later in the summer. The Commission expects to issue a decision to adopt new PBR regulations in December 2020.

### Key Takeaways and Lessons Learned

Although the PBR proceeding is ongoing, several lessons can be gleaned from Hawaii's experience.

First, Hawaii's collaborative approach to stakeholder engagement has encouraged innovation and generative dialogue. By maintaining a "space of creation," parties have used the working group process to test and co-create new ideas with each other, without being hindered by the usually contentious discussions that take place in more traditional proceedings. Although both phases of the proceeding have required significant time and resources by both PUC staff and parties, the deliberately iterative process has encouraged parties to continuously refine and improve their proposals. It also supported dialogue between the Commission and parties for feedback and refinement.

Hawaii also has given significant consideration to which types of outcomes PIMs are most applicable, and which may not be suitable due to lack of available data or where outcomes are better addressed via different regulatory treatment. The PUC decided that that not all of the 12 priority outcomes adopted in Phase 1 should be tied to financial incentives due to a lack of data or other challenges that would make setting incentives difficult.

To account for this, the Commission has encouraged a mix of PIMs, SSMs, scorecards and reported metrics that will ultimately keep the utility accountable in critical performance areas. However, despite this upfront guidance and direction, there continues to be challenges in collecting the level of data needed to set appropriate targets and incentives for more emergent PIMs.

Hawaii has also prioritized a comprehensive or holistic approach to regulatory reform, in which PIMs are one component. Considering performance mechanisms alongside other adjustments to the utility revenue model and having stakeholders submit comprehensive proposals—rather than individual PIM proposals for a given outcome—has forced process participants to consider how PIMs fit within the larger regulatory framework. This has required discussions focused on determining what the acceptable level of risk is in utility ratemaking, including questions over how much utility revenues should be pre-determined versus dependent on utility's achievement of performance targets.

More than five months remain in Hawaii's PBR proceeding. Although the ultimate success and effectiveness of PIMs and other PBR mechanisms under development will be determined in coming years, Hawaii is an important test case for how to comprehensively rethink the utility business model to achieve the transformation needed to meet the demands of a new era.

## Minnesota: Performance Metrics Proceeding for Xcel Energy

### Background

Minnesota is also considering how to add performance metrics and incentives for an investor-owned utility in the state, Xcel Energy. The Minnesota e21 initiative was a multi-stakeholder consensus-based process starting in 2014 that brought together utilities, customer advocates, nonprofits and other stakeholders to align on a shared vision of what the electric utility might look like in the 21st century.

One of the key recommendations of e21 was to shift towards a multi-year performance-based regulatory framework. The e21 findings additionally proposed a "shift to a more performance-based compensation framework, where some portion of the utility earnings is linked to utilities' performance on outcomes valued by customers and supportive of state energy policies."[77]

Based on these discussions and others, the Minnesota legislature passed a bill that extended the existing multi-year rate plan term to a maximum of 5 years and allowed the PUC to establish performance measures for utilities acting under multi-year rate plans.

### Process

In 2017, the Minnesota PUC opened a docket to explore performance metrics and possibly incentives for Xcel Energy.[78] Great Plains Institute hosted several stakeholder meetings to educate stakeholders on PIMs used elsewhere in advance of filing comments in the docket. These meetings included engaging PBR experts as well as using a model to simulate financial impacts of PIMs on a hypothetical Minnesota utility.[79]

Following party comments, in November 2018, the PUC set broad outcomes for the exploratory proceeding and then directed stakeholders to develop a list of performance metrics for the Commission to consider.[80] The broad outcomes included affordability, reliability, customer service, environmental performance, and the cost-effective alignment of generation and load.

The PUC also named Great Plains Institute as the independent facilitator for the process.

During 2019, Great Plains Institute facilitated two stakeholder meetings. These included utilities, environmental and consumer advocates, third-party developers, regulators and policymakers (including the Department of Commerce and the Attorney General's office) to explore potential performance metrics and discuss the stakeholder comments filed in the docket. Stakeholders proposed over 200 performance metrics in order to have multiple options for each outcome and to create an expansive record from which the Commission could then choose.

The Commission prioritized a selection of these metrics for implementation, initially as track-only metrics with the possibility of evolving in the future into financial incentives. In September 2019, the PUC released an order identifying the specific performance metrics to be tracked for each of the outcomes defined in the January 2019 order.[81] This order distinguished between metrics that can be implemented immediately, and those that should or might be implemented at a future date. The metrics adopted are included in Exhibit 14.

**EXHIBIT 14**

Performance Metrics Adopted by Minnesota PUC

| Outcome | Metric | Initial or Future? |
|---|---|---|
| Affordability | Rates per kWh based on total revenue, reported (1) by customer class and (2) with all classes aggregated | Initial |
| | Average monthly bills for residential customers | Initial |
| | Total arrearages for residential customers | Initial |
| | Total disconnections for nonpayment for residential customers | Initial |
| Reliability | System Average Interruption Duration Index (SAIDI) | Initial |
| | System Average Interruption Frequency Index (SAIFI) | Initial |
| | Customer Average Interruption Duration Index (CAIDI) | Initial |
| | Customer Average Interruption Frequency Index (CAIFI) | Initial |
| | Customers Experiencing Long Interruption Duration (CELID) | Initial |
| | Customers Experiencing Multiple Interruptions (CEMI) | Initial |
| | Average Service Availability Index (ASAI) | Initial |
| | Momentary Average Interruption Frequency Index (MAIFI) | Future |
| | Locational reliability | Future |
| | Power quality | Future |
| | Equity—reliability by geography, income, or other relevant benchmarks | Future |
| Customer service quality: customer satisfaction | Existing multi-sector metrics, including ACSI and J.D. Power | Initial |
| | Commission-approved utility-specific survey | Possible future |
| | Subscription to third-party customer satisfaction metrics | Possible future |

*continued on the next page*

| Outcome | Metric | Initial or Future? |
|---|---|---|
| Customer service quality: utility performance | Call center response time | Initial |
| | Billing invoice accuracy | Initial |
| | Number of customer complaints | Initial |
| Customer service quality: equity | Customer service quality by geography, income, or other relevant benchmarks | Initial |
| Environmental performance | Total carbon emissions by (1) utility-owned facilities and PPAs and (2) all sources | Initial |
| | Total criteria pollutant emissions | Initial |
| | Criteria pollutant emission intensity (criteria pollutant emissions per MWh) | Initial |
| | $CO_2$ emissions avoided by electrification of transportation | Initial |
| | $CO_2$ emissions avoided by electrification of buildings, agriculture, and other sectors | Initial |
| Cost-effective alignment of generation and load | Demand response, including (1) capacity available (MWh) and (2) amount called (MW, MWh per year) | Initial |
| Integration of customer loads with utility supply | Amount of demand response that shapes customer load profiles through price response, time-varying rates, or behavior campaigns | Initial |
| | Amount of demand response that shifts energy consumption from times of high demand to times when there is a surplus of renewable generation | Initial |
| | Amount of demand response that sheds loads that can be curtailed to provide peak capacity and supports the system in contingency events | Initial |
| | Metrics that measure the effectives and success of above integration metrics, individually and in aggregate | Initial |

Source: Order Establishing Performance Metrics, Docket No. E-002/CI-17-401, Minnesota Public Utilities Commission (September 2019), **https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId={0082456D-0000-CA1F-9241-23A4FFF7C2FB}&documentTitle=20199-155917-01**

The PUC also ordered Xcel to propose calculations for the adopted metrics and had the Great Plains Institute facilitate a stakeholder meeting to discuss different methodologies and determine where there were areas of consensus among stakeholders. For some of the newer metrics, such as workforce and community development, consensus was not reached, and further work must be done.

### Current Status

After considering stakeholder comments, the MN PUC approved Xcel's metrics, methodologies, and timelines, with some changes, in an April 2020 order. The PUC also instructed Xcel to develop an online dashboard for reporting metrics and to work with stakeholders on establishing benchmarks for the adopted metrics. Further, the PUC instructed Xcel to develop a demand response financial incentive to be considered in the first quarter of 2021.[82]

### Key Takeaways and Lessons Learned

The Minnesota process is distinguished from the other case studies described here for its focus on implementing performance metrics before designing financial incentives. This approach is intended to take a measured, comprehensive approach to PIM development, rather than moving quickly to address an immediate need or poor performance.

If Minnesota's process is successful, the metrics will indicate where utility performance is lacking enough to warrant new financial incentives then it will inform subsequent PIM design based on historical performance. At the same time, this deliberate, incremental approach will likely take much longer to implement than some of the other processes described in this paper. The PUC's decision to order Xcel to develop a demand response PIM also indicates flexibility in approach and a willingness to move more quickly for certain outcomes.

Minnesota's metrics development also displays important recognition of the changing nature of utility service obligations and the need to track performance in these areas. The process is producing useful metrics to gather data on emergent outcomes, including beneficial electrification, demand response, and equity. The metric calculations adopted for these metrics could serve as a model for other states considering how to accurately measure performance in these areas.

Minnesota's process exemplifies an attempt to proactively consider what metrics and incentives will best meet policy goals, developed in a collaborative, consensus-oriented approach through robust stakeholder dialogue. By using Great Plains Institute as an independent facilitator to hold stakeholder meetings for education and discussion purposes, Minnesota's experience is also an example of an inclusive stakeholder process that could be replicated in other jurisdictions.

The MN PUC's adoption of over two dozen new performance metrics demonstrates important attention to the expanded expectations of utilities. The question will remain, however, which of these metrics ultimately transition into incentives to more meaningfully improve future decision-making at the utility. Minnesota's extended process also serves as a model for states that may not be ready to make immediate changes to the utility business in response to system, customer, or policy needs, but require a diagnostic approach to start.

## Rhode Island: Power Sector Transformation, National Grid Rate Case, and PIM Principles

### Background

Rhode Island has had traditional PIMs in place for years for its primary utility, National Grid, including for energy efficiency, reliability, and customer service. Several times during this history, Rhode Island increased its allowed incentive amount for energy efficiency programs while raising the achievement target required to receive the incentive. During this period, Rhode Island has successfully achieved high levels of energy savings, suggesting that the state's performance incentives have been effective.[83]

Throughout 2017 and 2018, a broad group of stakeholders participated in Rhode Island's Power Sector Transformation process, hosted by the state consumer advocate and energy policy agencies. The group reviewed how Rhode Island's regulatory framework could evolve in terms of utility business models, grid connectivity, distribution system planning, and beneficial electrification. The resulting *Power Sector Transformation Report* recommended developing PIMs for system efficiency, increasing DERs, network support services, and customer engagement.[84]

### Process

Informed by the Power Sector Transformation process, seven performance incentives were subsequently proposed through a settlement agreement in the 2018 National Grid electric rate case.[85] The PIM proposals included incentives for $CO_2$ reductions from electric vehicles, fleet electrification, installed energy storage capacity, electric heat performance, installation of EV chargers in disadvantaged communities, and time to interconnect DERs.

The PUC rejected all but one of the PIM proposals, disallowing funding for incentives "associated with unquantified benefits." The approved PIM created a system efficiency incentive for annual MW capacity savings, and the rejected PIMs instead became track-only metrics that may ultimately turn into financial incentives in later years of the rate case.[86]

The PUC found that the PIM proposals had several notable shortcomings, including insufficient data to justify that achieving the targets would actually create net benefits, as the PIMs relied on unquantified benefits. The PUC was therefore concerned about the level of risk borne by customers from the incentives and whether the incentives were correctly sized relative to the benefits created. The PUC was also did not have confidence that activity-based metrics would motivate the most cost-effective solutions.

The approved system efficiency PIM established a 45%/55% split of the net benefits between the utility and customers. The quantified benefits include forward capacity market savings, transmission savings, distribution savings, and greenhouse gas reductions. Eligible resources included demand response, behind-the-meter PV, installed energy storage capacity, and any non-wires solutions that reduce peak demand and are not captured by other existing incentives. The maximum allowed earnings were set to increase over time as the targets become more stringent.

Exhibit 15 details the system efficiency PIM, as well as the rejected PIMs for six other outcomes.

**EXHIBIT 15**

PIMs Proposed in 2018 National Grid Rate Case Settlement Agreement

| Outcome | Metric | Incentive Structure | RI PUC Decision | Results |
|---|---|---|---|---|
| System Efficiency | MW annual peak capacity savings | Utility retains 45% of the quantified net benefits; customers retain 55% | Adopted | In 2019, National Grid exceeded the maximum target of 20MW, curtailing 33MW and have proposed earning the maximum reward of $362,085[87] |
| $CO_2$ Electric Vehicle | Incremental avoided tons of CO | Targets set based on percentage improvement over projected annual EV adoption levels; three levels of fixed reward tied to target achievement | Rejected | N/A |
| Fleet Electrification | Incremental light-duty fleet vehicle registrations above forecast | Targets set based on percentage improvement over projected annual EV adoption levels; three levels of fixed reward tied to target achievement | Rejected | N/A |
| Installed Energy Storage Capacity | Incremental MW of installed capacity | Three levels of fixed reward tied to target achievement | Rejected | N/A |

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| Outcome | Metric | Incentive Structure | RI PUC Decision | Results |
|---|---|---|---|---|
| $CO_2$ Electric Heat | Avoided metric tons of $CO_2$ due to oil heat and resistant heat conversions to air source heat pump | Three levels of fixed reward tied to target achievement | Rejected | N/A |
| Activated Apartments and Disadvantaged EVSE | Number of sites with installed electric vehicle supply equipment in apartments and disadvantaged communities | Fixed reward for each site activation ahead of schedule, up to a maximum | Rejected | N/A |
| Time to Interconnection Service Agreement | Calculation involving business days to issue interconnection service agreement and average time to interconnect | Fixed cash award based on percentage of interconnections happening within allotted time | Rejected | N/A |

Source: Application of the Narragansett Electric Company d/b/a National Grid for Approval of a Change in Electric and Gas Base Distribution Rates Amended Settlement Agreement, Docket 4770, Rhode Island Public Utilities Commission (August 10, 2018), **http://www.ripuc.ri.gov/eventsactions/docket/4770-4780-NGrid-AmendedSettlement(Redlined)_8-10-18.pdf**

Outside of National Grid's 2018 rate case, the RI PUC has both approved and rejected a number of other PIMs over recent years. Notably, the PUC rejected four PIMs proposed through National Grid's *System Reliability Procurement Report,* three of which were activity-based (two focused on EV charging infrastructure, and one on non-wires alternatives) and one shared savings (reduced system costs through specific customer-owned DERs).[88] The PUC determined that the shared savings mechanism was more appropriately captured under a capital efficiency incentive mechanism proposed in a different docket.

## Results

Following the Commission's rejection of the proposed PIMs in the 2018 Settlement Agreement, Commissioner Abigail Anthony developed a set of PIM principles to provide guidance for stakeholders, address misalignment between utility proposals and PUC expectations, and develop a more systematic approach to PIM development.[89] Commissioner Anthony issued draft principles in March 2019, following which parties were invited to provide comments.

The Rhode Island PIM principles seek to establish a regulatory standard of review for PIM proposals and provide further context to past PUC decisions. Although the PUC has not named specific goals or outcomes around which to develop PIMs, the principles provide criteria for stakeholders to consider when developing PIM proposals. Given the time and resources it takes to develop thoughtful PIM proposals, the PUC hopes these guidelines will allow future proposals to better meet Commission expectations.

In December 2019, the Commission issued further guidance to clarify the principles, address stakeholder comments, and provide next steps for refinement of PIM guidance.[90] In this guidance, the Commission articulated its thoughts on several key questions, such as how PIMs could address the capital expenditures bias and the role of PIMs in supporting utility innovation.

After holding a technical conference in January 2020, the PUC released an updated guidance document and proposed the principles shown below. The guidance document states that the principles will be applied to all PIM proposals, but that perfect consistency with the principles is not a prerequisite for approval.

**In a February 2020 draft guidance document, the PUC proposed the following principles, which have been slightly refined since Commissioner Anthony's initial draft principles in March 2019[91]**

1. A performance incentive mechanism can be considered when the utility lacks incentive (or has disincentive) to align performance with public interest and there is evidence of underperformance or evidence that improved performance will deliver incremental benefits.

2. Incentives should be designed to enable a comparison of cost of achieving the target to the potential quantifiable and cash benefits.

3. Incentives should maximize customers' share of total quantifiable, verifiable net benefits. Consideration will be given to the inherent risk and fairness of allocation of both cash and non-cash system, customer, and societal benefits.

4. An incentive should offer the utility no more than necessary to align utility performance with the target.

5. The utility should be offered the same incentive for performance. No action should be rewarded more than an alternative action that produces the same benefit.

## Current Status

Over the last several months, the Rhode Island PUC has been aggregating existing guidance on PIMs and collecting comments from stakeholders to further develop PUC guidance. Five parties including National Grid, other state agencies, and Vote Solar filed comments on the updated guiding principles.

In late April 2020, PUC staff issued a memorandum, which includes a summary of comments and recommendations to the PUC.[92] Staff noted that the February 2020 guidance document was intended to clarify existing Commission policy on PIMs, not set new policy, but acknowledged that a new proceeding may be appropriate for future PIM development.

Commission staff again emphasized that established principles should not be used as firm rules or standards, not should they be used to determine the bounds of what should be considered appropriate for regulated utilities to include in rates. The Commission adopted the February 2020 guidance document consistent with staff's recommendations in May 2020.

## Key Takeaways and Lessons Learned

Rhode Island's experience highlights the importance of clear regulator guidance and robust stakeholder discussion when determining how PIMs fit into the broader utility revenue model and where they are most appropriate as tools to meet clean energy goals and other regulatory outcomes. The rejected PIMs in the 2018 Settlement Agreement unearthed many key questions and areas of misalignment between stakeholders and the PUC; however, since realizing these inconsistencies, the PUC has taken action to clarify their own thinking and communicate that to stakeholders who may propose PIMs in the future.

The discussion around Commissioner Anthony's principles has raised important questions about the role and purpose of PIMs and the appropriate level of earnings to which utilities should be entitled. For example, one question is whether or not the PUC's determination of an appropriate ROE should depend on potential earnings from existing performance mechanisms. The PUC has also stated that it "will take into consideration any existing performance incentive mechanisms in proposals to set return on equity in rate base investments or minimum service quality standards, to the extent possible."

This leaves open the question of how the allowed ROE will be adjusted if the utility has significant earning opportunities through PIMs. National Grid's comments have opposed lowering the allowed ROE in response to PIM earning opportunities given the risk inherent in meeting targets and concern over impacting the utility's cost of capital.[93] As also seen elsewhere, clarifying these differences in how stakeholders consider PIMs to play a role in the larger utility business model is helpful before discussions over specific metrics, targets, and incentives down the line.

Other key questions raised through discussion of principles include the role of regulation in utility innovation, as well as how to consider risk, benefits, and costs. The PUC has suggested that it is more important to ensure that any regulation or PIM avoids *hindering* innovation, rather than focusing on *fostering* innovation. This question of whether the regulator should be actively shaping utility actions or "getting out of the way" is another tension that is not unique to Rhode Island.

Because the PUC's rejection of several previously proposed PIMs was based on parties failing to show how incentives would create sufficient benefits, this also has been a key topic for continued discussions. The Commission has explained that as regulators consider a PIM's risk, they must be able to verify that the utility created benefit, what the value of that benefit was, and who received that benefit, and that being able to show this in a quantified manner is necessary to show that the customers are receiving a "good deal" from any new PIM.

As PIMs continue to focus on emergent outcomes, determining how to quantify new and qualitative benefits will be increasingly important. However, it is important to find the right balance between requiring sufficient enough analysis to validate PIM's risk and reward, while not being paralyzed by a perceived need to iron out every detail that could potentially be included in these types of benefit and cost analyses.

Although the PIM principles adopted in Rhode Island provide a regulatory standard for PIMs, regulators likely will need to ultimately determine which policy or performance areas are best suited for PIMs to support successful PIM proposals in the future. As it was different than the order of operations in other state processes, it will be interesting to see how this early attention to fundamental questions around the purpose and role of PIMs will lay the foundation for this continued dialogue.

## New York:
## Reforming the Energy Vision and Con Edison's Earnings Adjustment Mechanisms

### Background

New York's Reforming the Energy Vision (REV) effort to comprehensively reform the state's electricity distribution industry laid the groundwork for new performance incentives (known as earnings adjustment mechanisms, or EAMs, in New York).[vii,94] However, several performance incentives existed before the REV process began, including rewards and penalties for safety, customer service, reliability, and energy efficiency.

### Process

The REV Track 2 Order, issued in May 2016, adopted the concept of EAMs and provided details on their expected function and purpose. The New York Public Service Commission (NYPSC) originally intended EAMs to be a temporary bridge to a future business model when utilities could earn sufficient revenues from providing platform services to a competitive energy marketplace. The transitional nature of New York's EAMs meant they were designed to be flexible rather than permanent. However, no termination dates were attached to proposed EAMs, and platform revenues have yet to be implemented.

The REV Track 2 Order laid out the NYPSC's approach to EAMs,[95] intended to support utilities in proposing their own PIMs. This guidance included:

- A preference toward outcome-based EAMs, on the basis that regulators may not know what the best solution is for a particular outcome, and that many approaches may lead to improved outcomes.
- EAMs should establish fixed performance targets where possible to avoid establishing counterfactuals.
- Although the proper direction for any EAM will be specific to that measure, negative EAMs should not be routine; EAMs should be designed to support activities for emergent outcomes and should therefore primarily offer rewards.
- The combined rewards of EAMs should be no larger than 100 basis points.[viii]
- To avoid unintended consequences, proposed EAMs must carefully consider the relationship between performance and reward. This might mean a linear slope for incentive payments, including a ceiling and a floor, or using deadbands and other inflection points for tiered incentives.

The Track 2 Order established outcome-based performance incentives for system efficiency, peak reduction, energy efficiency, customer engagement, and DER interconnection, while noting that there might be some need for specific program-based incentives as well. Some of these are familiar goals—energy efficiency and peak reduction have been priorities for the electric grid for many years. Others, like DER interconnection, are more emergent.[96] Utilities were then invited to propose specific EAMs around these outcomes.

[vii] The term "earnings adjustment mechanism" was chosen to avoid confusion with existing program incentives that customers received for such services as efficiency and demand response.

[viii] Actual EAM awards were fixed dollar amounts to avoid reinforcing bias toward capital.

### Results

The specifics of each EAM have been unique to each utility in the state; the Track 2 Order laid out a framework and goals for the EAMs across New York's six utilities, but purposefully left the details up to utilities to propose through rate negotiations. For the remainder of this case study, we focus on Consolidated Edison (Con Edison), a combined electric and gas utility in downstate New York.

Con Edison was the first to file EAMs under REV and received approval for two program-based EAMs for energy efficiency and demand management programs (based on GWh savings and system peak MW reductions from specific energy efficiency and peak reduction programs). It also received approval for three outcome-based EAMs aimed at expanding DERs (measured in MWh of energy provided by DERs) and reducing residential and commercial energy intensity (measured in kWh sales/customer).

Although details of program-based EAMs were determined in rate case negotiations, the rate case negotiations left the details of the outcome-based EAMs to be refined through an Outcome-Based EAM Collaborative, facilitated by Con Edison.[97] In addition to developing these outcome-based EAMs, the Collaborative met through 2017 and 2018 to evaluate and refine these outcome-based EAMs over the course of Con Edison's three-year rate plan.

As discussed earlier, in 2017 Con Edison earned the maximum incentive for programmatic EAMs but failed to meet targets for the outcome-based incentives. In 2018, Con Edison again met the targets for programmatic EAMs but also met the target for one of the outcome-based EAMs—DER utilization. The tables below show Con Edison's performance for energy efficiency EAMs in 2017 and 2018 as reported in Energy Efficiency EAM Achievement Reports.

**EXHIBIT 16**

Con Edison 2017 Energy Efficiency EAM Performance

| Programmatic | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Minimum Target | Mid-Point Target | Maximum Target | Minimum Earnings | Mid-Point Earnings | Maximum Earnings | Achievement | EAM Earned |
| Net GWh | 158 | 178 | 198 | $0.58M | $4.03M | $9.22M | 300.48 | $9.22M |
| Net MW | 28.3 | 43.5 | 58.7 | $0.29M | $1.15M | $3.46M | 61.387 | $3.46M |

| Outcome-Based | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Minimum Target | Mid-Point Target | Maximum Target | Minimum Earnings | Mid-Point Earnings | Maximum Earnings | Achievement | EAM Earned |
| DER Utilization (MWh) | 150,000 | 244,500 | 360,000 | $0.06M | $1.11M | $2.72M | 92,468.08 | $0 |
| Energy Intensity: Residential (kWh sales/residential customers) | 4.676 | 4.587 | 4.409 | $0.11M | $0.39M | $0.95M | 4.70 | $0 |
| Energy Intensity: Commercial (kWh sales/ private employment) | 7.164 | 6.931 | 6.465 | $0.20M | $0.72M | $1.76M | TBD | TBD |

Source: Con Edison 2017 EE EAM Achievement Report

**EXHIBIT 17**

Con Edison 2018 Energy Efficiency EAM Performance

| Programmatic | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Minimum Target | Mid-Point Target | Maximum Target | Minimum Earnings | Mid-Point Earnings | Maximum Earnings | Achievement | EAM Earned |
| Net GWh | 224 | 270 | 316 | $2.38M | $5.66M | $11.31M | 393.52 | $11.31M |
| Net MW | 49.1 | 65.5 | 81.9 | $0.60M | $2.68M | $5.36M | 84.997 | $5.36M |

| Outcome-Based | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Minimum Target | Mid-Point Target | Maximum Target | Minimum Earnings | Mid-Point Earnings | Maximum Earnings | Achievement | EAM Earned |
| DER Utilization (MWh) | 87,600 | 100,000 | 116,600 | $2.085M | $4.170M | $8.335M | 139,132.93 | $8.335 |
| Energy Intensity: Residential (kWh sales/residential customers) | 4,688 | 4,649 | 4,609 | $0.546M | $1.092M | $4M | TBD | TBD |
| Energy Intensity: Commercial (kWh sales/ private employment) | 6,710 | 6,663 | 6,616 | $1.149M | $2.298M | $4.593M | TBD | TBD |
| Energy Intensity: Multifamily and Public (GWh sales) | 9,458 | 9,375 | 9,292 | $0.390M | $0.780M | $1.558M | TBD | TBD |

Source: Con Edison 2018 EE EAM Achievement Report

In response to the learnings from the first years of implementation, the EAMs in effect in New York have shifted over time. For example, the PSC modified Con Edison's energy intensity EAM multiple times and ultimately eliminated it. The metrics only normalized for weather, not the many other factors that could influence the result. Stakeholders ultimately found that the energy intensity metrics had not changed significantly compared to the baseline and there seemed to be no consistency in terms of whether Con Edison would receive the incentive or not. Determining that many factors that influenced this EAM were outside of utility control, the PSC ultimately eliminated it as it was not useful in measuring desired utility behavior.

Although ensuring some level of flexibility in PIM implementation is important to learn from past experience, some argued that the EAM Collaborative's yearly metric and incentive setting undermined the effectiveness of Con Edison's EAMs. This resulted in uncertainty for Con Edison regarding how ramping up activity in one year would impact earnings in another year.

### Current Status

In its joint proposal for a new three-year rate plan, adopted in January 2020, Con Edison proposed a new set of seven EAMs to support energy efficiency, peak demand reduction, and beneficial electrification between 2020 and 2022.[98] These EAMs include two program-based EAMs that apply to both gas and electricity (Share the Savings and Deeper Energy Efficiency) and five outcome-based EAMs focused on beneficial electrification, DER utilization, electric peak reduction, locational system relief value load factor, and gas peak reduction. Con Edison does not expect to have another EAM Collaborative through this cycle, given the effectiveness of recent rate case negotiations.

**EXHIBIT 18**

EAMs Adopted in New York for Con Edison in 2020

| Outcome | Metric Description[ix] | Maximum Available Reward in 2020, in $ million |
|---|---|---|
| Share the Savings | Based on lifetime MMBtu savings' unit cost reductions. | 30% of $/lifetime MMBtu savings applied to acquired non-LMI energy efficiency savings |
| Deeper Energy Efficiency | Based on deeper lifetime energy efficiency savings, including LMI savings, over three years. | $15.970 (electric)<br>$5.298 (gas) |
| Beneficial Electrification | Based on GHG reductions provided by EVs and heat pumps. | $14.518 |
| DER Utilization | Based on solar PV, storage and wind adoption rate by customers (in MWh). | $14.518 |
| Electric Peak Reduction | Based on electric peak reduction below adjusted NY Independent System Operator installed capacity market forecast for Con Edison service territory. | $11.615 |
| Locational System Relief Value (LSRV) Load Factor | Based on maintaining or improving the load factor of a certain number of LSRV networks or load areas. | $7.259 |
| Gas Peak Reduction | Based on gas peak day per heating degree day reduction. | $3.853 |

Source: Joint Proposal, Case 19-E-0065/Case 19-G-066 Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric/Gas Electric/Gas Service, New York Public Service Commission (October 2019), **http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={8DFF975D-C514-41C8-8E31-82C33318D898}**

[ix] Descriptions as stated in Joint Proposal. For further details on the complex calculations used to determine reward levels for these EAMs, see: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={8DFF975D-C514-41C8-8E31-82C33318D898}

## Key Takeaways and Lessons Learned

New York's experience with performance incentives started with visionary leadership, ambition, and thoughtful attention to new regulatory and market design concepts. When it came to implementing this vision, however, there have been challenges and mixed success.

The NYPSC is a pioneer in imagining how performance incentives can support market transformation for what we call emergent outcomes in this paper. In addition, the New York Commission devoted significant and valuable attention to issue guidance on concepts like outcome-based metrics and sizing of incentive amounts. New York has also confronted the hard reality of how complicated incentive design becomes in practice when there are competing stakeholder visions for what are appropriate outcomes to incentivize and at what price, as well as challenges resulting from limited available historical data.

Where the REV Track 2 Order imagined a set of transitional EAMs that would accelerate utilities to remake themselves into platform operators serving a competitive, service-based energy marketplace, four years later (and six years since the launch of REV), New York's utilities remain more like conventional distribution companies than a platform. That being said, New York's EAMs have promoted important improvements in utility operations in support of state clean energy goals and other policies.

In general, the process of developing EAMs in New York has offered lessons on how to build in flexibility and learning to modify incentives from unfolding experience. Further, guidance from the NYPSC made clear that EAMs should be used to support beneficial activities and laid out useful guidelines for EAM development at the start of the process. By developing the groundwork and expectations for EAMs within the larger reframing of the utility business model, the PSC ensured that EAMs were discussed in conversation with the larger regulatory structure and aligned with New York's policy goals.

Although all the incentives developed have not necessarily resulted in results as stakeholders might have hoped, New York remains one of the leading states in exploring innovative ways to use PIMs.

# Recommendations

# Recommendations

PIMs provide a promising opportunity to incentivize utilities to achieve public policy goals while protecting customers and shareholders, but their success depends on key design and process factors. Whether the intent is a broad vision for utility transformation or a narrower exploration of metrics and incentives, PUCs and stakeholders looking to develop PIMs can learn from the range of PIM experiences across time and geographies. Although there is no “silver bullet” to successful PIM design, we offer eight recommendations to regulators, utilities, and other stakeholders looking to integrate PIMs into their regulatory frameworks:

**1. Determine what role PIMs can play to support public policy goals.**
Where in the past, US utility regulators primarily tied performance incentives to traditional service obligations, PIMs are now being considered as a tool to support new, emergent policies. By aligning utility incentives with new social and environmental goals, utilities are better able to meet evolving customer, policy and technological demands of the transformation taking place in the power sector. PIMs are only one lever available to regulators to advance policy priorities, however, so it is also important to assess their interactions with other mandates and directives to ensure rewards or penalties complement, but don’t duplicate or counteract, existing requirements.

**2. Evaluate how PIMs will work within current regulatory frameworks.**
To create clear directives and expectations, existing utility incentives should be carefully considered when designing new PIMs. Considering how PIMs function alongside existing earnings opportunities can avoid PIMs being added to the existing utility revenue model in a piecemeal manner. Although PIMs may be used in conjunction with a more traditional utility business model by being narrowly applied to specific programs or services, PIMs also offer an opportunity to more fundamentally change how utilities make spending decisions to support policy goals and meet regulatory objectives.

**3. Consider how PIMs can support utility growth into new service areas.**
PIMs are an effective tool to incent utilities to develop new programs and services outside of their traditional mandate of delivering safe, affordable, and reliable electricity. By offering utilities a financial incentive to pursue new roles—for example DER integration or utilization of electric vehicles—utilities can evolve alongside the transformation taking place in the power sector. PIMs also make explicit the areas of performance that utilities should focus on or grow into, helping to support creation of a modern utility aligned with identified priorities.

### 4. Strive for outcome-based PIMs where possible.

Outcome-based PIMs provide new opportunities to leverage utilities' unique knowledge of the grid to benefit customers and can drive innovation in the power sector. Although activity- and program-based PIMs have been used for years to successfully motivate utilities, outcome-based PIMs allow the utility more flexibility to choose which portfolio of programs and investments best produce desired results most cost-effectively. Although data limitations and grid dynamics may prevent outcome-based PIMs as a viable option for all areas that PIMs can be designed for, stakeholders should evaluate ways incentives can be tied directly to the benefits produced by utility efforts.

### 5. Leverage existing data to better understand utility operations.

Performance mechanisms help reduce the information asymmetry between utilities and other stakeholders by making data on utility programs or services more transparent. Where available, existing data should be used to substantiate PIM proposals. For the many metrics for which data is already available, such as reliability, peak demand, and energy consumption, regulators should ensure data is accessible to stakeholders. For metrics where there is not extensive data already collected, collecting data for a period of time can help stakeholders set more informed targets and incentives down the line.

However, gathering precise data for every metric chosen should not be a barrier to moving forward with incentive regulation. States should think about the right portfolio of metrics that best measures performance for identified goals—for example, which should be publicly reported, which should also have a target or benchmark associated with it, and which should have a financial reward or penalty attached. For more emergent outcomes, reward-only incentives may be appropriate given less understood grid and market dynamics that could impact results.

### 6. Align incentive structures with expected benefits.

PIMs should be designed so that their benefits outweigh the cost to customers in terms of both the potential reward paid to the utility and the spending needed to meet the performance target. Incentives also should be sized so that they motivate different utility actions or decisions than what would have happed under business as usual.

To appropriately account for potential costs and benefits, PIM processes should be designed to ensure that data sharing among participants is done in an organized and timely fashion. Although it is critical to ensure that PIMs are in the public's interest, benefit-cost analyses often become overly detailed and cumbersome. It is important to find the right balance between requiring sufficient analysis to validate a PIM's risk and reward, while not being paralyzed by a perceived need to iron out every detail that could potentially be included in these types of analyses.

### 7. Prioritize flexibility and learning.

Given the complexity of utility operations and ratemaking, PIMs will likely need to be adjusted over time to ensure that customer rates are reflective of prudent utility costs and PIMs deliver additional benefits to customers and market participants, as well as to the larger economy and society. It is important to design metrics, targets, and incentives that can evolve over time with experience and that there is a process for reevaluation and course correction.

Integrating a level of flexibility into PIM implementation can also make regulators and stakeholders more comfortable to support newer or more innovative PIMs that may carry higher risk or uncertainty. At the same time, unexpected changes to incentives may deter utilities from making the investments needed to meet performance targets. Given this, PIMs should be evaluated and adjusted at pre-determined milestones using a clear and transparent process whenever possible.

### 8. Design effective approaches for stakeholder participation.

It is necessary to include a wide range of stakeholder voices when developing PIMs to make sure targets and incentives are reflective of the multiple perspectives that play a role in the electricity sector. If a wide range of stakeholders are not included in discussions, PIM design risks not accounting for important dynamics or tradeoffs.

Regulators should consider structuring PIM processes differently than traditional regulatory proceedings or more formal technical conferences to optimize collaboration, data sharing, and innovative thinking. Regulators should also provide clear vision and guidance at the outset and continue to give direction throughout the process to ensure stakeholder efforts stay in line with expectations. Third-party, independent facilitators can help support constructive dialogue by ensuring processes meet objectives not only of policymakers and regulators, but also of utilities and other stakeholders.

# Appendix

# Appendix

This appendix provides recent examples of regulator guidance on PIM design issued in states across the country.

**EXHIBIT 19**

Rhode Island PIM Design Principles (Adopted)[99]

| Principle | Description |
|---|---|
| 1 | A performance incentive mechanism can be considered when the utility lacks an incentive (or has a disincentive) to better align utility performance with the public interest and there is evidence of underperformance or evidence that improved performance will deliver incremental benefits. |
| 2 | Incentives should be designed to enable a comparison of the cost of achieving the target to the potential quantifiable and cash benefits. |
| 3 | Incentives should be designed to maximize customers' share of total quantifiable, verifiable net benefits. Consideration should be given to the inherent risks and fairness of allocation of both cash and non-cash system, customer, and societal benefits. |
| 4 | An incentive should offer the utility no more than necessary to align utility performance with the public interest. |
| 5 | The utility should be offered the same incentive for the same benefit. No action should be rewarded more than an alternative action that produces the same benefit. |

**EXHIBIT 20**

Massachusetts PIM Threshold Principles and Design Guidelines (Adopted)[100]

| Principle | Description |
|---|---|
| 1 | A PIM must advance specific policy goals. |
| 2 | A PIM must target an activity that is clearly outside a distribution's public service obligations. |
| 3 | PIMs must be designed to encourage program performance that best achieves the Commonwealth's energy goals. |
| 4 | PIMs must be designed to enable a comparison of (i) clearly defined goals and activities that can be sufficiently monitored, quantified, and verified after the fact to (ii) the cost of achieving the target to the potential quantifiable benefits. |
| 5 | A PIM must be available only for activities where the distribution company plays a distinct and clear role in bringing about the desired outcome. |
| 6 | PIMs must be consistent across all electric and gas distribution companies, where possible, with deviations across companies clearly justified. |
| 7 | A PIM must be created to avoid perverse incentives. |
| 8 | PIMs must ensure that the distribution company is not rewarded for the same action through another mechanism. |

**EXHIBIT 21**

Hawaii PUC's Principles for Metric and PIM Design (Adopted)[101]

| Principle | Description |
|---|---|
| **Metric Design Principles** | |
| 1 | Metrics should reflect desired outcomes. |
| 2 | Metrics should be clearly defined. |
| 3 | Metrics should be quantifiable through reasonably available data. |
| 4 | Metrics should be easily interpreted. |
| 5 | Metrics should be easily verified. |
| **PIM-Specific Design Considerations** | |
| 1 | Setting a quantitative standard for performance. The benchmarks/targets, and especially any associated financial incentives, should focus on promoting the achievement of only superior performance or penalizing poor performance. |
| 2 | Benefit-cost analyses should inform the development of PIMs. PIMs should be designed to reflect some sharing of net benefits. This assessment of net benefits sets an upper limit on the value of the PIM, with further discussion about the appropriate sharing percentages between ratepayers and the utility shareholders. |
| 3 | PIMs should shift an appropriate amount of performance risk to the utility in exchange for longer-term regulatory certainty and perhaps incentive compensation. Entrepreneurialism on the part of the utility should be rewarded, but PIMs should also ensure the risk and reward is comparable to that of firms in a free and competitive market. |
| 4 | "Double recovery" of PIMs that achieve the same or similar outcome should be minimalized (for example, a program-based [Demand Response] PIM and an outcome-based PIM for improved system load factor or peak demand reduction). Care will need to be taken to ensure that the design of PIMs is coordinated so that multiple utility activities are not double-counting the same benefits and receiving reward for the same outcome(s). |
| 5 | Consider designing individual PIMs so that "outstanding" performance on an individual PIM may be rewarded by additional earnings, while maintaining overall earnings caps for all PIMs. |
| 6 | Consider the appropriate time frame for PIMs. PIMs can be designed to span multiple years to allow time for utility actions to take effect. |

**EXHIBIT 22**

D.C. PSC PIM General Guidelines (Adopted)[102]

| Principle | Description |
| --- | --- |
| 1 | PIMs should advance or otherwise align with the District's public policy goals and the PowerPath DC objectives (such as grid modernization, energy efficiency, clean energy, and climate goals). |
| 2 | PIMs should be clearly defined. |
| 3 | PIMs should be able to be quantified by the utility using reasonably available data. |
| 4 | PIMs should be sufficiently objective and free from external influences. |
| 5 | PIM should be easily interpreted and easily verified. |
| 6 | PIM should not duplicate a target or objective that is already addressed by any existing standards, metrics, or requirements. |
| 7 | PIMs should focus on outcome rather than input (costs). |
| 8 | PIMs should have historical performance data. |
| 9 | PIMs should be considered only when the utility lacks an incentive (or has disincentive) to align its performance with the public interest, there is evidence of underperformance, and evidence that improved performance will deliver incremental benefits. |
| 10 | PIMs should be designed to maximize total quantifiable, verifiable net benefits. |
| 11 | PIMs should offer the utility no more financial benefit than is necessary to align its performance with the public interest (the utility should not be paid for performance above the value perceived by customers for that improvement). |

**EXHIBIT 23**

Minnesota Metric Design Principles (Adopted)[103]

| Principle | Description |
|---|---|
| 1 | Tied to the policy goal. A metric should clearly reflect whether or not the underlying policy goal is being met. That is, it should seek and evaluate data that is specifically tied to the particular policy goal underlying the metric. |
| 2 | Clearly defined. The method of calculating a metric should be precise and unambiguous to enable meaningful comparisons and to reduce potential disputes. |
| 3 | Able to be quantified using reasonably available data. Using already reported data or data that is readily available will reduce administrative burden and the costs associated with implementing the metric. |
| 4 | Sufficiently objective and free from external influences. Metrics should seek to measure behaviors that are within a utility's control and free from exogenous influences, such as weather or market forces. |
| 5 | Easily interpreted. Metrics should exclude the effects of factors outside a utility's control so they provide a better understanding of utility performance and should use measurement units that facilitate comparisons across time and utilities (e.g., "per kWh" or "per customer"). |
| 6 | Easily verified. Straightforward data collection and analysis techniques should be used, and independent third-party evaluators can further ensure accurate verification with respect to performance metrics. |
| 7 | Should complement and inform evaluation of utility performance. Performance metric systems should be designed to complement—not replace—other parts of a utility's regulatory system such as multi-year rate plans and cost trackers. |

# Endnotes


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