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# NAVIGATING UTILITY BUSINESS MODEL REFORM

A PRACTICAL GUIDE TO REGULATORY DESIGN

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# ABOUT US

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Rocky Mountain Institute, Advanced Energy Economy Institute, and America's Power Plan have collaborated over the past year to identify approaches and curate resources to modernize utility business models in a manner that better aligns utility profit-making incentives with public policy objectives. Outputs of this work include this guiding document and case studies of utility business model reforms from across the US and abroad. Case studies are available at <http://info.aee.net/navigating-utility-business-model-reform-case-studies>.

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## ABOUT ROCKY MOUNTAIN INSTITUTE

Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables. RMI has offices in Basalt and Boulder, Colorado; New York City; Washington, D.C.; and Beijing.



## ABOUT ADVANCED ENERGY ECONOMY INSTITUTE

Advanced Energy Economy Institute is a nonprofit educational and charitable organization whose mission is to raise awareness of the public benefits and opportunities of advanced energy. AEE Institute is affiliated with Advanced Energy Economy (AEE), a national association of businesses that are making the energy we use secure, clean, and affordable.



## ABOUT AMERICA'S POWER PLAN

America's Power Plan is a platform for innovative thinking about how to manage the transformation happening in the electric power sector today. America's Power Plan curates expert information for decision makers and their staffs, highlighting specific solutions to today's most pressing policy, regulatory, planning, and market design challenges.

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The logo features the letters 'IES' in a large, white, sans-serif font. The 'I' and 'E' are positioned on the left, and the 'S' is on the right. Behind the letters is a faint, stylized globe with latitude and longitude lines, rendered in a light blue color. The entire logo is set against a dark blue background.

# IES

## Executive Summary

# EXECUTIVE SUMMARY

## WHY REFORM?

### CHANGING CONDITIONS PORTEND A NEED TO UPDATE THE UTILITY BUSINESS MODEL

The business model of electric utilities is in a state of transformation due to rapidly proliferating changes, including demands for improved environmental performance, the expansion of distributed energy resources, a growing need for resiliency, new options to improve the performance of the grid, the advent of big data, and new expectations for customer choice. Increasingly, electricity sector leaders and stakeholders are responding to these shifts by proposing grid modernization and new clean energy programs, product offerings, and business models, up to and including comprehensive reform of traditional utility businesses.

Reform of utilities' business models is imperative to build a clean, reliable, and affordable energy economy. Business model reform supports multiple attractive characteristics for the 21st century electricity system, including the following:

- Creating business opportunities and motivation for utilities to invest in clean energy services and products
- Creating appropriate opportunities for third-party service providers to participate in energy provision and value creation for customers
- Making utilities partners in achieving social and policy goals related to electricity generation and management of the grid
- Putting utilities on a sound financial footing for long-term business health

## OBJECTIVES OF THIS REPORT

### PRACTICAL GUIDANCE FOR PRACTITIONERS OF UTILITY REFORM

Although the industry has endured disruptive periods before, including deregulation and market restructuring, many of the current issues bring new challenges for which there is not a ready playbook. Regulators, policymakers, and policy influencers are looking for practical guidance to navigate the process of adaptation as defined by their local context and circumstances.

To meet that need, this paper:

- **Establishes foundational elements** of different business model reform options that stakeholders, regulators, and policymakers across jurisdictions can consider;
- **Identifies key questions** and evaluates the applicability of these reform options to various market structures, states, and utility contexts;
- **Identifies applicable experiences** and maturity level, ranging from theory to application, for prominent business model reform ideas and concepts; and
- **Explores implementation options** to understand merits and trade-offs for how to advance business model reform (for example, regulatory proceedings, legislative approaches, or utility-initiated reforms).

This paper is published concurrently with a set of case studies that detail experiences with business model reform options. Available at <http://info.aee.net/navigating-utility-business-model-reform-case-studies>.

## SCOPE OF THIS REPORT

### UTILITY REFORM IS A CENTRAL COMPONENT OF THE BROADER ENERGY TRANSITION

Utility business model reform sits at the nexus of a connected set of changes currently unfolding to modernize the electric power sector. Those include:

- **Changing public policy objectives**, at both the state and federal levels, that include a more secure, clean, affordable, customer-centric electric system.
- **Pricing and rate design**, including adoption of advanced rate designs and new models for managing and compensating customer-sited resources that generate, store, and shift electricity.
- **Competitive market shifts**, including wholesale energy market design to accommodate variable generation, storage technologies, and demand-side resources, and efforts to open up resource procurement to non-utility providers.
- **Grid modernization** (“grid mod”), including advanced distribution resource planning, more efficient asset deployment, and digitized grid operations at both the bulk system and distribution levels.

This report is focused on utility business model reform, particularly at the state level. It lays out a menu of regulatory options for policymakers, utilities, and non-utility stakeholders to encourage business model reform, which in turn implicates and serves other elements of the energy transition currently underway. Where appropriate, the report assesses business model options in the context of policy and market design considerations (for example, existence of state renewable portfolio standards [RPS] or vertically integrated versus restructured utility businesses).

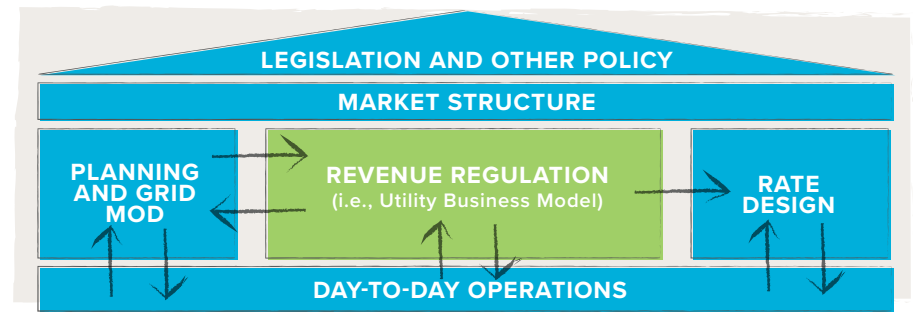


EXHIBIT 1: KEY COMPONENTS OF UTILITY BUSINESS AND FACTORS INFLUENCING REFORM

### DEFINITION OF UTILITY BUSINESS MODEL

For the purposes of this report, we define the utility business model as the utility’s approach to generating revenue and making profits, informed by underlying assumptions about long-term trends in the industry. These decisions are shaped by financial incentives produced by:

- The utility’s ownership structure (including investor, publicly, or member owned)
- The market structure in which the utility operates (vertically integrated versus restructured wholesale market versus retail competitive)
- Technological change
- Regulatory processes
- Public policy mandates

The utility’s business model shapes the services the utility is obligated to, is able to, or chooses to provide, as well as the utility’s available profit-maximizing strategies. As the elements listed above evolve and deviate from previously held industry assumptions, the utility’s financial incentives may become increasingly misaligned with its former business model and may create a need for reform.

## REFORM OPTIONS CONSIDERED

The report focuses on 10 options for utility business model reform that respond to changing technological, policy, and market conditions. These cover approaches ranging from the relatively common (e.g., revenue decoupling) to more novel ideas (e.g., platform revenues). The list is not meant to be exhaustive, but rather it reflects a range of responses to different pressures on the existing utility business model.

Although these reform options defy easy groupings, we provide a suggested categorization that organizes options according to similar approaches or objectives:

- **Adjustments to the cost-of-service model** include policy tools that shift regulation away from a backward-looking focus on costs and sales to a forward-looking approach that rewards utility performance.
- Options categorized as **leveling the playing field** emphasize technology and resource neutrality in utility planning and procurement.
- Mechanisms included under **retirement of uneconomic assets** support the utility financial transition away from aging, no longer competitive assets to cleaner, less expensive resources.
- Reforms for a **reimagined utility business** include opportunities to holistically rethink the utility role and business in the larger electricity system.

These options can be shaped in conjunction with other elements of the energy transition underway, such as public policy shifts, new market structures, grid modernization, and advanced rate designs. For example, performance incentives for utilities to adopt clean energy paired with accelerated depreciation may respond to public demands for a cleaner, cheaper power mix. New procurement practices can help to more efficiently modernize the grid. Platform service revenues can create a new role for the utility as a market maker on a competitive distribution system network. And shared savings mechanisms and revenue decoupling can better align utility business models with more efficient rate designs that benefit customers and modernize the grid.

## REFORM OPTIONS CONSIDERED



### I. Adjustments to the Cost-of-Service Model

- a. Revenue decoupling
- b. Multiyear rate plans (MRPs)
- c. Shared savings mechanisms
- d. Performance incentive mechanisms



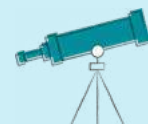
### II. Leveling the Playing Field

- a. Changes to treatment of capital and operational expenditures
- b. New procurement practices



### III. Retirement of Uneconomic Assets

- a. Securitization
- b. Accelerated depreciation



### IV. Reimagined Utility Business

- a. Platform revenues
- b. New utility value-added services



## HOW TO USE THIS REPORT

The heart of this work is the reform options described in Section 3. Option discussions attempt to keep the content succinct and action-oriented, providing essential details for practitioners of reform while pointing to other sources and developing experience for the interested reader.

For each option, we describe the basic purpose of the approach, identify what business reform objectives it most closely aligns with, and discuss which venues (regulatory, legislative, or utility) are most likely for development and implementation. Key design choices for each option are listed, and notable case studies are briefly highlighted. Most options also are cataloged along a spectrum from mostly theoretical, to in development, to more established in application. Best practices are noted for the more established options, while emerging questions at the “innovation edge” are identified for more emergent options.

Sections 1 and 2 provide useful context for the reform options, including a discussion of why reform is needed and a primer on the most significant utility ownership models and related set of policies in which the utility business sits.

This work builds on many important reports that describe and evaluate the current utility business model as well as options for reform. Where those reports provide extensive detail on the theory and design of utility regulations and alternative approaches, this paper adds to the literature with a focus on basic structures and applications to support implementation. For a list of essential reading on the utility business and regulatory reform, see Section 6.

Future updates to this work may be made to track progress on implementation of reform activities, clarify key design considerations, and identify new or emerging options as utility reform advances.





# The Need for Reform

This section describes an expanding set of forces that act on the utility business, which in combination suggest a need, as well as a historic economic opportunity, to rethink utility regulations and resulting financial motivations.

# THE NEED FOR REFORM

## UTILITY BUSINESS MODELS MUST REFORM TO DELIVER ON EXISTING AND EMERGING RESPONSIBILITIES

The traditional utility model has served us well but is not set up to perform against modern service requirements. The conventional utility business model largely succeeded at delivering on historical responsibilities for affordability, safety, and reliability. However, new public policy priorities and emerging trends are forcing reconsideration of those responsibilities—expanded to include new expectations for environmental performance, choice, resilience, and adapting to (or enabling) sector-wide innovation, among others.

Environmental performance is one key area for utility attention. This is not entirely new, as pollution controls and other policies have been central to the industry for decades, including limits on sulfur dioxide and other criteria pollutants. Environmental concerns have only grown in recent years, particularly in light of many states' expanding policies to address climate change. Concurrently, continuing declines in the cost of renewable energy, and expanded service opportunities from a distributed grid, have turned some historic assumptions for the utility business on their head. As a result, regulatory reform has become necessary to pursue and sustain deep emissions reductions in a cost-effective and value-generating manner.

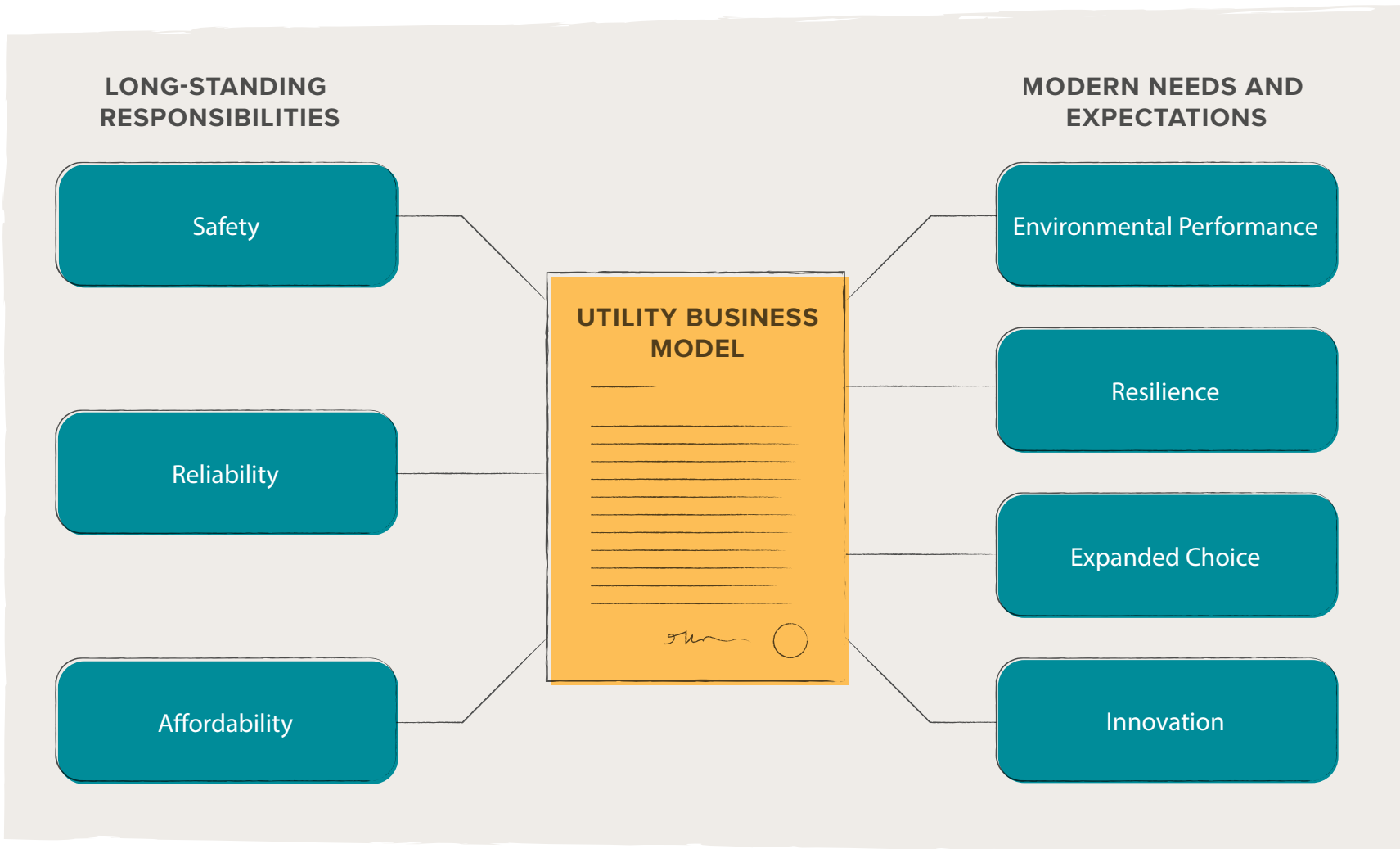
But environmental performance is not the whole story. A connected set of new expectations has further exposed the limitations of the traditional utility business. As customers demand increased choice and business entrepreneurs develop a diverse array of innovative product and service offerings, the industry needs to rethink regulations to enable new forms of value creation and market opportunity. These need to be considered and meaningfully promoted, both within the utility business and in its market-facing activities, while balancing existing service responsibilities and appealing new business attributes.

## TRADITIONAL UTILITY BUSINESS ATTRIBUTES

The traditional utility business has many attractive attributes that need to be considered in the course of reform activities for whether and how to maintain. Those include:

- Universal service provision
- Reliable service
- Generally stable rates without major price shocks borne by customers
- Vehicle for raising low-cost capital
- Skilled workforce
- Public service entity that can serve social/policy objectives





**EXHIBIT 2:** EXPANDING UTILITY RESPONSIBILITIES AND EXPECTATIONS

## NEW SYSTEM AND CUSTOMER TRENDS ARE ACCELERATING THE NEED FOR UTILITY REFORM

A new set of expectations for utility services and products has emerged from a quickly changing system, new technologies, evolving customer needs, and new external and environmental threats. New utility responsibilities include:

- **Environmental performance:** Utilities are an important partner to achieve economy-wide greenhouse gas abatement, decarbonization, and other environmental goals.
- **Resilience:** There is heightened focus on resilience in response to cybersecurity threats and increases in extreme weather events.
- **Expanded choice:** Customers expect expanded choices and control over energy use, energy sources, and costs, including municipalities and large commercial and industrial customers.
- **Innovation:** New opportunities and paradigm shifts in technological capabilities require utilities to become more innovative within the utility as well as to enable innovation by others. Opportunities and shifts include:
  - Higher penetrations of variable **renewable energy**
  - **Beneficial electrification** of heating and transport
  - Increased use of **information technologies** and **software-as-a-service (SaaS)**
  - Greater economic potential and new participation models for **distributed energy resources (DERs)**

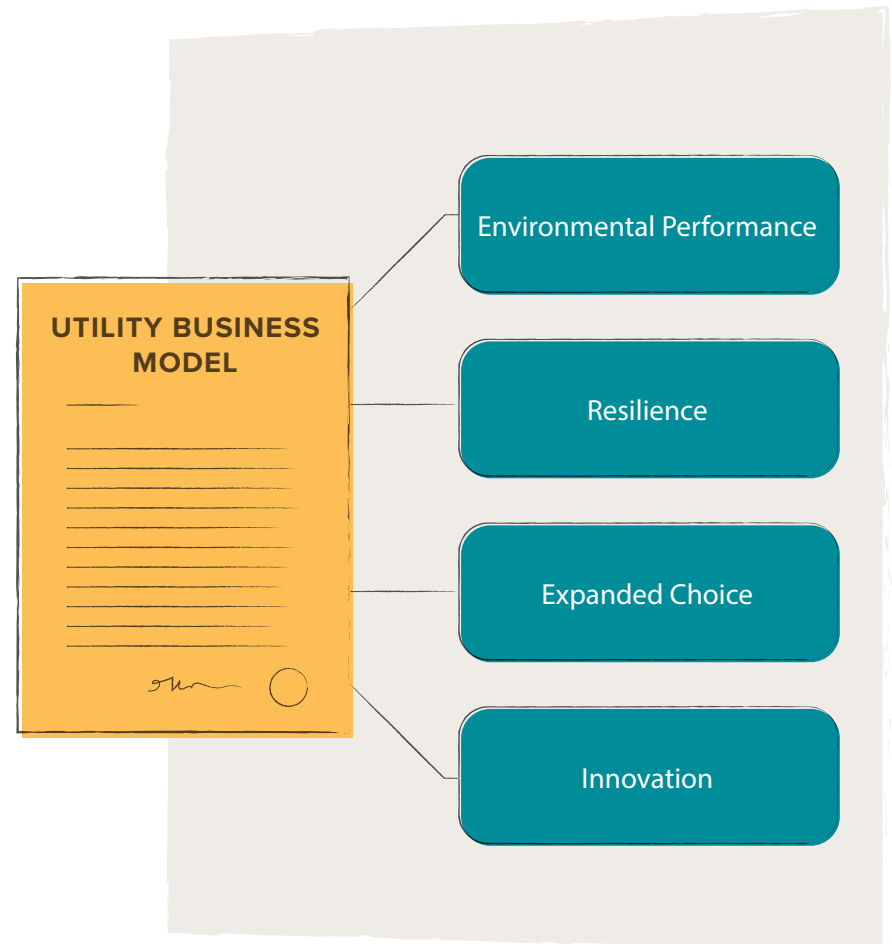


EXHIBIT 3: MODERN NEEDS AND EXPECTATIONS FOR UTILITIES

## CHANGES ALSO EXERT NEW CHALLENGES ON EXISTING RESPONSIBILITIES

As the grid continues to evolve, utilities need to continually assess not only how they are meeting new customer and system demands but how to deliver on traditional requirements as well. These include:

- **Safety:** New technologies and connection of increasing numbers of power system assets requires new safety protocols and training to ensure workforce and public safety.
- **Reliability:** Increased dependence on electricity for economic activities brings increased costs from outages and ever higher expectations for reliability. This has led to
  - New probabilistic frameworks for **resource adequacy** based on net load
  - Consideration of reliability services provided by **DERs** (e.g., use of advanced inverters with solar PV and behind-the-meter batteries)
- **Affordability:** As previous norms and foundational assumptions for the utility business model change, affordability is being reevaluated and baseline cost forecasts must be reconsidered. Compounding challenges to affordability include:
  - **Flat or declining load growth** cannot support ever-expanding capital investments that previously relied on ever-increasing energy sales.
  - **Economy of scale** presumptions may no longer hold in an era of new generation and communication technologies, continuing trends toward deregulation, and increased competitive opportunities.
  - **Modernization of the grid** is needed to ensure reliability and resiliency and to integrate new technologies.
  - **Baseline cost assumptions** for long-term, bulky investments such as transmission lines, substations, and generators are increasingly difficult to determine against a backdrop of rapidly declining renewable energy costs, non-wires alternatives, uncertain load growth due to electrification in the future, and new service opportunities.

- **New opportunities for customer value creation** in some cases may incrementally increase costs.
- **Customer value that is difficult to quantify** when considering system investments that may be linked to a specific set of customers but create positive externalities diffuse across customers, or in some cases are not shared universally.

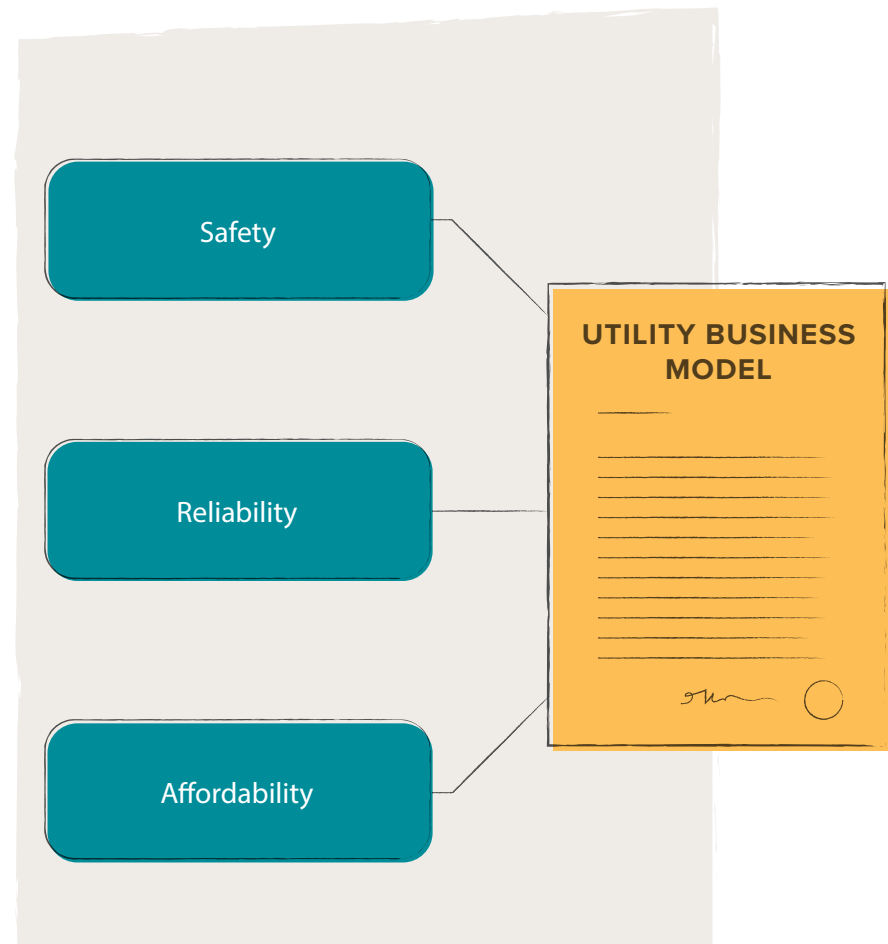


EXHIBIT 4: LONG-STANDING RESPONSIBILITIES OF UTILITIES

## NEW OPPORTUNITIES HAVE EMERGED FOR UTILITY SERVICE IMPROVEMENT AND VALUE CREATION, BUT STRUCTURAL LIMITATIONS PREVENT ADAPTATION AND UTILITY EVOLUTION

These expanding utility responsibilities and expectations have produced new business opportunities. Utilities across the United States are experimenting with strategies to:

- Employ new approaches to distribution planning and procurement of grid services
- Offer new rate design and pricing options to promote customer engagement and encourage better system operations
- Flexibly manage new loads to balance supply and demand
- Make optimal choices when deciding between capital and noncapital investments that are consistent with expanded system resources and public policy priorities
- Work with third parties to determine how best to leverage utility advantages and maximize value to customers

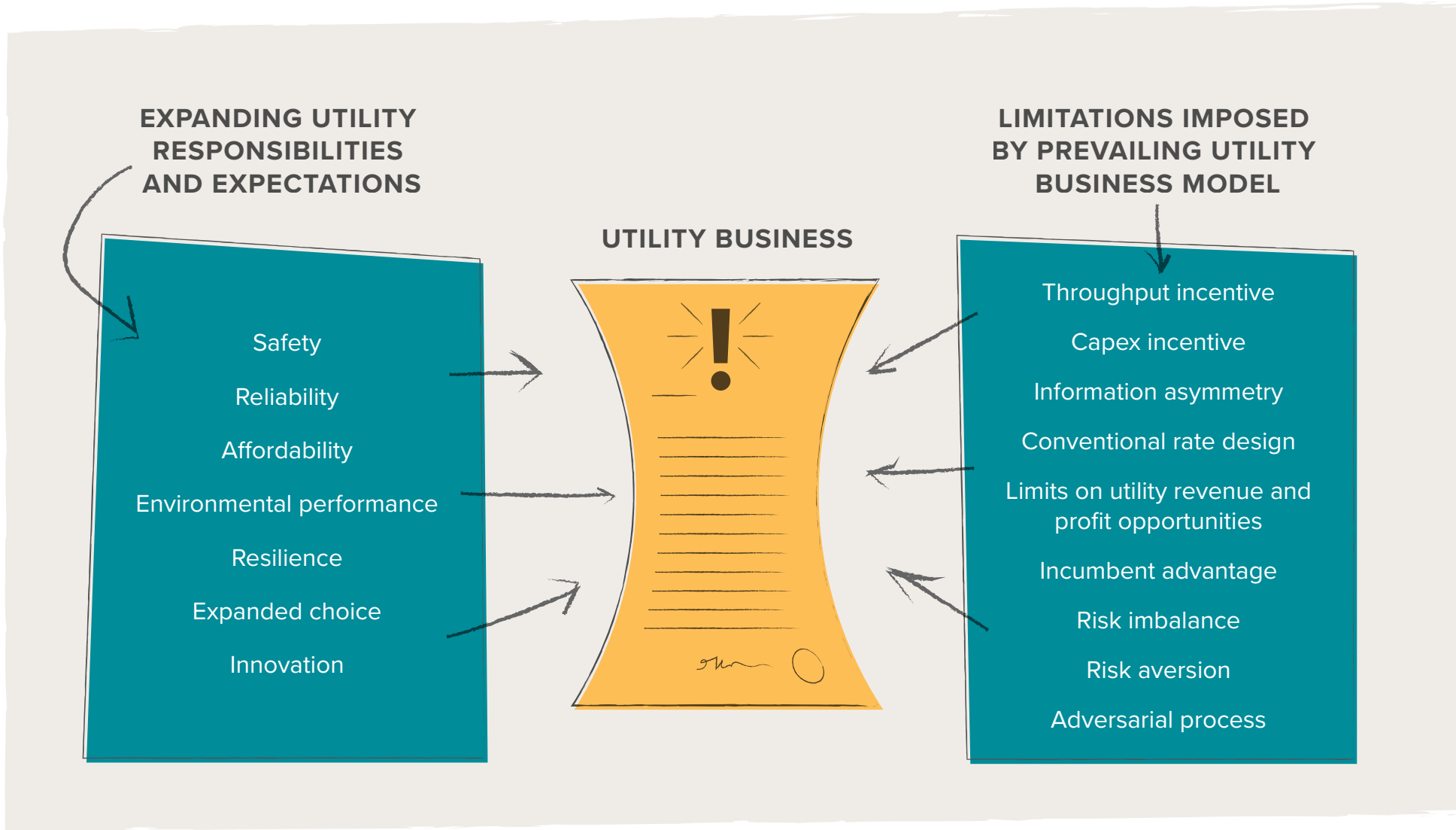
However, the traditional utility business model and regulatory construct include fundamental attributes that limit utilities' ability to serve modern needs and expectations. These include:

- **Throughput incentive:** Incentive to grow energy sales (and disincentive to reduce sales)
- **Capex bias:** Conventional cost-based accounting that incentivizes capital expenditures
- **Information asymmetry:** Differing levels of information between regulators/stakeholders and utilities make determinations of "prudence" imprecise
- **Conventional rate design:** The current way customers pay for electricity may not sufficiently cover utility costs in a high-DER future. Conventional rates may also undervalue or improperly incent the services that customer-sited or nonutility owned resources provide
- **Limits on utility revenue and profit opportunities:** Legacy regulatory structures can diminish motivation to pursue efficient investments in

clean energy, new services, and alternative infrastructure; limits on upside incentives also prevent utilities from innovating and trying new things

- **Incumbent advantage:** As monopoly businesses, utilities have inherent advantages, including system access, information asymmetry, and customer relationships
- **Risk imbalance:** Business and market risks tend to get passed through to customers, with limited exposure by the utility and investors
- **Risk aversion:** Utility management, shareholders, and regulators have a lot at stake when making significant changes to utility products and services, especially those offerings that are unfamiliar to traditional ratemaking
- **Adversarial and restrictive process:** Quasi-judicial rate cases can inhibit the ability to think beyond what's immediately in front of regulators and utilities





**EXHIBIT 5:** MODERN EXPECTATIONS AND LIMITATIONS ON THE UTILITY BUSINESS



# 2

## Utility Contexts

This section lays out the most prominent types of utilities in the United States, the regulatory and market structures these utilities are operating in, and the implications these conditions have on the utility business. It also describes how other state and federal policies may support or deter regulatory reform efforts.

# UTILITY CONTEXTS

THERE ARE THREE MAJOR TYPES OF UTILITIES, THOUGH THE MAJORITY OF CUSTOMERS ARE SERVED BY INVESTOR-OWNED UTILITIES.

## INVESTOR-OWNED UTILITIES (IOUS)



**IOUs** are granted a monopoly by the state government over a specified service territory. Shareholders hold stock and are commonly paid dividends based on assessment of many utility factors.

**Only 6%** of utilities operating in the United States are investor-owned. However, 68% of electricity customers are served by IOUs.

## MUNICIPAL UTILITIES (“MUNIS”)



**Munis** serve as a city-operated agency in a manner similar to water service, trash collection, and other services. Revenues are collected by the muni but can be subject to city council budgets and trade-offs with other city costs.

**60%** of utilities operating in the United States are municipally owned. However, only 15% of electricity customers are served by munis. The states with the highest number of munis include Minnesota, Tennessee, and Wisconsin.

## COOPERATIVES (“CO-OPS”)



**Co-ops** are owned by their customers (i.e., members) and operate on a not-for-profit basis. An elected board provides oversight and can set strategy for utility managers.

**26%** of utilities operating in the United States are cooperatives. 13% of electricity customers are served by co-ops. The states with the highest number of co-ops include Texas, Minnesota, and Missouri.



## INVESTOR-OWNED UTILITIES

IOUS OPERATE AS A FOR-PROFIT BUSINESS;  
REGULATIONS ATTEMPT TO MIMIC COMPETITIVE  
MARKET CONDITIONS FOR MONOPOLY FRANCHISES

Utility Structure	
Ownership	Publicly traded corporation; owned by shareholders
Revenues and Profit Interest	Revenue collected from rates resulting from utility costs that are passed through to customers; Utilities also include certain costs in their rate base on which they earn a return; return on equity (ROE) is set at approved rates and flows back to shareholders
Management and Governance	An executive leadership team responsible to a board of directors elected by the shareholders. Management often is diffused through business units
Regulation and Oversight	Public utility commission (PUC); shareholders; federal and state environmental regulators
Source of Capital	Private debt and equity investments
Other Key Business Relationships	Independent power producers and other generators; other owners of bulk system assets; regional transmission operators/independent system operators (RTOs/ISO); adjacent balancing authorities

Leading examples: [Commonwealth Edison](#) (ComEd; IL), [Consolidated Edison](#) (ConEd; NY), [Green Mountain Power](#) (GMP; VT), [Southern California Edison](#) (SCE; CA)

### Factors that support reform

Regulatory agencies oversee all investments and costs expended by IOUs, making them a key driver of IOU reform efforts. Regulatory decisions over what is included in utilities' rate base and the allowable rate of return drive utilities' capital and noncapital investment decisions. The combination of declining load growth at the same time as necessary upgrades to system infrastructure and operations is forcing regulators to rethink how IOUs can deliver sufficient shareholder profits and maintain debt ratings for the cost of capital, while meeting new policy and customer objectives. Adding to those demands, community choice aggregation and municipalization trends are exerting pressure on IOUs to better meet customer needs or risk customer attrition.

### Factors that challenge reform

The monopoly status of vertically integrated IOUs imposes a limit to the competitive pressure on IOUs to pursue reforms. Additionally, vertically integrated utilities may be threatened by increasing DER penetration because these resources can affect utilities' sales volume to customers, which in turn challenges rate design and rate recovery for utility capital investments. Alternatively, because restructured IOUs cannot use generation costs as a pass-through, they are limited to earnings opportunities related to distribution and transmission infrastructure. This restricted revenue potential hampers these utilities' incentives to consider nonutility owned DER solutions and non-wire alternatives. In addition, shareholders of IOUs may be concerned that their valuation will shrink as IOUs seek out more cost-effective alternative investments.



## MUNICIPAL UTILITIES

MUNIS OPERATE AS NOT-FOR-PROFIT BUSINESSES, OWNED BY MUNICIPALITIES AND OVERSEEN BY CITY COUNCIL MEMBERS OR AN APPOINTED BOARD

Utility Structure	
Ownership	Municipalities
Revenues and Profit Interest	Revenue collected from rates; no profit motivation, but surplus revenues can sometimes support other city costs; financial stability important for bond rating
Management and Governance	City management and utility staff. Management can be diffuse in larger munis
Regulation and Oversight	Oversight provided by boards or city council; regulated by PUCs in limited instances; federal and state environmental regulators
Source of Capital	Municipal bonds and other standard debt markets; cost of capital tied to city's debt rating
Other Key Business Relationships	Generation and transmission (G&T) co-ops and public power agencies to conduct bulk purchasing and own bulk system assets

Leading examples: [Sacramento Municipal Utility District](#) (SMUD; CA), [L.A. Department of Water and Power](#) (LADWP; CA), [Fort Collins Utilities](#) (FCU; CO)

### Factors that support reform

Unlike IOUs, munis are not-for-profit entities that are often governed democratically by the local city council or a city council-appointed board. Due to this structure, public policy objectives and customer demands directly influence how munis serve customers. Because munis are not regulated, they can move faster than IOUs in implementing new technologies or business models. As government agencies, governing bodies also decide how muni revenue is collected and what to do with it, potentially putting them in a key role to drive reform.

### Factors that challenge reform

Many munis may be constrained to undergo reform efforts either by staffing, capacity, financial, and/or technical resources. Several munis also serve functions beyond electricity distribution, such as water delivery, which can compete for resources. Although munis operate as a not-for-profit, excess revenue from electricity services is often treated as a critical revenue stream for other city operations. This interdependence results in the munis' cost of capital being tied to the city's overall credit rating, which may or may not attract investments depending on the jurisdiction's broader financial health.

Although many munis own distribution systems, some munis own a central generating station as well. In a growing number of cases, munis may want to invest in alternative resources but are constrained by the fact that the capital invested in generating assets has not fully depreciated. Munis face the question of how to pay off the asset even if its operating costs, fuel type, or other characteristics no longer meet city policy goals. These potentially stranded assets are of significant concern as all risk falls on ratepayers without the presence of shareholders.



## COOPERATIVES

CO-OPS OPERATE AS NOT-FOR-PROFIT BUSINESSES, OWNED BY CUSTOMERS AND OVERSEEN BY AN ELECTED BOARD

Utility Structure	
Ownership	Customers (i.e., members)
Revenues and Profit Interest	Revenue collected from rates; no explicit profit motivation
Management and Governance	Governed by a customer-elected board
Regulation and Oversight	Some are regulated by public utility commissions; federal and state environmental regulators
Source of Capital	Government loans and grants (e.g., Rural Utilities Service under US Department of Agriculture); private financing
Other Key Business Relationships	G&T co-ops to conduct bulk purchasing and own bulk system assets

Leading examples: [Kit Carson Electric Co-op](#) (NM), [Ouachita Electric Co-op](#) (AR)

### Factors that support reform

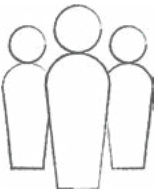

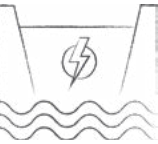

Similar to munis, co-ops' not-for-profit status means that they are not tethered to the need to earn a return for shareholders, but they must still have enough capital to support operations, maintain infrastructure, and invest in new initiatives. Any net earnings are returned to customers, who are also owners and members of the co-op. As member-owners, customers have the potential to be key drivers of change for the utility. Each member annually votes for members of the board, who in turn set the policies for the co-op. This process makes the board members accountable to the customers they serve.

### Factors that challenge reform

Since many co-ops are located in rural communities, lack of access to capital, the need for short-term affordability, and limitations on capacity and expertise are often priority concerns for reform efforts. Co-ops' more distributed, rural customer base may discourage third-party DER providers in their service territory, limiting competition and creating openings for expanding monopoly practices.

The dependence of co-ops on G&Ts to bring power from elsewhere limits reforms aimed at diversifying energy portfolios. Many co-ops have all-requirements contracts with G&Ts, which often include caps that restrict local self-generation by the co-op or its members to 5% of purchases. This restricts the co-ops' ability to invest in cheaper local renewables that meet members' cost or clean energy goals.

## OTHER MARKET ENTITIES AND UTILITY RELATIONSHIPS

 <p><b>Generation and Transmission Co-ops (G&amp;Ts)</b></p>	<p>Generation and Transmission Co-ops (G&amp;Ts) vary in terms of ownership structure, assets, and regulatory requirements. G&amp;Ts provide electricity to distribution co-ops and munis through their own generation or by purchasing power on behalf of distribution members. Groups of co-ops have formed G&amp;Ts to collectively own generation and transmission lines. These G&amp;Ts typically generate or contract for power on behalf of many member utilities. G&amp;T and muni/co-op relationships depend on the structure of the utility and whether or not the utility owns generation or contracts with G&amp;Ts for power supply.</p>
 <p><b>Community Choice Aggregators (CCAs)</b></p>	<p>Community Choice Aggregators (CCAs) are cities or counties that have chosen to take over aspects of their electricity procurement, distribution, and sales from the municipality's incumbent utility. CCAs have become increasingly popular in California, with eight entities currently in operation and several more in development. Other states, including New York, Massachusetts, Illinois, New Jersey, Ohio, and Rhode Island, also have passed legislation to enable CCAs.</p>
 <p><b>Federal Power Marketing Agencies (PMAs)</b></p>	<p>Congress originally created power marketing agencies (PMAs) to sell power produced by federally owned dams, but it has expanded their authority to build and own thermal power plants. PMAs sell wholesale power to local distribution or vertically integrated utilities. Bonneville Power Administration and Tennessee Valley Authority (which is not technically a PMA, but acts similarly) also operate the transmission for numerous local distribution utilities.</p>
 <p><b>Joint Power Agencies</b></p>	<p>Munis often come together to create joint power agencies to contract for energy. These agencies are legally separate municipal corporations that sell bonds, build facilities, enter into contracts, and sell the resulting power to the member utilities.</p>

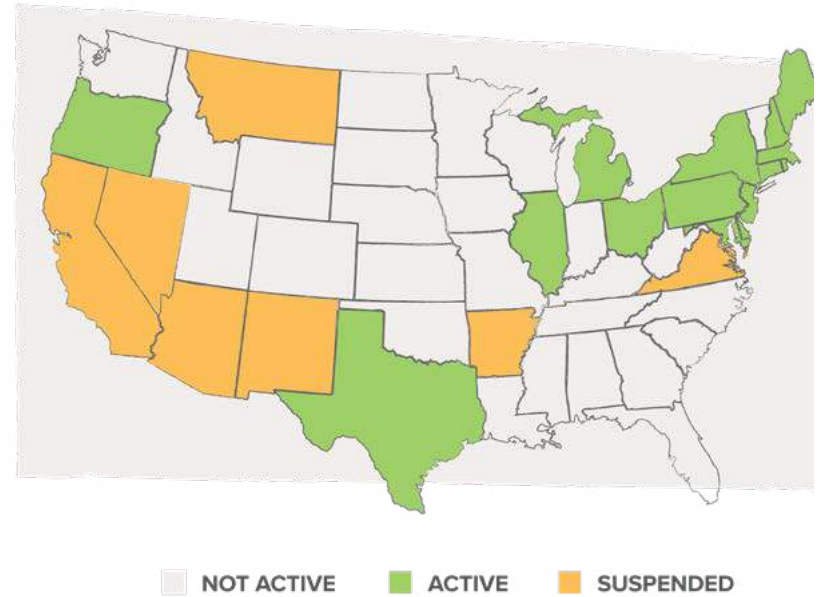
### IMPACT ON REGULATORY MODEL

How utilities and customers contract for power generation, electricity delivery, and other products and services may limit or accelerate reform. For example, load decline from the emergence of CCAs may push incumbent investor-owned utilities or regulators to investigate new business models that are more aligned with jurisdictional needs and that can keep the utility financially healthy. On the other hand, contracts with G&Ts and PMAs for generation and transmission could complicate new business opportunities arising from more sophisticated distribution planning for co-ops and munis. Progressively minded G&Ts or other entities, meanwhile, can be a force and enabler for spreading new programs and broader reforms.

## VERTICALLY INTEGRATED AND RESTRUCTURED STATES

How the electricity market functions in different states also impacts the opportunity for utility reform. Specifically, which parts and functions of the system (e.g., customer relationship, distribution system, transmission system, generation, system optimization) are owned or managed by utilities versus other entities will determine the scope and applicability of reform options.

<p><b>Vertically Integrated</b></p>	<p>In vertically integrated states, regulated utilities have a monopoly over generation, distribution, and billing. Retail choice—the ability to choose among a number of providers for electricity supply—can exist in predominantly vertically integrated states but varies in terms of eligibility and actual participation.</p>
<p><b>Restructured</b></p>	<p>Restructuring means that a monopoly system of electric utilities has been replaced with competing sellers. Generators sell electricity either to utilities or to retail service providers to sell to end-use customers.</p>



**EXHIBIT 6:** ELECTRICITY RESTRUCTURING BY STATE (ADAPTED FROM US ENERGY INFORMATION AGENCY)

### IMPACT ON REGULATORY MODEL

Because all parts of the supply chain in vertically integrated states are regulated, reform efforts can have a more comprehensive impact on both the supply and delivery of energy. However, PUCs in vertically integrated states may experience greater regulatory capture or may view themselves as economic regulators rather than policymakers, both of which can limit PUC appetite to lead on business model reform.

Alternatively, introducing competition into the supply of generation can increase customer choice and provide pressure on utilities to better meet customer needs. Restructured utilities may be better positioned to pursue reforms targeted to increase DER penetration, being less impacted by load decline. PUCs will need to address what parts of the new utility business model should be regulated, especially if incentivizing performance in areas of third-party activity such as platform services or electric vehicles.

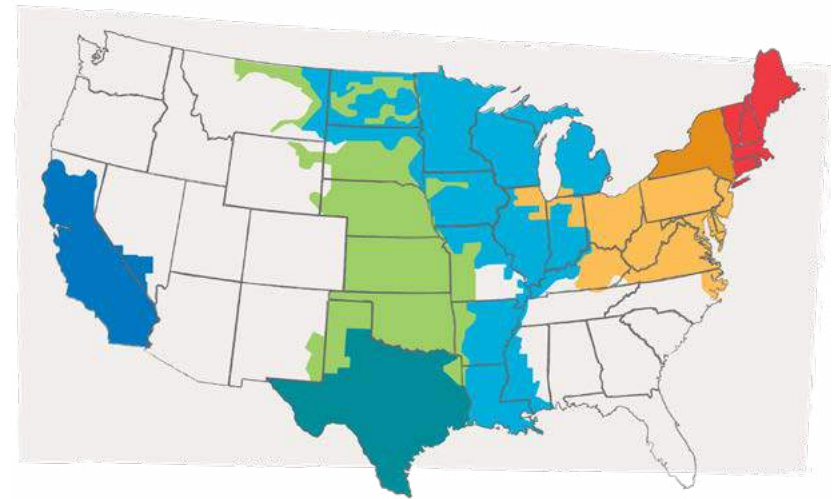
## ORGANIZED MARKETS AND BALANCING AUTHORITIES

Regional transmission operators (RTOs) and independent system operators (ISOs) are independent, not-for-profit organizations that manage transmission assets of a number of utilities by ensuring reliability and controlling supply and demand on the wholesale electricity market. RTOs/ISOs operate the transmission system by dispatching power plants through centralized competitive energy markets.

In other parts of the country, power plants are dispatched by individual utilities, with reliability ensured by balancing authorities and other reliability managers, who may be utilities, federal agencies, or special-purpose entities. The bulk electricity system is operated by individual utilities or utility holding companies.

The Federal Energy Reliability Commission (FERC) approves and regulates ISOs and RTOs. FERC ensures the reliability of the interstate transmission system and oversees wholesale power sales and rates and service standards for most bulk power transmission.

The North American Electric Reliability Corporation (NERC) oversees eight regional reliability entities and encompasses all of the interconnected power systems of the contiguous United States, Canada, and Mexico.



**EXHIBIT 7: WHOLESALE ELECTRIC POWER MARKETS**

NOTE: CAISO IS CURRENTLY EXPANDING MARKET OPERATIONS TO OTHER WESTERN STATES THROUGH ITS ENERGY IMBALANCE MARKET

## IMPACT ON REGULATORY MODEL

Regional grid integration has proved to be more efficient than individual utilities controlling their section of the bulk power system, translating into lower system costs. These lower and shared costs can create a level of stability needed for utilities to pursue reforms that may come with a perceived higher risk. Participation in RTOs/ISOs also can increase states' capacity to integrate renewable energy, including DERs. This more diverse generation mix can put pressure on utilities to seek out incentives to support complementary programs and services.

FERC's rulemakings also can impact state-level regulatory reform. For example, FERC's efforts to set minimum prices for bids into energy or capacity markets are likely to have an impact on state clean energy policies. These policies can provide further legal or regulatory support for moving reform efforts forward.



## OTHER POLICY TOOLS

A slate of other energy policies, usually set by legislation, are in place or can be considered to propel clean energy adoption. Although these are not directly associated with the utility business model, they have important interplay with utility incentives and business requirements. Some of the more prominent policy tools are described here.

### [Renewable Portfolio Standards](#)

Renewable Portfolio Standards (RPS) require that a percentage, or a specified amount, of the electricity utilities sell come from renewable resources. [Twenty-nine states and Washington, D.C.](#), have adopted an RPS, while eight states have set renewable energy goals.

Ex: [Hawaii](#), [New York](#), [California](#)

### [Energy Efficiency Resource Standards](#)

Energy Efficiency Resource Standards (EERS) establish specific, long-term targets for energy savings that utilities or non-utility program administrators must meet through customer energy efficiency programs. [Twenty-six states](#) have energy savings targets.

Ex: [Massachusetts](#), [Vermont](#), [Illinois](#)

### [Carbon Pricing](#)

Some states, regions, and cities have adopted carbon taxes and cap-and-trade programs as market-based approaches to limiting carbon emissions.

Ex: [Boulder \(CO\)](#), [California](#), [Regional Greenhouse Gas Initiative](#)

### [Energy Storage Mandates](#)

Several states are establishing energy storage procurement targets through legislation and regulation.

Ex: [Oregon](#), [California](#), [Massachusetts](#)

### [Peak Demand Standards](#)

States can incorporate peak demand reduction targets into their energy efficiency strategies. States also are looking at ways to increase the use of renewable generation during peak load hours.

Ex: [Maryland](#), [Arizona](#)

### [Transport Electrification](#)

States and local governments support transport electrification using a variety of policies. These include electric vehicle (EV) deployment targets, rebates, tax credits, mandates for government fleets, and support for EV infrastructure.

Ex: [Washington](#), [Boulder County \(CO\)](#)

### [Building Electrification](#)

Similar to transportation, states and cities support building electrification using different approaches. Policies include incentives for electric technologies, supportive rate design, demand response/flexibility programs, building codes, and appliance standards.

Ex: [California](#), [Rhode Island](#)

## IMPACT ON REGULATORY MODEL

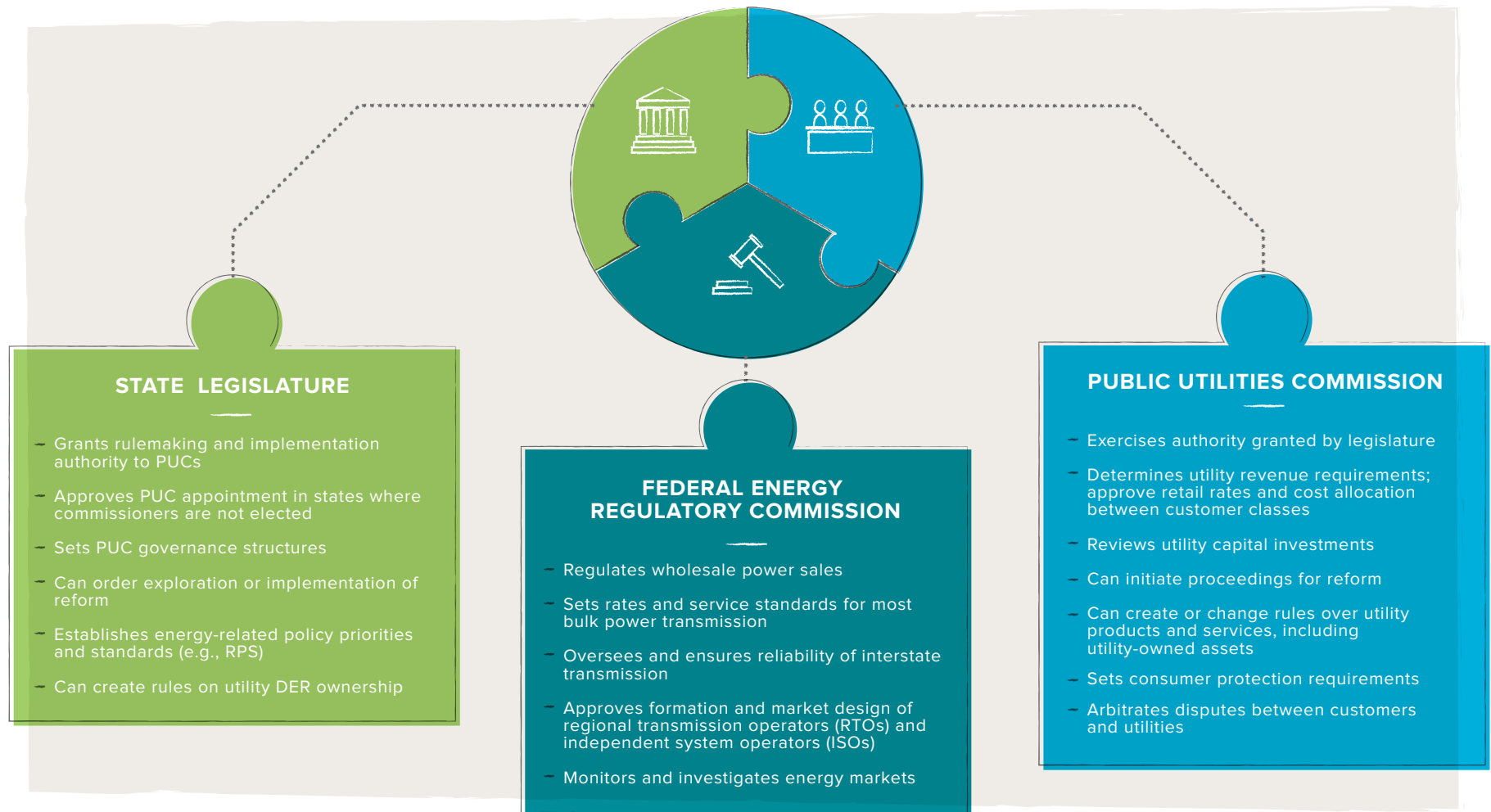
Utility reform should work in conjunction with these or other clean energy policies, and in many cases policy serves as an impetus for reforms. For example, an EERS could be complementary to or encourage decoupling and efficiency-related PIMs. The reform options described in the remainder of this paper can promote efficient business practices and alignment of incentives so that utility interests do not run counter to new expectations or requirements for utilities.

## INTERACTIONS BETWEEN REGULATORS AND OTHER POLICYMAKERS

Although there are prescribed roles for particular institutions across states, reform efforts are often impacted by how much authority is delegated to state PUCs by legislation. Still, in many states, the extent of regulatory authority may be unclear.

Because regulatory and policymaking processes are interrelated, laws and regulations established by one entity will likely impact the rules developed

by others. One example is electricity pricing. Although a PUC sets retail rates, FERC oversees wholesale electricity prices. Another evolving issue is how markets treat grid services from DERs. Although FERC is responsible for DER participation in wholesale markets, state regulators are responsible for DER participation in distribution markets. Other gray areas include rules of eligibility for capacity markets and ancillary services, and authority over establishing multiyear rate plans, decoupling, and other elements of PBR.



# 3

## Reform Options

This section focuses on 10 options that can be considered for utility business model reform. Overviews of each reform option include its key objectives, design choices, and a short case study. Most overviews also describe reform options' prevalence and extent of application across the county, as well as best practices for comprehensive reform or questions to spur innovation.

# REFORM OPTIONS

## A GROWING STABLE OF REFORM OPTIONS IS AVAILABLE TO REALIGN UTILITY BUSINESS PRACTICES

### I. Adjustments to the Cost-of-Service Model



#### I.a Revenue Decoupling

Breaks the link between the amount of energy a utility delivers to customers and the revenues it collects

#### I.b Multiyear Rate Plans

Fix the time between utility rate cases and compensate utilities based on forecasted efficient expenditures rather than historical costs of service

#### I.c Shared Savings Mechanisms

Reward the utility for reducing expenditures from a baseline or projection by allowing the utility to retain some of the savings as profit

#### I.d Performance Incentive Mechanisms (PIMs)

Create a financial incentive for a utility to achieve performance outcomes and targets consistent with customer and public policy interests

### II. Leveling the Playing Field



#### II.a Changes to Treatment of CapEx/OpEx

Change the treatment of capital expenditures (capex) and operational expenditures (opex) to make utilities indifferent between capital or operational solutions

#### II.b New Procurement Practices

Expand utility resource procurement approaches to provide customers with the most cost-effective combination of supply- and demand-side resources

### III. Retirement of Uneconomic Assets



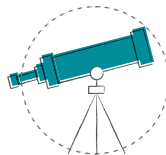
#### III.a Securitization

Refinances uneconomic utility-owned assets by creating a debt security or bond to pay down an early-retiring plant's undepreciated capital balance

#### III.b Accelerated Depreciation

Adjusts rates to speed up the depreciation of an asset so the utility and its customers are not left with stranded costs when an asset retires early

### IV. Reimagined Utility Business



#### IV.a Platform Revenues

Provide utilities with new revenues for integrating and coordinating third-party energy services and resources on the distribution system

#### IV.b New Utility Value-Added Services

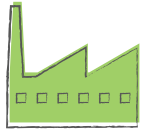
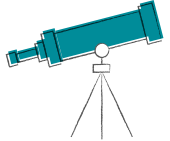
Provide utilities with the opportunity to earn revenues for providing customers with enhanced services made possible by new grid technologies

## UTILITY BUSINESS MODEL REFORM MAY ADDRESS ONE OR MORE OF THE FOLLOWING OBJECTIVES

While regulatory and business model reform efforts may achieve different outcomes, they should adhere to these core objectives to meet emerging needs and expectations.

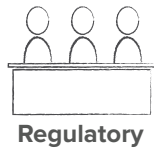
OBJECTIVES	DESCRIPTIONS
<b>Remove utilities' incentive to grow energy sales</b>	By breaking the tie between utility revenues and energy sales, also called decoupling, utilities no longer have a disincentive to invest in solutions that decrease sales.
<b>Realign profit-making incentives</b>	Earning opportunities for utilities can be structured so they are aligned with public policy goals consistent with a clean, affordable, and reliable energy future. Ratemaking reforms may be focused on encouraging energy conservation, reducing peak load, removing the utility capex bias, or addressing risk imbalances between shareholders and ratepayers.
<b>Develop new utility revenue and profit opportunities</b>	As grid and customer needs evolve, utilities have the opportunity to provide new services and products to end-users and third parties compatible with a clean energy future. Changes to regulations and earning mechanisms may be necessary to ensure utilities can provide new offerings without damaging new competitive markets.
<b>Revise risk and value sharing</b>	New utility financial incentives can create a better balance between ratepayers, utility managers, and shareholders as to who bears the brunt of business risks. Shared savings mechanisms between ratepayers and utilities can better balance the monetary value gained from achieving operational or programmatic goals.
<b>Encourage cost containment</b>	Promote economic efficiency in investment decisions and business operations through realigning business practices and profit incentives in a manner that lessens cost overruns. Although cost containment has been a long-standing priority of utility regulations, new needs and opportunities force a reconsideration of how best to incentivize cost control.

# REFORM OPTIONS SUPPORT IDENTIFIED OBJECTIVES TO VARYING DEGREES

		Remove utilities incentive to grow energy sales	New utility revenue and profit opportunities	Realign profit incentives	Revise risk and value sharing	Encourage cost containment
	Revenue decoupling	●	◐	○	◐	○
	Multiyear rate plans	◐	◐	○	◐	●
	Shared savings mechanisms	◐	◐	◐	●	◐
	Performance incentive mechanisms	◐	●	◐	◐	◐
	Changes to treatment of capex/opex	◐	●	◐	◐	◐
	New procurement practices	◐	◐	◐	◐	●
	Securitization for uneconomic assets	○	◐	◐	◐	◐
	Accelerated depreciation for uneconomic assets	○	◐	◐	◐	◐
	Platform revenues	◐	◐	●	◐	○
	New utility value-added services	◐	◐	●	◐	○

● Primary objective of reform option
◐ Important objective of reform option
◑ Can support objective  
◒ Can indirectly support objective
○ Does not support objective

## REFORM EFFORTS ARE TYPICALLY INITIATED IN ONE OF THREE VENUES



Proceedings taking place within the PUC can take the following forms:

- **Investigatory:** Explore emerging issues; may include more informal workshop formats
  - **Rulemaking:** Develop new rules and guidance to utilities on program design and implementation; can create pilot and emerging technology structures that accelerate reform
  - **Rate cases:** Set revenue requirements and rates; usually involve hearings, written and oral testimony (with potential cross-examination), and settlement negotiations
  - **Application:** Evaluate utility program and investment proposals
  - **Planning:** Oversee utility modeling and analysis that identifies system needs and potential solutions
- PUCs can be proactive (launching new proceedings) or reactive (initiating proceedings in response to legislation or utility proposals).

### Examples:

- The NY Public Service Commission proactively launched **REV** and has created new performance measures to align utility incentives with REV goals
- In response to state legislation, the Minnesota PUC opened **Docket 17-401** in 2017 to develop performance metrics and potential incentives for the largest IOU in the state



Legislation can:

- Create or shift **obligations and incentives** for utilities and their customers
- **Set energy-related targets** for states that may advance reform efforts (i.e., high EE targets in a state could motivate regulators to decouple utility revenue from sales)
- **Direct PUCs to open proceedings** and make changes to regulations focused on reforms, such as decoupling or performance-based regulation
- **Delegate new authorities to PUCs** Similar actions can be initiated by governors. They can set energy-related targets through executive action and can direct PUCs to open proceedings or non-docketed investigations focused on regulatory reforms.

### Examples:

- Illinois' **Future Energy Jobs Act** (2016) created incentives for utility investment in solar and energy efficiency
- Oregon's **SB 978** required the PUC to establish a public investigation on how emergent trends impact the existing electricity regulatory system



As utilities are faced with a growing number of business model challenges, utilities can be the first to propose changes ahead of reform efforts initiated outside their control.

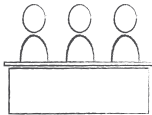
Utilities can initiate reforms themselves by submitting applications or proposals to a PUC or a governing board.

PUCs and governing boards typically need to respond to proposals by initiating a formal proceeding or other stakeholder process.

### Examples:

- Green Mountain Power's (VT) transition to a B Corporation and its **pilots to expand utility service offerings**
- Fort Collins Utilities' **integrated utility services** model

# EACH VENUE AFFORDS OPPORTUNITIES FOR STAKEHOLDER PARTICIPATION



**Regulatory**

Stakeholders can formally intervene in proceedings or participate in informal investigatory processes. Parties have the opportunity to provide **written comments**, request or supply **evidence**, and participate in **technical conferences** and **working groups**.



**Legislative**

Stakeholders can **lobby and engage in other efforts to shape the content of legislation** focused on utility business model reforms. Stakeholders also can **campaign or use other ways to support legislators** with aligned interests.



**Utility Proposal**


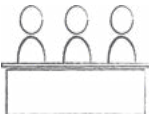
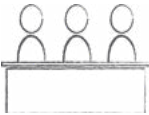

Stakeholders can hold external **forums** or **workshops** to increase pressure on utilities to reform; customers of munis and co-ops can **vote for board or council members** and raise issues at **stakeholder meetings**.

## STAKEHOLDERS SERVE A KEY ROLE IN THE DESIGN AND IMPLEMENTATION OF REGULATORY REFORM POLICIES. THESE THREE EXAMPLES SHOW HOW DIFFERENT PROCESSES HAVE LEVERAGED STAKEHOLDERS AND WORKING GROUPS.

Illinois	Minnesota	Ohio
<p>In response to the Future Energy Jobs Act, the Illinois Commerce Commission (ICC) convened the <b>NextGrid</b> process to identify opportunities for grid modernization and reform, including potential business model reforms. This process has been facilitated by the University of Illinois and consists of seven working groups, plus a Stakeholder Advisory Council and Technical Advisory Group. The ICC plans to issue its final report by the end of 2018.</p>	<p>In 2014, stakeholders launched the <b>Minnesota e21</b> initiative to investigate reforming utilities' revenue structures and integrate new grid technologies into system planning. The group has since published several reports and white papers on goals and options for reform. The Minnesota PUC has since opened proceedings focused on grid modernization and performance metrics, influenced in part by e21 efforts.</p>	<p>In 2017, the PUC of Ohio launched <b>PowerForward</b>, an investigation of technological and regulatory tools to modernize the grid. PowerForward consisted of three phases of multiday panels and testimonies covering a broad range of topics. The PUC issued a report in late summer 2018 outlining its conclusions, including options for business model reform.</p>



# UTILITY BUSINESS MODEL REFORM CAN BE INCREMENTAL OR MORE COMPREHENSIVE

SCOPE OF REFORM	LIKELY VENUES FOR SCOPE OF REFORM	
<p><b>Incremental reforms within existing business model</b>                      New individual programs and business models create a product or service within <b>existing market rules</b>. A full delivery or business model is a plan for the full chain of transactions between stakeholders, including ongoing funding and financing, customer engagement and acquisition, and service delivery, that ultimately deliver technologies and clean energy benefits to end-users. Examples include utility energy efficiency programs or new value-added services models.</p>	 <b>Utilities</b>	Utilities have the opportunity to propose or implement new products and services but are unlikely to promote sweeping changes that could undermine profit or introduce business risk.
<p><b>Comprehensive reform to underlying structures</b>                      Comprehensive and structural reforms are those that <b>change the market and regulatory rules or the roles of utilities</b>. These changes modify the utility's fundamental cost of service incentives, typically requiring regulatory or legislative changes. Examples include expanded performance-based regulation or more complete rethinking of the utility, such as to a platform or distributed system operator (DSO) structure.</p>	 <b>Regulatory</b>	Utility reforms require regulatory review and approval by PUCs or other oversight authorities. Reforms happen in rulemaking proceedings or standard rate cases.
<p><b>Comprehensive reform to underlying structures</b>                      Comprehensive and structural reforms are those that <b>change the market and regulatory rules or the roles of utilities</b>. These changes modify the utility's fundamental cost of service incentives, typically requiring regulatory or legislative changes. Examples include expanded performance-based regulation or more complete rethinking of the utility, such as to a platform or distributed system operator (DSO) structure.</p>	 <b>Regulatory</b>	Regulatory agencies have differing levels of authority to make changes to regulations needed to enable comprehensive reform.
<p><b>Comprehensive reform to underlying structures</b>                      Comprehensive and structural reforms are those that <b>change the market and regulatory rules or the roles of utilities</b>. These changes modify the utility's fundamental cost of service incentives, typically requiring regulatory or legislative changes. Examples include expanded performance-based regulation or more complete rethinking of the utility, such as to a platform or distributed system operator (DSO) structure.</p>	 <b>Legislative</b>	Legislation could be needed either to directly modify existing market rules or to expand regulators' authority. Legislation also can order PUCs to open proceedings on certain issues.

## PERFORMANCE-BASED REGULATION TO REALIGN UTILITY FINANCIAL INCENTIVES

### PBR AS A SET OF TOOLS



Performance-based regulation (PBR) receives a lot of attention for its promise of realigning utility incentives with environmental and other policy goals. Rather than a single option in its own right, PBR can be seen as a set of tools that may be adopted individually or in combination to achieve specified objectives.

Forms of PBR have been proposed for many years and implemented in different ways since at least the 1990s. Especially for basic service requirements such as reliability, as well as cost control on major capital projects, PIMs have been used to motivate utility operational improvements. Increasingly, more expansive views of PBR are being considered to institute strong financial incentives into the core of the utilities' ratemaking structures and business strategy. These have targeted areas spanning from targeted program effectiveness (e.g., energy efficiency programs) to underlying incentives of the cost-of-service model, including capex bias by utilities to build and rate base large infrastructure projects.

Of the options described in this paper, decoupling, multiyear rate plans, performance incentive mechanisms, and shared savings mechanisms are most commonly considered among the PBR toolkit. PBR also can be combined with other options to ensure policy alignment or as a backstop to prevent backsliding on basic services such as reliability, clean energy, or other priorities.

### LEADING EXAMPLES OF PBR

PBR structures are common, although often in disparate applications with relatively small financial impact. A few jurisdictions are pioneering more comprehensive application of PBR to motivate utility performance. The following are leading examples, with the most notable tools employed by each.

#### **United Kingdom's RIIO Model**

- Multiyear rate plans
- Performance-incentive mechanisms
- Shared savings mechanisms

#### **New York's Reforming the Energy Vision (REV)\***

- Decoupling
- Multiyear rate plans
- Performance-incentive mechanisms
- Shared savings mechanisms

#### **Hawaii Performance-Based Regulation\*\***

- Decoupling
- Multiyear rate plans
- Performance-incentive mechanisms
- Shared savings mechanisms

\* NY REV envisions combining PBR measures with other reform options, including platform revenues and changes to capex/opex.

\*\* Hawaii has many elements of PBR already in place; at the time of publishing this paper, an active PBR proceeding is considering additional PBR measures for the Hawaiian Electric Company.

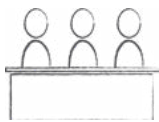
## 1a - REVENUE DECOUPLING



### UNLINKING UTILITY REVENUES AND SALES GROWTH REDUCES UTILITIES' INTEREST IN GROWING ENERGY SALES AND ADDRESSES OTHER RISKS TO REVENUES OUTSIDE UTILITY CONTROL

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. Decoupling is a foundational reform that all states should adopt, on top of which other reforms can be layered.

### MOST PROMISING REFORM VENUES



**Regulatory**



**Legislative**



**Utility Proposal**

Legislation may be required in some states to implement decoupling. In others, it is under regulatory authority. In states like CO, decoupling has been proposed by the utility.

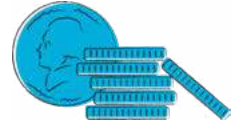
### OBJECTIVES ADDRESSED

Remove incentive to grow sales	●
Realign profit-making incentives	◐
New revenue and profit opportunities	○
Revise risk and value sharing	◑
Encourage cost containment	○

- Decoupling is explicitly designed to remove the utility's incentive to grow energy sales, which discourages investment in energy efficiency and customer-sited generation
- Can enable utilities to earn revenue that is more dependent on controllable factors
- Removes certain economic risks for the utilities, but does not necessarily promote value sharing with customers
- Decoupling alone does not support cost containment



## 1a - REVENUE DECOUPLING



### CASE STUDY

#### ***Los Angeles Department of Water and Power's Decoupling Revenues from Sales***

In 2012, Los Angeles Department of Water and Power (LADWP)—a large Southern California muni that serves 1.4 million customers— became the first publicly owned utility to implement a decoupling mechanism for its electric services. This effort was in response to growing risks associated with recovering revenue, such as weather and reduced energy sales from energy efficiency programs.

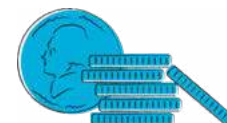
LADWP's decoupling adjustment appears on customer bills as a component of the Variable Energy Adjustment (itself a component of the Energy Cost Adjustment Factor), which is applied to the usage of all customer classes. It is calculated by first taking the difference between the amount of revenue collected in base rates and a revenue target; this difference is then divided by expected electricity sales over the following year.

As a result of decoupling, LADWP has shifted the throughput-focus of utility executives to a focus on investments in energy efficiency and other DERs. Decoupling has also improved LADWP's financial performance and its ability to attract low-cost capital.

**Targeted business area:** Electric services   **Market structure:** Vertically integrated   **Ownership structure:** Municipal

### DESIGN CHOICES

- Decide which **utility functions, costs, and customer classes** will be included in decoupling.
- Decide **whether to make adjustments** to revenue requirements and rates between rate cases and, if so, how often.
  - Consider how to factor in **inflation** and **productivity** when making revenue adjustments. Determine whether to use a **steady annual increase** or another mechanism, such as **indexing** or **stair-step**, in annual adjustments between rate cases.
  - Depending on jurisdiction, decide if **Revenue-per-Customer (RPC)**, which establishes a fixed level of revenue to be collected for each customer, or **Attrition Adjustment** decoupling, which uses reviews between rate cases to determine if any changes in utility costs merit a rate change, is the most appropriate approach.
  - Consider **limits on rate adjustment size**.
- Possibly explore **other changes to rate design** that could complement decoupling efforts.
- Address how to distribute **refunds** or implement **surcharges** resulting from utility revenue true-ups based on actual utility revenues.



## 1a - REVENUE DECOUPLING

### PREVALENCE ACROSS THE UNITED STATES

A growing number of states have adopted some form of revenue decoupling. As of December 2017, six states had pending legislation or regulations permitting electric decoupling (see [Carter and Cavanagh, 2017](#)).

#### UTILITIES AND STATES WITH ELECTRIC DECOUPLING

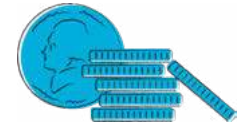
2013		2017	
Utilities	States	Utilities	States
24	13 + DC	33	17 + DC

### BEST PRACTICES FOR MEANINGFUL REFORM

- Assess how decoupling can reduce a utility's business risk and how this impacts approved ROE and access to low-cost capital
- Any changes to rates, either through base rates or riders, should be transparent and well-communicated to customers
- Utilities should consider how other changes in rate design can better optimize the price signals sent to customers
- Utilities should consider how performance incentive mechanisms and new utility services can assist with the transition to decoupling
- Lost revenue adjustment mechanisms (LRAMs), which allow a utility to recover revenues that are reduced as a result of specific programs (e.g., EE programs), should not be considered as a substitute for decoupling

### REFERENCES AND USE CASES





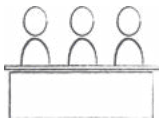
## 1b - MULTIYEAR RATE PLANS (MRPS)

### LESS FREQUENT RATE CASES CAN IMPROVE COST CONTAINMENT AND REDUCE ADMINISTRATIVE BURDEN OF CONSTANTLY PREPARING FOR REGULATORY REVIEW

Under MRPs, utility revenue requirements are set for multiple years in advance (typically 3–5 years). Utility compensation is based on forecasted efficient expenditures rather than the historical costs of services. This can better reflect a competitive market paradigm, creating incentives to contain costs and reducing regulatory costs from rate cases. This often includes the following:

- Moratoriums on general rate cases for longer periods
- Attrition relief mechanisms (ARMs) in the interim to automatically adjust rates or revenue requirement to reflect changing conditions, such as inflation and population growth

### MOST PROMISING REFORM VENUES



Regulatory



Legislative



Utility Proposal

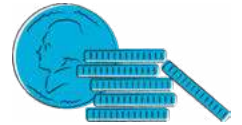
May require legislative action to initiate. In states with precedent for PBR options, could originate from regulatory or utility proposals.

### OBJECTIVES ADDRESSED

Remove incentive to grow sales	◐
Realign profit-making incentives	◑
New revenue and profit opportunities	○
Revise risk and value sharing	◐
Encourage cost containment	●

- Primary objective is cost containment
- Cost containment can affect throughput, rate-base growth, and profit-making incentives, depending on design
- To maintain or pursue other regulatory and policy goals, MRPs should be combined with PIMs (sometimes considered “backstop” protections for reliability or other services) or other tools

## 1b - MULTIYEAR RATE PLANS (MRPS)



### CASE STUDY

#### *Alternative Rate Plans by Central Maine Power*

Central Maine Power (CMP) operated for 18 years (1995–2013) under MRPs, a total of three successive ~5-year plans with no rate cases in between. The Commission initiated these plans, each of which produced a settlement between CMP and other parties.

The plans used price caps with index-based inflators, including macroeconomic price indexes for inflation and input price and productivity trends of northeast US utilities. The legislature allowed marketing flexibility for the utility to discount rates with limited Commission approval.

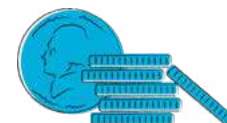
The MRPs were successful in containing costs relative to the period before the plans, with a growth differential of 50 basis points compared to US electric utilities. The utility generally met or exceeded service quality targets but had uneven performance across feeders (note that PIMs were at the system-wide level). In 2013, CMP proposed a fourth-generation plan that would have significantly accelerated its revenue growth to help fund forecasted capex, but the case ended in a settlement that returned the company to a more traditional regulatory system.

**Targeted business area:** All utility expenditures    **Market structure:** Vertically integrated, then restructured    **Ownership structure:** Investor owned

→ For a more complete case study on this topic, see “UK’s RIIO—A Performance-Based Framework for Driving Innovation and Delivering Value.” Available at <http://info.aee.net/navigating-utility-business-model-reform-case-studies>

### DESIGN CHOICES

- Consider **forecasts**, inflation or productivity **indexing**, **rate freezes**, or hybrids of these approaches for ARM design. **Integrated distribution planning** can support ARM agreement.
- Use **shared savings mechanisms** to share surplus/deficit earnings between the utility and ratepayers.
- Use **off-ramp mechanisms** to suspend the plan under prespecified outcomes.
- Consider **efficiency carry-over mechanisms** to allow the utility to keep some portion of performance gains or penalize a utility for poor performance after a plan ends.
- Include **decoupling** to remove the throughput incentive and **performance incentive mechanisms** to tie performance to objectives other than cost containment.



## 1b - MULTIYEAR RATE PLANS (MRPS)

### PREVALENCE ACROSS THE UNITED STATES

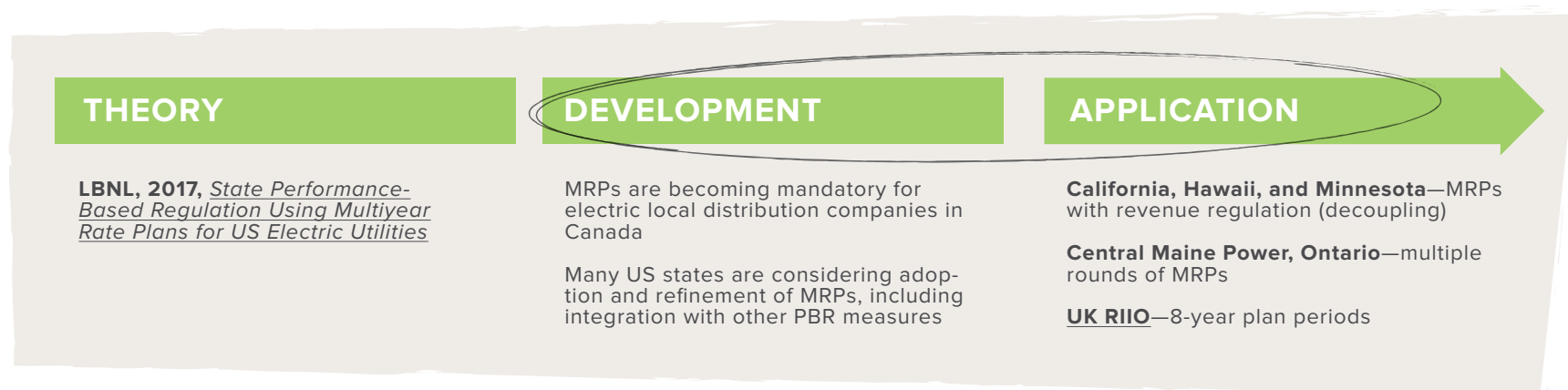
Although annual rate cases remain more common, states that have completed multiple rounds of MRPs show evidence of cost containment. Fifteen US states have adopted electric utility MRPs. Examples with a longer experience of MRPs include Central Maine Power, MidAmerican Energy, and utilities in California and New York. (MRPs are also common in Canada, including Ontario.)

In addition, many utilities have avoided general rate cases for long periods without an explicit MRP structure. This has generally led to higher multifactor productivity growth in the case of states who have gone more than 12 years without filing for a new rate case, suggesting lower distributor costs from longer rate cases.

### QUESTIONS AT THE INNOVATION EDGE

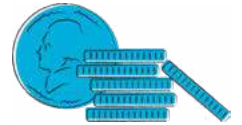
- What is the best way to design attrition relief mechanisms to ensure that cost containment benefits flow to customers?
- How should risk and reward be shared between shareholders and customers when performance deviates from revenue forecasts and ROE targets?
- What criteria should be applied to plan approval, and in what ways will rates be reset between plans?
- How can utility incentives be maintained between plans (e.g., use of PIMs or other tools)?
- How should large, unexpected capital expenditures needed between plans be considered?
- What are different strategies for utilities to bring down operational and programmatic costs while improving the quality of their products or services?

### REFERENCES AND USE CASES





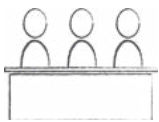
## 1c - SHARED SAVINGS MECHANISMS



### SHARED SAVINGS MECHANISMS CAN INCENTIVIZE UTILITIES TO EXPLORE ALTERNATIVE, MORE COST-EFFECTIVE, SOLUTIONS

Shared savings mechanisms can reward the utility for reducing expenditures from a baseline or projection by allowing it to retain some savings as profit while returning the remainder to ratepayers. Shared savings mechanisms can be combined with PIMs to share benefits of programs and limit potential for windfall profits to utilities. They can also be applied to fuel costs, with proven success in improving fuel efficiency in power plants.

### MOST PROMISING REFORM VENUES



**Regulatory**



**Legislative**



**Utility Proposal**

PUCs are a natural venue for these mechanisms based on affordability focus. Utilities can also be a source of proposals, given their potential for financial upside. Because of complexity and nuanced design decisions for shared savings mechanisms, it may not be appropriate for legislatures to wade into details.

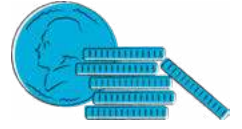
### OBJECTIVES ADDRESSED

Remove incentive to grow sales	◐
Realign profit-making incentives	◐
New revenue and profit opportunities	◑
Revise risk and value sharing	●
Encourage cost containment	◐

- Provide opportunity to earn additional profit through achievement of cost savings to system and customers
- Can provide significant incentive to contain costs, although some risk of utility gaming exists (shared savings can create an incentive to inflate the cost of alternatives against which savings are measured)
- Shared savings approaches in isolation may not provide incentive to reduce sales, especially when they are applied only to capital expenditures and not the throughput incentive
- Mechanism is often a design detail to support other reform options



## 1c - SHARED SAVINGS MECHANISMS



### CASE STUDY

#### Con Edison's NWA incentive design in NYC

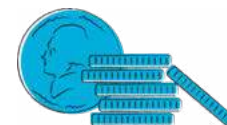
In January 2017, the New York Public Service Commission adopted an incentive for Con Edison (ConEd) to pursue cost-effective non-wires alternatives (NWAs) to traditional infrastructure projects. The incentive is a function of net benefits of the NWA, which includes not only cost savings but also societal benefits such as greenhouse gas reduction. ConEd receives 30% of net benefits, with the other 70% going to customers. Additionally, ConEd shares the risk of cost savings and overruns 50/50. The shared savings incentive is capped at 50% of total net benefits and can be wiped out completely by cost overruns. This mechanism operates in parallel with a capex/opex incentive that allows ConEd to treat NWA costs as 10-year regulatory assets that earn a regulated return.

**Targeted business area:** Distribution capital investment    **Market structure:** Restructured    **Ownership structure:** Investor owned

→ For a more complete case study on this topic, see “Maryland’s Behavioral Demand Response Program—Baltimore Gas and Electric’s Smart Energy Rewards.” Available at <http://info.aee.net/navigating-utility-business-model-reform-case-studies>

### DESIGN CHOICES

- Whether to include unmonetized benefits such as reduced environmental impacts in a **“shared net benefits”** approach.
- Determine how sharing mechanisms can better support the **balance of risk** between utilities and customers from **fuel cost variability**.
- Can stakeholders devise a **clear, transparent methodology for evaluating savings** to avoid adversarial wrangling over the incentive that can drag on long after performance has taken place?
- Decide if shared savings apply to **all expenditures** (totex), **capital expenditures** (capex) only, or some **subset of expenditures** such as non-wires alternatives or demand management programs?
- Whether to make shared savings incentives **“symmetrical,”** such that risks of cost overruns are also borne by utility shareholders.
- Determine how the **baseline against which savings are measured** is proposed and approved; is it made on a case-by-case basis, or can the regulator and stakeholders agree on initial criteria that improves the presumption that the baseline is accurate and avoids risk?
- Whether to include **noncapital alternatives as regulatory assets** that earn a regulated return, thereby reducing capex/opex bias.



## 1c - SHARED SAVINGS MECHANISMS

### PREVALENCE ACROSS THE UNITED STATES

Shared savings and shared net benefits are often the basis for efficiency incentives. According to ACEEE (2015), 13 states use this approach to incent utility energy efficiency performance.

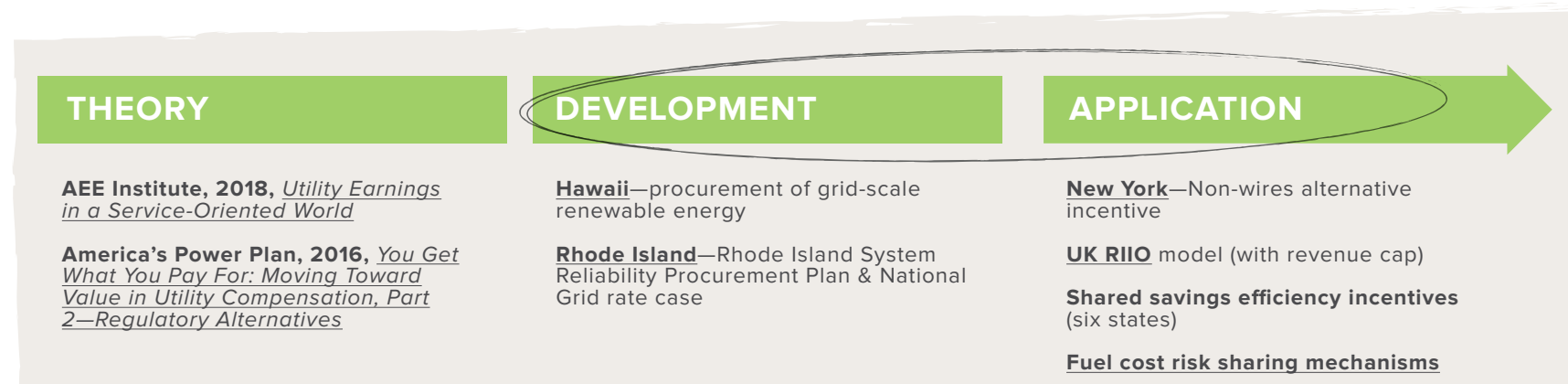
Targeted shared savings approaches for non-wires alternatives are less common but growing; outside of the New York example, Rhode Island has a program set up for National Grid to propose NWAs and share the savings.

Comprehensive shared savings mechanisms for reduced spending on the utility's entire portfolio of capital or operational expenses do not exist today in the United States. The closest thing is the rate case currently under consideration in Rhode Island, where a shared savings mechanism is proposed that applies to the utility's capital expenses.

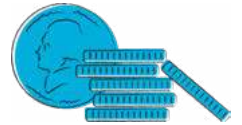
### BEST PRACTICES FOR MEANINGFUL REFORM

- Create clear expectations for evaluating, measuring, and verifying savings (i.e., baseline measurements are important).
- Use transparency and stakeholder engagement to avoid ex post adjustments to baseline and savings estimates (can lead to contention and mistrust, and may undermine the mechanism's effectiveness).
- Guard against unintended excess compensation or penalty by limiting upside and downside, particularly when the mechanism is newly adopted.
- Limit utility opportunities for gaming by creating transparency into baseline and savings calculations.
- Build in periodic review of the mechanism, allowing adaptation to unintended consequences or bad information.
- Create consistent, clear expectations for utility management that promised benefits will not be revoked.

### REFERENCES AND USE CASES



## 1d - PERFORMANCE INCENTIVE MECHANISMS



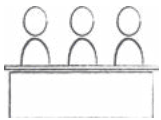
### PERFORMANCE INCENTIVES MOTIVATE IMPROVEMENT IN SPECIFIC PERFORMANCE AREAS OR PROGRAMS

Performance incentive mechanisms (PIMs) create a financial incentive for a utility to achieve performance outcomes and targets consistent with customer and public policy interests. Objectives should be determined according to state energy policy goals, ratepayer interests, and desired utility functions. Well-designed PIMs reward utilities for exemplary performance or penalize underperformance, rather than rewarding business-as-usual outcomes.

### OBJECTIVES ADDRESSED

Remove incentive to grow sales	
Realign profit-making incentives	
New revenue and profit opportunities	
Revise risk and value sharing	
Encourage cost containment	

### MOST PROMISING REFORM VENUES



Regulatory



Legislative



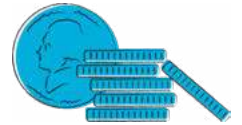
Utility Proposal

Regulatory proceedings are commonly the venue for PIM development. PIM-focused proceedings may be initiated by regulators, or they can be launched in response to utility proposals or legislative mandates.

- PIMs are meant to shift financial incentives to investments that achieve specific power sector goals
- PIMs themselves usually do not remove the incentive to grow sales; however, they can complement decoupling efforts
- If utilities achieve set targets, PIMs can create new profit opportunities
- The choice and design of PIMs will impact the extent of risk and value sharing, while cost containment can be addressed by certain PIMs



## 1d - PERFORMANCE INCENTIVE MECHANISMS



### CASE STUDY

#### ComEd and Ameren's Performance Incentive Mechanism in Illinois

In 2016, the Illinois Legislature passed the Future Energy Jobs Act (FEJA, SB 2814), which created new energy efficiency targets for ComEd and Ameren and a symmetric incentive mechanism for energy efficiency performance.

The performance incentive mechanism is based on success in achieving “applicable annual incremental goals,” the difference between the cumulative persisting goal for a given year and the previous year. This structure requires the utilities to achieve progress toward the goal and address any savings “die-off” from measures reaching the end of their useful life.

The thresholds that trigger incentives are slightly different for the two utilities, but both provide a full rate of return for meeting a specified goal or a portion of a goal, with 8 basis point penalties or bonuses for every 1% shortfall or achievement relative to that goal. These cap at 125% of the goal, or 200 basis points, regardless of spending or cost-effectiveness constraints. The utilities also have the option to expense, rather than rate base, efficiency spending if preferred.

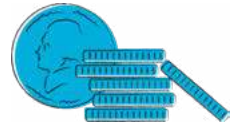
**Targeted business area:** Energy efficiency programs    **Market structure:** Restructured    **Ownership structure:** Investor owned

→ For a more complete case study on this topic, see “Oklahoma’s Energy Efficiency Incentives—Shared Savings-Based Performance Incentive Mechanisms” Available at <http://info.aee.net/navigating-utility-business-model-reform-case-studies>

### DESIGN CHOICES

- Decide how PIMs can deliver **prioritized outcomes** instead of program- or technology-specific improvements.
- Determine **targets** and **metrics** using historical performance, statistical benchmarking, or utility-specific studies.
- Design PIMs so that performance can be **directly and consistently measured**. Consider what information is available or can be made available to measure performance.
- Decide which size of incentive and time frame should be applied to **affect utility decision-making**.
- Monitor incentives to ensure they are **not sending perverse signals**.
- Choose PIMs that are **flexible** enough to evolve with experience, but which still **deliver expected earnings**.
- In designing incentive mechanisms, consider the **symmetry** of incentives and the use of **deadbands, ceilings, and floors**.

## 1d - PERFORMANCE INCENTIVE MECHANISMS



### PREVALENCE ACROSS THE UNITED STATES

Performance incentives have been applied in electric utility regulation for over 25 years. The most common incentive mechanism has been for energy efficiency. At least 26 states have used performance incentives to encourage energy efficiency investments. As priorities for utility investments continue to change, more states are opening dockets looking at PIMs for reliability, peak demand reduction, carbon reduction, beneficial electrification, and targeted DER deployment.

### QUESTIONS AT THE INNOVATION EDGE

- How much of utility earnings should be subject to performance versus traditional cost-of-service ratemaking?
- How can regulators ensure that PIM design impacts utility behavior and decision-making as intended?
- Should performance be measured against metrics under utility control within approved programs (e.g., demand response enrollment) or broader outcomes that the utility can influence (e.g., measured peak load)?
- What changes to utility functions are needed to achieve key goals under different jurisdictions' market structures?
- How to design comprehensive and complementary programs, products, and services that meet policy objectives and provide appropriate utility revenues and profits?

### REFERENCES AND USE CASES





## 2a - CHANGES TO TREATMENT OF CAPEX/OPEX EXPENDITURES

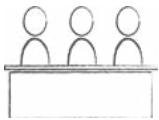
### NEW POSSIBILITIES TO MEET SYSTEM NEEDS WITH SERVICES INSTEAD OF CAPITAL EXPENDITURES SUGGEST A NEED TO RECONSIDER HOW SOME EXPENDITURES ARE TREATED IN RATEMAKING

Changes to treatment of capital expenditures (capex) and operational expenditures (opex) seek to remove the capital bias in utility decision-making created by cost-of-service regulation (the “Averch–Johnson effect”), which provides regulated returns on capital investments but not operational spending. These changes are intended to make utilities indifferent between capital or operational solutions.

### OBJECTIVES ADDRESSED

Remove incentive to grow sales	
Realign profit-making incentives	
New revenue and profit opportunities	
Revise risk and value sharing	
Encourage cost containment	

### MOST PROMISING REFORM VENUES



Regulatory



Legislative



Utility Proposal

In some states, regulatory agencies have the authority to change the rules around treatment of expenditures; legislation may be necessary in others.

- Creating returns through opex efficiency redirects utility focus on capex and can create major new profit opportunities
- Changes to expense treatment may not on their own address the underlying incentive to grow sales and revenue and increase spending
- Opex may yield only commensurate returns with capex if total spending decreases, creating a major cost-containment incentive





## 2a - CHANGES TO TREATMENT OF CAPEX/OPEX EXPENDITURES



### CASE STUDY

#### *Treating Cloud Computing Services as Capital Expenditures (Illinois)*

In May 2018, the Illinois Commerce Commission approved a staff proposal to allow investor-owned utilities to treat service contracts for cloud computing services as though they were utility-owned IT infrastructure. Under the order, the utilities may place the upfront costs of the service contracts into the rate base capital asset account. The cost is then amortized over the lifetime of the service contract, similar to a capital asset that depreciates over time. Alternatively, the utility could pay on a periodic basis, though as the contract end date approaches, later payments would necessarily be amortized at an accelerated pace.

Under this structure, the utility receives a regulated rate of return on the cost of cloud computing. Under the traditional cost-of-service model, utilities were punished for adopting cloud computing, because they could earn shareholders greater returns by investing in their own information technology services and hardware. Under the new structure, the utility sees the two as equal and thus has a greater incentive to pursue cost-effective cloud computing services that are cheaper and more scalable, flexible, and secure.

**Targeted business area:** Opex alternatives to capex    **Market structure:** Restructured    **Ownership structure:** Investor owned

→ For a more complete case study on this topic, see “Regulatory Accounting of Cloud Computing—Software as a Service (SAAS) in New York and Illinois.” Available at <http://info.aee.net/navigating-utility-business-model-reform-case-studies>

### DESIGN CHOICES

- Whether to adopt “**totex**” accounting to treat capex and opex on an equal footing, although conflicts may arise with US accounting standards, tax policies, and investor assurances.
- If some portion of opex should be treated as a **regulatory asset**, are there limitations on this treatment?
- Does a change to treatment of opex as capex depend on a **demonstration of cost savings**, or at least the creation of net benefits or meeting a policy goal such as market transformation? If so, what is the utility’s burden of proof it must meet to receive this treatment?
- If opex treatment as capex results in lower overall returns for utility shareholders, can this change be accompanied by other changes such as a **modified clawback mechanism** or a **shared savings mechanism**? What share of these savings is returned to customers, and how is that accounted for?
- To allow for utilities to make choices between capex and opex, a revenue requirement has to be in place that has already determined the utility’s predicted capex/opex split. If the utility finds material efficiencies that rely more on opex and has a modified clawback mechanism in place, **how long can utility shareholders benefit** from those efficiencies until a new revenue requirement is set?





## 2a - CHANGES TO TREATMENT OF CAPEX/OPEX EXPENDITURES

### PREVALENCE ACROSS THE UNITED STATES

Changing the treatment of capex and opex is not yet common. Illinois is one leader in this approach; in addition to treating cloud-based services as regulatory assets, Illinois has allowed utilities to rate base demand-side management expenses.

Other experiments are underway. California is piloting incentives to reward utilities for using distributed energy resources to defer infrastructure.

### QUESTIONS AT THE INNOVATION EDGE

- Should rate-based rate of return be granted for utility investments in software-as-a-service (SaaS) and other third-party provided solutions, such as non-wires alternatives?
- How can criteria be normalized to decide between capex and opex to choose on the basis of the most economically efficient and socially desirable outcomes?
- How can cost reduction be incentivized, which may result in lower returns under “equal treatment” of capex/opex?
- How to obtain accurate information about utility projected spending and revenue, given that utilities can change spending by allocating costs between opex and capex?

### REFERENCES AND USE CASES



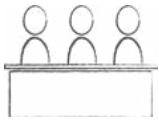
## 2b - NEW PROCUREMENT PRACTICES



AS TECHNOLOGY DEVELOPMENTS DRIVE DOWN THE COSTS OF RENEWABLES AND DERS, UTILITIES HAVE AN EXPANDING SET OF OPTIONS TO MEET GENERATION AND GRID INFRASTRUCTURE NEEDS

Utilities can use new technology- and ownership-neutral procurement methods to expand utility resource procurement approaches to ensure the most cost-effective combination of supply- and demand-side resources are used to meet generation and grid infrastructure needs.

### MOST PROMISING REFORM VENUES



Regulatory



Legislative



Utility Proposal

Utilities can implement new procurement practices on their own. Alternatively, regulators can require utilities to adopt specific procurement methods and criteria.

### OBJECTIVES ADDRESSED

Remove incentive to grow sales	
Realign profit-making incentives	
New revenue and profit opportunities	
Revise risk and value sharing	
Encourage cost containment	

- New procurement practices can impact how utilities make investment decisions and how they profit from those decisions, but new procurement practices do not directly impact sales.
- Depending on how contracts are structured, increased use of third-party services can impact a utility's ROE and potentially redistribute utility risk.
- By requiring utilities to consider alternative resources that could potentially be more cost-effective, new procurement practices can encourage utility cost containment.





## 2b - NEW PROCUREMENT PRACTICES



### CASE STUDY

#### *Rhode Island System Reliability Procurement Standards*

In 2006, Rhode Island adopted a Least-Cost Procurement law that required state utility providers to identify and procure cost-effective distributed resources as alternative solutions to traditional supply and infrastructure options. In response, the State’s PUC adopted System Reliability Procurement (SRP) Standards in 2008 (revised in 2011 and 2014). These SRP Standards require National Grid to annually submit an SRP Report that includes, among other information, a summary of where non-wire alternatives (NWAs) were considered, identification of projects where NWAs were selected as a preferred solution, and an implementation and funding plan for selected NWA projects.

The PUC approved the first fully funded NWA proposal, the DemandLink pilot, included in National Grid’s 2012 SRP Report. The pilot initially used energy efficiency and demand response strategies focused on reducing air conditioning and water heating load to defer construction of an additional feeder at the Tiverton Substation. In 2017, National Grid began to refocus its approach on targeted demand-side management efforts to market-based solutions procured through a request for proposal (RFP) process. National Grid completed the RFP process in early 2017, resulting in a battery storage project winning the contract. The vendor will site, own, and operate the energy storage asset and will enter into a services contract to provide the required load reduction to National Grid during the summers of 2018 through 2021.

Additionally, National Grid has proposed a System Reliability Procurement incentive mechanism consisting of action-based and savings-based incentives in its 2018 SRP Report. The savings-based incentives split the net benefits associated with projects, with 80% going back to customers and 20% going to National Grid.

**Targeted business area:** System reliability    **Market structure:** Restructured    **Ownership structure:** Investor owned

→ For a more complete case study on this topic, see “The Brooklyn Queens Demand Management (BQDM) Program—Employing Innovative Demand Reduction Solutions.”

Available at <http://info.aee.net/navigating-utility-business-model-reform-case-studies>

### DESIGN CHOICES

- **Competitive requests for offers (RFOs) and RFPs** can be designed to solicit traditional and nontraditional bids for grid resources and services.
- **Auctions** offer another alternative to compare bids from a diverse set of options, as well as provide a mechanism to procure **least-cost, best-fit** solutions.
- Decide how to use **financial incentives** to make the utility indifferent between capital and noncapital procurement.
- Utilities can enter into **third-party contracts** with technology providers, developers, or DER aggregators. Contract structures will vary depending on whether the utility or third party owns and operates assets.
- **Pilots** can be helpful to test **market response, technology readiness, and program viability** to ensure broader rollouts are effective.
- **Engaging with stakeholders** throughout the procurement process can support information sharing, collaboration, and consensus building.
- Utilities can consider combining competitive solicitation of resources with **customer programs** and **pricing mechanisms** to cost-effectively manage grid needs.



## 2b - NEW PROCUREMENT PRACTICES

### PREVALENCE ACROSS THE UNITED STATES

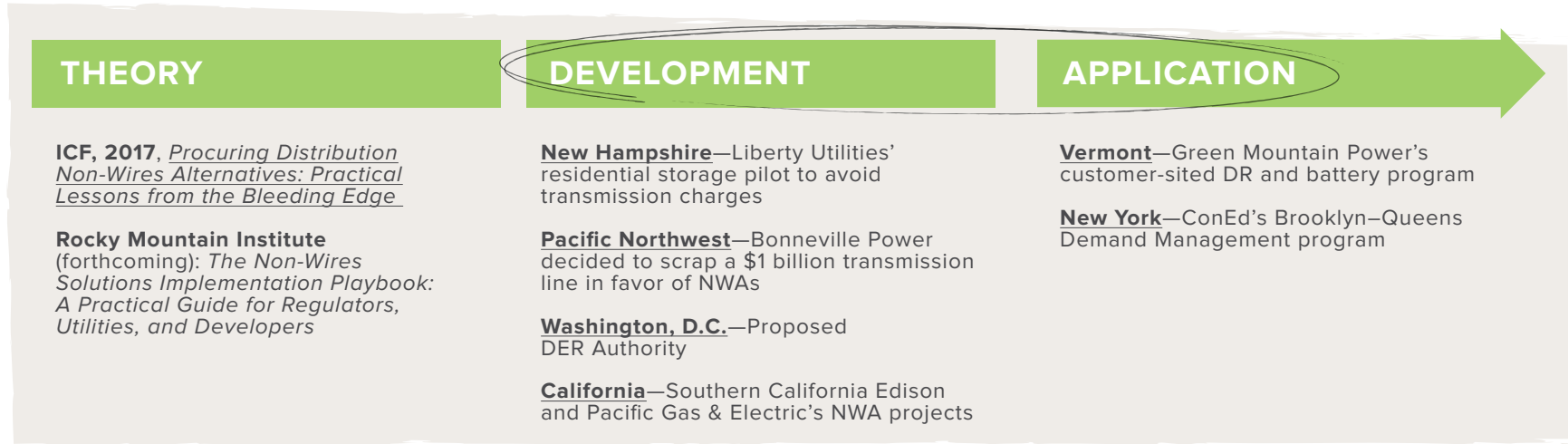
Utilities in many states are exploring new procurement approaches. For example, utilities in Arizona, Connecticut, Illinois, Maine, Massachusetts, North Carolina, New Hampshire, Rhode Island, Texas, Vermont, New York, California, and Washington, D.C., are all exploring ways to procure alternative resources, such as energy efficiency, demand response, and behind-the-meter battery storage, instead of pursuing traditional infrastructure upgrades to meet system needs.

Utilities also are using new procurement methods for utility-scale generation. For example, Colorado’s 2016 all-source RFP solicited both fossil fuel and renewable bids. The RFP resulted in renewable developers proposing projects with some of the lowest energy prices in the United States.

### REFERENCES AND USE CASES

### BEST PRACTICES FOR MEANINGFUL REFORM

- To inform the procurement process, utilities should go through an integrated planning process that includes advanced forecasting and system modeling, hosting capacity analysis, and public disclosure of grid needs and locational values.
- Shared savings or other incentive mechanisms should be in place to make new procurement practices effective.
- Solicitations should be transparent, technology agnostic, and targeted for a defined set of grid needs.
- Clarify screening and evaluation criteria to enable opportunity identification and assessment.
- Locational values should be integrated into the assessment of bids’ cost-effectiveness; temporal needs should also be considered in the evaluation of bids.
- Service contracts should be long enough so that they garner sufficient interest from the market, but not too long that utilities are locked into prices and terms that become outdated.
- Processes should include well-designed marketing and engagement plans to ensure they attract the needed number of participants.





### 3 - RETIREMENT OF UNECONOMIC ASSETS

THE GROWING NUMBER OF EARLY PLANT RETIREMENTS IS FORCING UTILITIES AND REGULATORS TO DETERMINE HOW TO MANAGE THESE ASSETS ONCE THEY ARE NO LONGER DEEMED “USED AND USEFUL”

The policy and market pressures accelerating the transition to clean energy are simultaneously leaving utilities with assets that are no longer competitive in the current energy system. Although cheap renewables represent attractive investment opportunities, utilities need new financial tools to retire existing assets, while remaining financially stable and avoiding rate shocks to customers. Securitization and accelerated depreciation are two of the many mechanisms\* utilities are using to manage the transition away from coal and other resources. Although these mechanisms lie within the traditional cost-of-service regulatory model, they represent innovative approaches to how utilities can shift their investments to be more aligned with clean energy goals and public interest.

\* For a review of additional mechanisms, see “Managing the Coal Capital Transition” (RMI 2018).





### 3a - SECURITIZATION FOR UNECONOMIC ASSETS

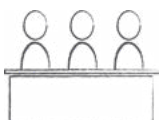
#### UTILITIES CAN USE SECURITIZATION TO FREE UP THE CAPITAL TIED TO POORLY PERFORMING ASSETS AND REINVEST IN CLEAN ENERGY

Utilities can use securitization as a financial tool to refinance early retired or uneconomic generating plants (e.g., coal). Ratepayer-backed bonds were initially issued for the recovery of stranded costs in restructured states, but have been used for a variety of purposes over the years. By pooling revenues from an adjustable ratepayer charge, sold to the public market as a debt security or bond equal to the retired plant's undepreciated capital balance, proceeds from bond sales can be invested in clean energy projects that still earn a return. Ratepayers also save money since the bonds require lower interest payments than traditionally owned assets.

#### OBJECTIVES ADDRESSED

Remove incentive to grow sales	○
Realign profit-making incentives	◐
New revenue and profit opportunities	◐
Revise risk and value sharing	◐
Encourage cost containment	◐

#### MOST PROMISING REFORM VENUES



Regulatory



Legislative



Utility Proposal

Ratepayer-backed bond securitization requires regulatory approval and could require legislation in some cases.

- Securitization mitigates the incentive for utilities to keep old assets in their rate base.
- Securitization allows utilities to refinance these uneconomic assets and make new investments better aligned with public policy objectives.
- Securitization allows utilities to shift their investments from higher- to lower-risk assets. The capital freed up from this transition can generate new long-term value for ratepayers, shareholders, and utility management (especially when paired with tax incentives).



## 3a - SECURITIZATION FOR UNECONOMIC ASSETS



### CASE STUDY

#### Easing Michigan's Transition Away From Coal

The Michigan Public Service Commission Act of 1939 approved the use of securitized bonds by the state's public utilities. Over the last 75 years, the state's utilities have used ratepayer-backed bonds for a variety of reasons, including paying for environmental improvements to generating plants.

In 2013, the Michigan Public Service Commission (MPSC) approved a Consumer Energy proposal for a \$389.6 million securitization bond to refinance the debt resulting from the closure of the B.C. Cobb, J.R. Whiting, and J.C. Weadock coal power plants. In addition to covering the plants' book value, the MPSC also allowed the Consumer Energy bond to cover the costs associated with issuance of the bond and debt retirement costs, but rejected costs associated with the demolition of the three aging coal-fired power plants. Commissioners were split over the decision due to the impact the B.C. Cobb plant closure could have on the city and county of Muskegon, as it was the county's largest taxpayer and an employer of 115 workers.

The MPSC order set the term of the bonds to be up to a maximum of 15 years. The order also approved a ratepayer charge for Consumer Energy's electric customers to cover the bond payments, equal to a fraction of a cent per kilowatt hour. According to an April 2018 report issued by Consumer Energy, customer savings began in the August 2014 billing month.

**Targeted business area:** Generation    **Market structure:** Restructured    **Ownership structure:** Investor owned

### DESIGN CHOICES

- Determine what should be the **allowable uses** of securitization and the requirements for **utility applications and approval**. Consider date of investment, construction, or commissioning.
- Decide which **utility costs** should be able to be recovered by securitization bonds.
- Design legislative and regulatory directives to dictate **how certain percentages of freed-up capital should be spent** (e.g., investment in clean energy, assistance for communities' transition away from coal). Consider if there an opportunity to combine this new capital with a shared savings mechanism.
- Consider what restrictions regulators should put on **bond terms** (e.g., 15–20 year term length, 3% interest rate).
- **Weigh risks** to the utility, to customers, and to investors/lenders.



### 3b - ACCELERATED DEPRECIATION FOR UNECONOMIC ASSETS

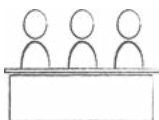
#### ACCELERATED DEPRECIATION ALLOWS UTILITIES TO REMOVE ASSETS FROM THEIR RATE BASE EARLIER THAN PLANNED WHILE MINIMIZING IMPACT TO RATEPAYERS

Regulators can approve an accelerated depreciation schedule for an uneconomic asset and adjust rates accordingly. Accelerated depreciation is used to mitigate potentially large cost impacts on the utility and customers when an asset retires early. This tool is likely to be tailored according to the asset's outstanding value and retirement timeline.

#### OBJECTIVES ADDRESSED

Remove incentive to grow sales	<input type="radio"/>
Realign profit-making incentives	<input type="checkbox"/>
New revenue and profit opportunities	<input type="checkbox"/>
Revise risk and value sharing	<input type="checkbox"/>
Encourage cost containment	<input type="checkbox"/>

#### MOST PROMISING REFORM VENUES



Regulatory



Legislative



Utility Proposal

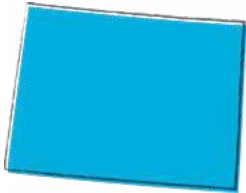
Accelerated depreciation usually requires regulatory approval on a project basis.

- Similar to securitization, accelerated depreciation provides an opportunity for utilities to substitute aging assets in their rate base with less expensive and less risky resources.
- Using incremental customer charges to cover the costs of accelerated depreciation can protect ratepayers from sudden, large rate shocks in the future.





## 3b - ACCELERATED DEPRECIATION FOR UNECONOMIC ASSETS



### CASE STUDY

#### Retiring Colorado's Comanche Generating Units

Xcel Energy is the biggest regulated electric utility in Colorado, owning 72 power plants in the state with an aggregate capacity of 17 GW—40% of which is coal fired. In August 2018, the Colorado PUC approved Xcel's Clean Energy Plan, which included retiring two coal-fired plants by 2025 and replacing them with new wind, solar, and natural gas generation.

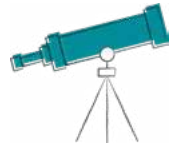
In pursuit of this goal, Xcel plans to shut down two of the three Comanche Generating units. The two units (660 MW) came online in the 1970s and are now planned to retire a decade earlier than scheduled. Xcel will accelerate depreciation of the units and issue a competitive bidding process to source replacement non-coal generation. To account for losing two large assets in its rate base, Xcel will be allowed to own 50% of new renewable energy generation and 75% of gas-fired plants.

The cost of closing the plants early, including the accelerated depreciation and decommissioning, will be about \$200 million. Xcel is delaying cost recovery of the accelerated depreciation from ratepayers by initially setting up a regulatory asset to collect costs. To further mitigate impacts on ratepayers, Xcel's proposal redirects half of the Renewable Energy Standard Adjustment (RESA) funds ratepayers are already paying (a state-mandated 2% rider on utility bills) to recover the accelerated depreciation. Another factor supporting Xcel's proposal is that the costs of new renewable energy generation in Colorado are significantly lower than the cost of the coal power it will be replacing, so customers will be paying less per unit of electricity than they are currently paying for power from the Comanche plants.

**Targeted business area:** Generation    **Market structure:** Vertically integrated    **Ownership structure:** Investor owned

### DESIGN CHOICES

- Accelerated depreciation should be determined on a **project-by-project basis**, considering:
  - The asset's original **retirement schedule** and **outstanding value**
  - **Availability of other funds** to recover costs of accelerated depreciation
  - **Alternative energy sources** to be used as replacement generation
  - Local **workforce** impacts
  - Availability of other state or national energy **incentives**
- If the utility is allowed to recover the incremental costs of accelerated depreciation, decide how to best **mitigate ratepayer impacts**. This could include:
  - Using **securitization** to recover undepreciated capital costs
  - **Repurposing existing utility revenue streams**, such as riders on customer bills
- Consider how complementary policies or procurement strategies can encourage utilities to **replace retired assets with cleaner and less-expensive resources**



## 4a - PLATFORM REVENUES

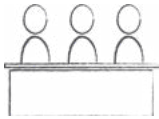
IN THE MOVE TO A MORE DISTRIBUTED FUTURE, UTILITIES HAVE THE OPPORTUNITY TO EARN REVENUES FROM MANAGING DISTRIBUTION SYSTEM OPERATIONS AND HOSTING DER MARKETS

Utilities can serve as neutral platforms by integrating and coordinating third-party resources and energy services on the distribution system. Utilities have the opportunity to earn revenues or returns on costs for providing multidirectional services to DER developers and customers.

### OBJECTIVES ADDRESSED

Remove incentive to grow sales	
Realign profit-making incentives	
New revenue and profit opportunities	
Revise risk and value sharing	
Encourage cost containment	

### MOST PROMISING REFORM VENUES



Regulatory



Legislative

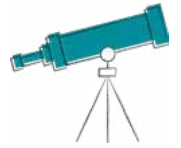


Utility Proposal

PUCs will ultimately need to make the changes necessary for utilities to earn platform fees, but they may be directed by state legislation or by executive order. Utilities also can propose reforms themselves.

- Platform fees provide utilities with new revenue opportunities and can offer new financial incentives. However, the utility may still have traditional profit-making incentives in addition to revenue opportunities from supporting a platform.
- Serving as a platform provider can shift risk usually borne by utilities, and ultimately ratepayers, to third-party providers, who directly offer services and products to customers.





## 4a - PLATFORM REVENUES



### CASE STUDY

#### New York's Platform Revenues

New York is pioneering the utility-as-a-platform model, establishing revenues for utility services. Through the Reforming the Energy Vision (REV) process, regulators seek to evolve utilities to be distributed system platform (DSP) providers focused on integrating DERs to achieve system goals, such as network efficiency and greenhouse gas reductions. In this new role, utilities have the opportunity to derive revenues from market-facing platform activities.

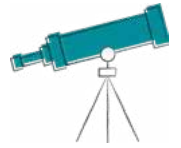
Utilities will be able to earn platform service revenues (PSRs) by selling products and services that facilitate the operation of DSP markets. The intention is that there will be a payment for each market transaction replacing (to some extent) current distribution utility payments. These transactions include services required of the utility as part of market development, or voluntary value-added utility services provided through the DSP function that have an operational nexus with core utility offerings. For example, PSRs could come from data analysis, transaction or platform access fees, and engineering services for microgrids.

New PSRs are expected to emerge as the platform model and DER market in NY evolve. As such, the New York Public Service Commission (NY PSC) established standards for evaluating and approving PSRs.

**Targeted business area:** DER integration and grid operations   **Market structure:** Restructured   **Ownership structure:** Investor owned

### DESIGN CHOICES

- Determine which distribution needs are best addressed by **utility control and coordination** (e.g., system data sharing, DER scheduling and dispatch, matching grid service supply with need)
- Decide for which distribution services and products the **utility should be able to earn revenues** (e.g., network subscriptions or scheduling fees)
- Evaluate different methodologies for **valuing platform services** (e.g., time- and/or location-based)
- Consider different options for ongoing **utility and third-party service provider relationships** (e.g., network subscription)
- Develop a process for coordinating services to meet both **distribution and bulk system needs**
- Consider which **customer protections** should be used when developing rules around third-party interactions with customers



## 4a - PLATFORM REVENUES

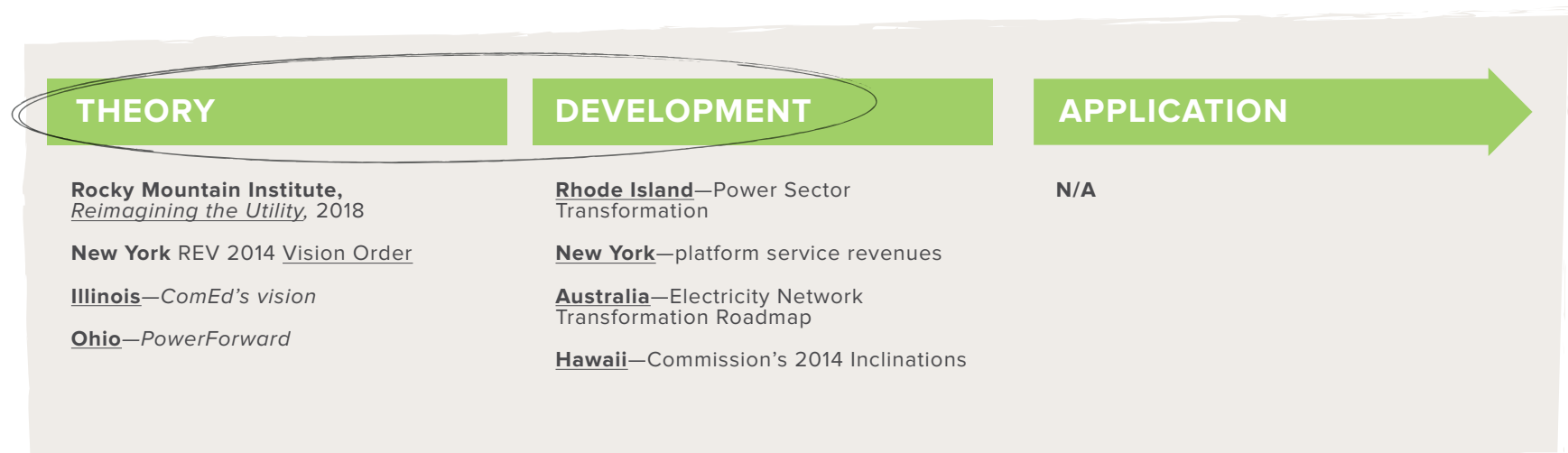
### PREVALENCE ACROSS THE UNITED STATES

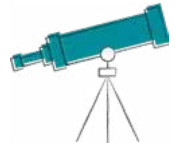
Other states and utilities are beginning to join New York in exploring the platform model. In Illinois, ComEd has put forward a vision to shift to a more platform-based business focused on integrating and coordinating DERs. In Hawaii, HECO's recently approved utility procurement of third-party aggregated demand-response products is an approach to this platform model as well, whereas HECO's new Integrated Grid Planning (IGP) filing proposes an expansion of this mechanism for other resources and grid services. The Hawaii PUC also has articulated hopes for a more platform-oriented utility in the future. Internationally, Australia has ambitious plans for its electricity system to become more platform-focused as higher penetration levels of solar are reached.

### QUESTIONS AT THE INNOVATION EDGE

- What platform-focused services can improve the utility/customer relationship?
- What market structure is compatible with this type of approach?
- What are possible contract structures for delivering new platform services?
- How do you integrate platform fees with a utility's existing rate-based assets? How do you distinguish between recovery of platform costs and other costs?
- How do you build in review to periodically reassess whether or not utility provision of certain platform products and services is in the public interest?
- What types of services are appropriate for the utility to provide (and under what circumstances), and which should be left to the competitive market?

### REFERENCES AND USE CASES





## 4b - NEW UTILITY VALUE-ADDED SERVICES

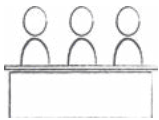
### UTILITIES COULD EARN NEW REVENUES BY PROVIDING CUSTOMERS ENHANCED SERVICE OR DELIVERING EXPANDED SYSTEM CAPABILITIES

Modern technology enables a new generation of enhanced services to customers and intermediaries. Utilities may be best positioned to provide some of these services, delivering additional value to customers and third parties beyond what has been expected of them in their traditional roles. New regulatory rules and incentives for value-added services can ensure that utilities are supporting innovation and adequately meeting customer needs.

### OBJECTIVES ADDRESSED

Remove incentive to grow sales	
Realign profit-making incentives	
New revenue and profit opportunities	
Revise risk and value sharing	
Encourage cost containment	

### MOST PROMISING REFORM VENUES



Regulatory



Legislative

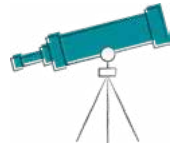


Utility Proposal

In many cases, new utility value-added services will need regulatory and potential legislative approval. Value-added services may also be proposed by the utility itself.

- New value-added services can provide utilities with alternative revenue and profit opportunities but provide no incentives to utilities to contain costs.
- Depending on the treatment of utility costs for providing these services, value-added services can shift profit-making incentives and revise risk and value sharing.





## 4b - NEW UTILITY VALUE-ADDED SERVICES



### CASE STUDY

#### Green Mountain Power's Suite of Customer Offerings

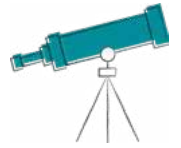
Like many utilities today, Green Mountain Power (GMP) forecasts declining load and sales over the next 10 years, concurrent with a growing need for capital investments to modernize an aging grid. GMP also needs to meet ambitious clean energy and electrification mandates. To meet this diverse set of objectives, GMP has become the first utility in the world to be a certified B Corporation. GMP also has an “alternative regulation plan” that incentivizes the use of “innovative pilots” necessary to satisfy part of the state’s Renewable Energy Standard that requires Vermont electric distribution utilities to “deliver customer-facing transformative energy projects that decrease fossil-fuel consumption and greenhouse-gas emissions.” To date, GMP has designed an expanding portfolio of customer-facing products and value-added services, including the following:

- Tesla Powerwall: GMP offers residential customers Tesla Powerwall batteries paired with a bidirectional inverter for \$15/month for 10 years. In exchange, all participating customers agree to allow GMP to access their Powerwall to control the battery during peak hours.
- EV charging: GMP partners with EVgo to build EV infrastructure in residential, workplace, and public spaces. GMP also offers an unlimited off-peak charging plan to residential customers for a monthly fee of \$29.99.

**Targeted business area:** DERs, demand management, customer products and services    **Market structure:** Vertically integrated    **Ownership structure:** Investor owned

### DESIGN CHOICES

- Define **basic** and **value-added services**. Value-added services should be **optional, enhanced services** beyond traditional distribution and electricity supply services.
- Design criteria for determining which value-added services would best be provided by a utility, a third party, or both. Consider the extent of **potential competition** and **willingness to serve market segments**.
  - For services provided by the utility, consider **how to treat related costs** in light of these services not benefitting the whole customer base.
  - For services provided by third parties, decide how utilities can create **enabling platforms, procurement, or financing mechanisms**.
  - For services provided by both, develop **rules** and **regulations** to ensure fair competition.
- Decide which **regulatory or policy safeguards** are needed to balance innovation and consumer protection.



## 4b - NEW UTILITY VALUE-ADDED SERVICES

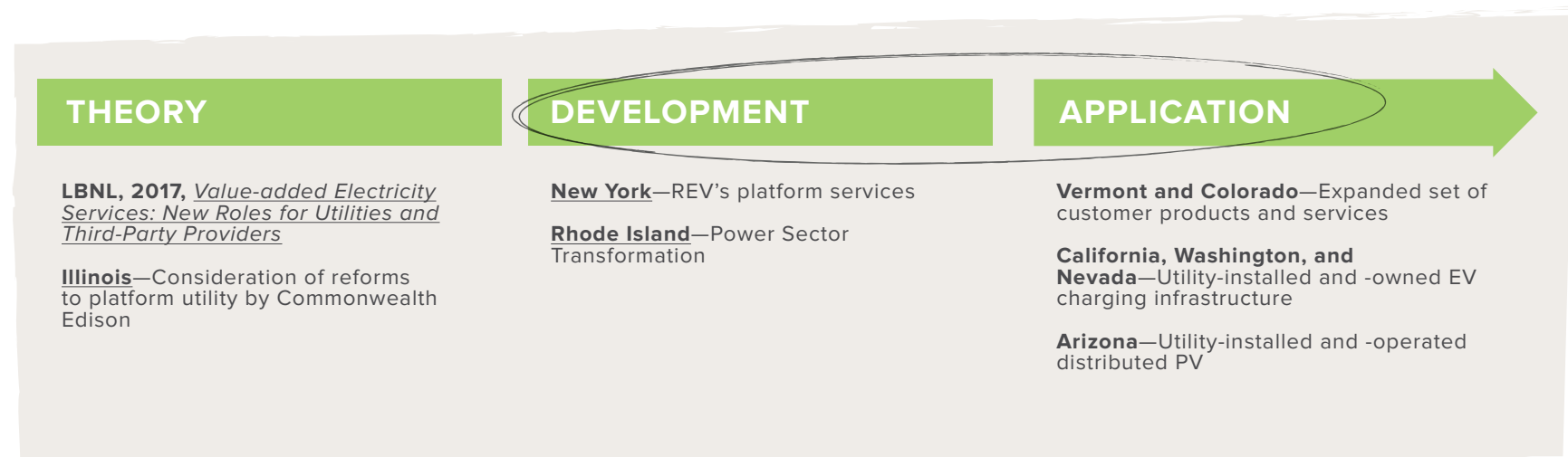
### PREVALENCE ACROSS THE UNITED STATES

Many states are exploring how utilities can provide or support value-added services to customers.

- California, Nevada, and Washington allow utilities to build and/or operate EV infrastructure within limits.
- Oregon, Washington, and California allow utility ownership of behind-the-meter energy storage.
- Massachusetts, New York, New Jersey, and Connecticut have all begun to implement utility-led microgrid pilot or demonstration projects.
- Munis and co-ops in Colorado, California, Washington, Florida, Utah, Oregon, and Arizona are exploring utility-sponsored community solar programs.

Additionally, utilities in Illinois, Colorado, Hawaii, Missouri, and Michigan are partnering with technology companies to offer new services to customers.

### REFERENCES AND USE CASES



### QUESTIONS AT THE INNOVATION EDGE

- How can states develop criteria to determine which of a utility’s investments in services and products should be included in the utility’s rate base?
- What is the right approach to evaluating the potential for competition in providing new services? How should the market be segmented?
- Does allowing utility provision of a service unduly advantage the utility at the expense of competitive service providers?
- What are the different options for utility service contracts with customers and third parties? How can benefits be shared?
- How can financial incentives and pricing mechanisms best represent grid and customer value?
- For services provided by utilities, how do regulators ensure that the least-cost option is being deployed?
- How should regulators address complementary rules around third-party data access and sharing?

# 4

## Synthesis

This section provides a discussion of approaches policymakers can take to pursue utility business model reform, considering differences in existing market and regulatory frameworks, as well as a vision for what reform should accomplish.



# SYNTHESIS

This paper presents 10 options for utility reform. However, the question remains of how states or utilities actually proceed with these efforts. The overviews of each reform option include a variety of design considerations, as well as a symbolic rendering of how well each option can achieve five identified objectives. While these provide stakeholders and policymakers with a general indication of which options are best suited to meet their needs, there are other conditions to consider when determining which reforms to pursue and when.

## PRIORITIZING REGULATORY REFORMS

### CONSIDER THE PROBLEM AT HAND

Reforms should be fit for purpose and should match the appropriate scale and ambition of reform that is suitable for the jurisdictional context. Depending on existing regulation and the underlying objectives of reform, different options may be more suitable.

- To lay the groundwork for utility efficiency programs, consider measures that remove the utility's incentive to grow energy sales and encourage cost containment.
- To combat seemingly unnecessary or excessive capital investment proposals, consider measures that realign profit-making incentives or revise risk and value sharing to depend on the performance of these investments.
- To provide a lifeline to a utility whose revenue is staggering due to public policy or market forces, consider measures that provide new utility revenue and profit opportunities that position the utility to succeed in light of changing expectations.
- To promote an optimal portfolio of distributed energy resources like demand response, distributed solar PV, storage, and efficiency, a wide array of reforms may be needed.



## PUTTING THE PIECES TOGETHER

The 10 reform options do not exist in isolation from each other, and in many instances these reforms can build off or be complementary to one another by addressing different limitations of the current regulatory model.

For example:

- By severing the link between energy sales and utility revenues, decoupling provides a foundational element for additional revenue adjustments and is important to do immediately if not already in place. Additional reforms are then needed to incentivize utilities to improve performance and make more efficient grid investment decisions.
- Multiyear rate plans and performance incentive mechanisms commonly work in tandem so that, as utilities look for opportunities to reduce costs, safeguards are in place to protect the quality of utility services, such as reliability and environmental performance.
- Accelerated depreciation and securitization for uneconomic assets provide financial tools to retire stranded assets that impose higher costs on customers than are available from new, low-cost renewables, or which are incompatible with clean energy policy, while offering an acceptable buyout for asset owners.
- “Platform” approaches and revenues from new services rely on regulatory changes that make service-based solutions attractive investment options, such as changing the treatment of operational expenditures in utility ratemaking. At the same time, these new revenues may complement or reduce the need for other economic efficiency incentives like shared savings.

The reform options in this paper also represent varying levels of maturity. For example, revenue decoupling, multiyear rate plans, and shared savings mechanisms are well-tested and widely used. There are dozens of cases from which stakeholders can draw, tailoring their efforts to correct for failures or limitations that other jurisdictions have experienced. There will likely be more comfort among utilities and their shareholders that these changes, if designed well, will not harm, and may even enhance, their business model and advance public policy objectives.

By contrast, newer options such as value-added services, some elements of performance-based regulation, and equalizing capital and operational expenditures, represent more significant deviations from the conventional utility business model. These are promising options to bring the utility into the modern, service-based economy, but can require more exploration and education at the outset. There are fewer examples from which to draw, so it will be critical that experimentation with these approaches is evaluated and refined over time to achieve intended outcomes.

## REFORM OR RESTRUCTURE?

It is important to always bear in mind what fundamental tenets and assumptions underlie the utility structure. Especially for investor-owned utilities, natural monopoly conditions that motivated their original creation have increasingly been called into question. As new service-based opportunities and technology-enabled competition arise, it is fair to ask which services are best served by an incumbent utility, and which can be equally or better served in a competitive marketplace. Utility business model reforms, whether new PIMs or additional revenue streams for new services, should always seek to promote the best service offerings at a reasonable cost. It is appropriate to offer utilities new earning opportunities from performance-based adjustments or entirely new revenue sources, but there also exists a risk that reforms—if not designed well or in a balanced manner—could simply stack new earnings opportunities onto the utility in a manner that only pads profit and insulates utilities from fundamental market changes.

To avoid that outcome, it is helpful to consider how regulatory reforms and new revenue streams impact utility cost structures to ensure utilities are providing services and products that are consistent with their monopoly charter. If and when those diverge from a monopoly business, there should be good reasons for doing so, as well as appropriate protections in place. New business opportunities should be pursued with attention to how the utility’s total costs and revenues compare to those that could be provided by competitive alternatives. In cases where the competitive market can provide higher-value or lower-cost solutions, it may be better to restrict the utility’s role rather than maintain or expand monopoly control using false or outdated assumptions.

## ADAPTIVE REFORM PROCESSES

Adaptiveness should also be a central feature of the learning process needed to effectively transition to new utility business models. This takes two forms—pilots, where possible, and a targeted focus on outcomes through metrics and information gathering. Performance-based regulation provides a robust opportunity to apply both concepts.

To familiarize participants in reform efforts with the idea of compensating the utility based on its performance, the regulator, utility, and stakeholders can codevelop pilots as regulatory sandboxes in which to test ideas. The Brooklyn–Queens Demand Management Project in New York is one good example; there, the utility had opportunities to earn additional profits on the project if it met performance benchmarks related to cost and effectiveness. Three years later, all of the state’s regulated utilities proposed similar but more expansive performance incentive mechanisms in their rate cases, covering their larger investment portfolios.

In order to be adaptive, regulators and stakeholders need a way to evaluate the success of the programs with which they are experimenting. Performance metrics that measure and track utility data for certain outcomes are a key, no-regrets tool to ensure that utility performance is improving after implementing a given regulatory reform. For example, if performance-based regulation was intended to turn utilities into agnostic market makers for clean energy resources, regulators should be able to measure the growth of these resources on both distributed and bulk-system levels.

Similarly, operating a more efficient grid should yield reductions in peak demand or higher load factors, two key metrics for evaluating system efficiency. Reliability and affordability should also improve, rather than suffer, as a result of regulatory reforms. Creating a benchmark for utility performance on these areas, then examining utility performance after a major change to the business model, can determine whether regulations require further refinement.

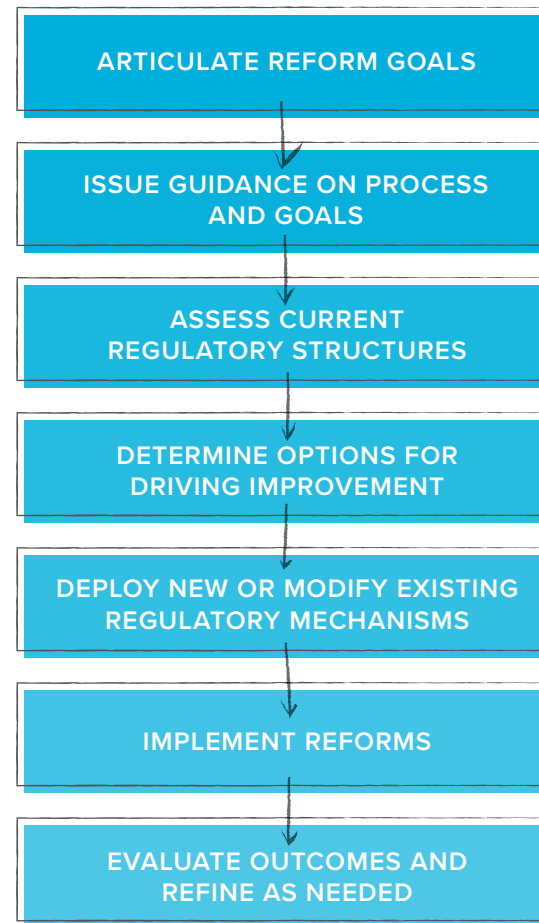
Building adaptation into utility regulation may seem like an oxymoron because utility regulation is one of the most incremental and risk-averse areas of public policy; however, it is essential to meeting the challenge and opportunity presented by new technologies, expanded customer needs, and more ambitious public policy. Utilities will need regulatory frameworks that allow for more risk taking and better enable them to adjust to changing conditions and opportunities.



## TURNING VISION INTO OUTCOMES

Exhibit 8 illustrates a generalized process approach for undertaking effective reform efforts. For reform to be successful in any state, processes should begin with a clear articulation of goals and objectives. In some cases, legislation and executive orders can provide the impetus and political cover for regulatory agencies to initiate reform activities. In other cases, regulators and utilities can take a proactive approach to explore reform options on their own. Whether directives originate from the governor, legislature, regulator, or utility, reform efforts should commence with direction and intent. Advocates and other participants in the regulatory arena can help shape these directives through engaging in constructive dialogue with regulators and other stakeholders on the capabilities of new technologies and regulatory tools.

As reform efforts develop, processes can vary from pure exploration, to exploration with the possibility of implementation, to explicit regulatory action. Prior state activities on reform-related issues, political considerations, and regulatory capacity can all impact which path a state chooses. In any of these venues, advocates and intervenors will play a critical role in driving the process forward. Stakeholders have the opportunity to contribute and shape the various steps of the reform process by participating in technical conferences and working groups, providing written comments, and organizing among themselves to build more effective coalitions.



**EXHIBIT 8:** PROCESS APPROACH TO UNDERTAKE REFORMS

## WHAT REFORM CAN LOOK LIKE

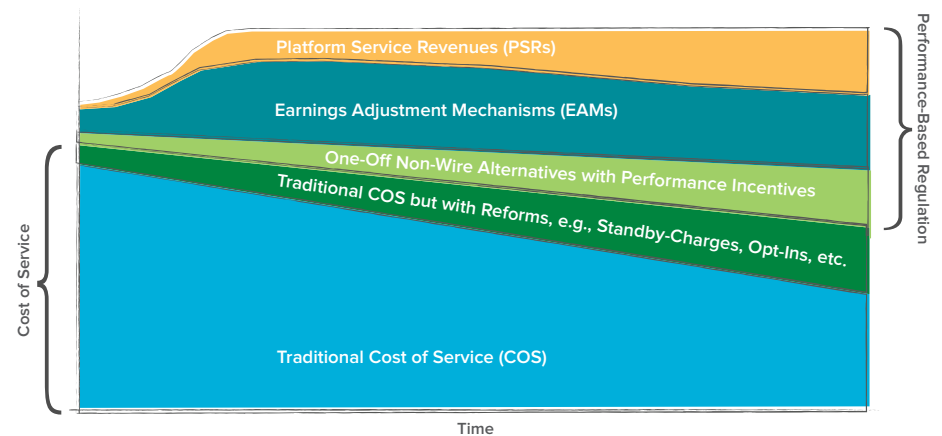
There is no set combination of options that is prescribed for undertaking reform. Each jurisdiction, and its associated stakeholders, will need to determine what approaches are best suited for their circumstances and conduct an open, thoughtful investigation of how the options fit together to reinforce or potentially undermine each other. Yet, emerging experience does provide ideas for how reform can be pursued and ways to combine options, which can be instructive for reformers everywhere. Here, we describe two ongoing efforts that illustrate different stages, approaches, and scales of reform.

### New York's market transformation

New York's Reforming the Energy Vision (REV) initiative includes a series of reforms set to achieve modern energy goals through competitive distribution markets. REV is testing a platform approach to utility reform, wherein utilities are imagined as distributed system platforms (DSPs) that can serve as neutral hosts of expanded product and service opportunities for customers and third parties. A combination of PBR mechanisms and novel utility revenue opportunities are intended to spur innovation, create value for customers, and drive greater efficiency in grid operations and investments.

To support the transition to a platform utility, the New York Public Service Commission invited utilities to propose new revenue sources to supplant traditional cost-of-service ratemaking, including "platform service revenues" derived from fees for hosting the distribution system marketplace. To better align these new revenue streams with the state's policy objectives, the commission has adopted performance-based approaches as a bridge to realign utility incentives toward new utility structures of the future. As Exhibit 9 illustrates, the desire is for the share of utility earnings from market-based earnings and platform service revenues to grow over time in comparison to traditional cost-of-service revenues.

New York's story shows one approach to regulatory reform—the ambitious pursuit of what can be considered a comprehensive regulatory overhaul. REV represents a coordinated approach to implementing complementary regulatory mechanisms that together aim to achieve a new market paradigm. Although there is disagreement over the extent to which reform has been achieved, REV provides one vision for how regulators, utilities, and stakeholders can bypass incremental change to create new regulatory frameworks better fit for the 21st century.



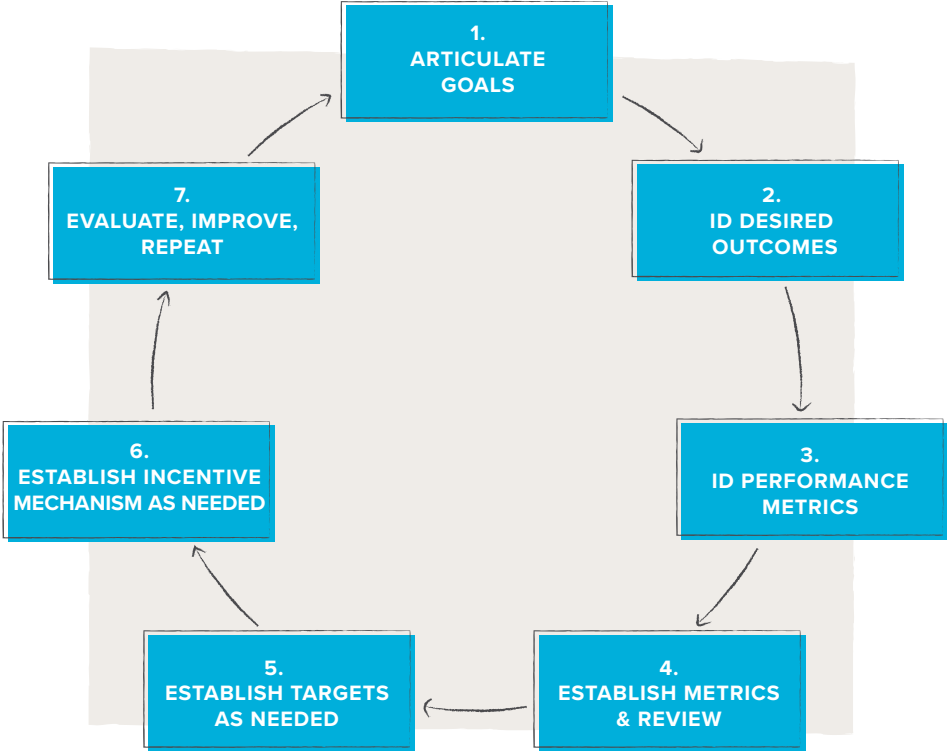
**EXHIBIT 9:** POTENTIAL EVOLUTION OF UTILITY REVENUES UNDER REV (ILLUSTRATIVE)

**Minnesota’s performance-based regulation efforts**

Minnesota has taken a more incremental approach to regulatory reform. In an attempt to move toward performance-based regulation, legislation was initially passed in 2011 to allow the state’s utilities to file multiyear rate plans. Several years later, this legislation was updated to extend the allowable time between rate cases, make changes to the rules around cost recovery, and clarify the PUC’s authority over establishing performance measures and incentives.

Observing the shortcomings of implementing multiyear rate plans alone, the PUC launched a proceeding in 2017 to develop performance metrics for the state’s largest investor-owned utility. To support the intent and objectives of moving toward performance-based regulation, the PUC hopes these new metrics can preserve service quality and better align utility incentives with ratepayer interests. Any financial incentives tied to these metrics will be decided in a second phase of the proceeding. In initial stakeholder meetings and testimony in this docket, stakeholders largely coalesced around an incremental reform process articulated by the Office of the Attorney General.

Parallel to these efforts, stakeholders in Minnesota, including utilities, advocates, academics, and the attorney general’s office, have worked together through the e21 initiative to define possible pathways for utility reform. This has helped improve consensus and stakeholder understanding of different regulatory reform options and their applicability to Minnesota.



**EXHIBIT 10:** SUGGESTED PROCESS FOR PIM DEVELOPMENT (ADAPTED FROM MINNESOTA OFFICE OF THE ATTORNEY GENERAL)

5

**Conclusion**

# CONCLUSION

## REFORMS FIT TO THE PURPOSE

The business model and regulatory reform options described in this report present ways that utilities can meet expanding customer and public policy needs while also providing utilities with earnings opportunities to maintain, or even improve, their financial standing. These reform options exist along more than one spectrum, including:

- Incremental adjustments to the traditional cost-of-service (COS) business model, to more comprehensive reforms
- Familiar and widely adopted reforms, to new ideas and proposals emerging in some jurisdictions
- Updates to regulatory processes and accounting, to new utility products and services

Reformers can determine which options are most applicable and desired for their effort, depending on regional context, the currently existing business model (including reforms already in place), and the level of ambition of the initiative.

## ENCOURAGING FAIR MARKET DEVELOPMENT

While these reforms offer utilities and regulators updated tools to meet a rapidly transforming system, we must also bear in mind the fundamental tenants of the regulated utility system, including presumptions of natural monopoly conditions that are believed to be best served through a chartered monopoly and regulatory compact with regulatory-approved returns. In this context, utility-provided monopoly services are appropriate where a service is necessary for the public good and the competitive market is not able to effectively provide the service.

Business model reform should help the utility adapt to new technologies, demands, and market entrants, while supporting those utility investments

and operations that remain consistent with the regulatory compact. Reforms need not give utilities undue profit opportunities at the expense of other market participants that might provide higher-quality or lower-cost service. Importantly, it may not be that every reform described in this paper should be applied in all cases, particularly if doing so would add up to unreasonably large new earnings potential while cementing utility control of market segments that competitive service providers may be better equipped to serve.

By recognizing and tempering the risks that reforms can introduce to an industry with monopoly characteristics, including incumbency advantages and fair risk and value sharing, utilities can evolve to be a key enabler of a sustainable 21st century electric system.

## MOVING AHEAD

With a growing number of reform efforts underway around the country and across the world, it is clear that utilities, regulators, and other policymakers recognize the need for business model and regulatory change. While there will be plenty of lessons to learn from other states' experiences, no approach to reform will be the same. The nuances of each state will shape how each reform process initiates, proceeds, and is ultimately implemented.

This paper provides a distillation of leading options for reform of the utility business model and associated regulations, but it by no means represents a complete or finished compilation. Utility business model reform is a live and active endeavor that is unfolding in many states and specific venues in parallel. In each venue and with each passing month, countless smart, creative, and motivated people are developing new approaches and refinements to existing approaches that will further clarify the merits and design considerations of these options. By offering this paper for business model reform, we hope that policymakers, regulatory intervenors, and policy influencers can all be more effective in understanding their options and taking these efforts further, faster, together.





# Further Reading

The following sources provide helpful detail and examples that go beyond the information in this report. References are organized according to what sections of the report they most correspond to, with some sources listed in more than one section where they apply to multiple topics.

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