

Lessons from the Stimulus: The Past and Potential Future Impacts of Federal Policy on Utility Rate Structures

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ABSTRACT

Historically, state commissions have presided over the development of utility rate structures, but Congress has occasionally required commissioners to consider new rate designs. Most recently, the 2009 American Recovery and Reinvestment Act included \$3.1 billion for the Department of Energy's State Energy Program. In order for a state to access its share of the funding, the governor had to notify the Secretary of Energy that state regulators would "seek to implement a policy that ensures that utility incentives are aligned with helping their customers use energy more efficiently." While all 50 governors pledged to comply, little research has been published that determines whether this open-ended provision actually impacted electric utility rate structures.

This paper reviews federal attempts (ARRA and PURPA) to influence electric rate design and specifically examines the ways in which states responded to the ARRA request. ARRA's provision had the potential to affect utility business models, but that potential has been largely unrealized. The paper also reflects upon changes occurring in the electricity sector, which are driving considerations of new rate designs, and explores the potential for additional federal policy options to impact utility rate structures.

Introduction

Energy efficiency is widely recognized as the most cost-effective way to meet electricity demand (Molina, 2014). As spending on efficiency programs increases, service providers run into an inherent conflict with the traditional utility business model where rates are structured to reward increased electricity sales and punish efficiency.

Rate structures describe the set of factors (e.g., energy use, transmission, distribution, time of use, etc.) that utilities and their regulators choose to include when calculating how much a given customer pays for its electricity use. Alternative rate structures, e.g., rates that decouple utility revenue from electricity sales and/or provide incentives for meeting efficiency goals, can overcome the barriers to energy efficiency built into traditional regulation. While utilities in some states have adopted these alternatives, in much of the country, the industry still operates in an environment in which efficiency undercuts utility financial performance.

This paper focuses on the ways in which the federal government has impacted and can impact electric utility rate structures, which historically have been under the exclusive jurisdiction of state regulatory commissions. We examine past federal policies designed to spur changes to rate designs in order to understand how federal policy can be most effective in aligning efficiency with utility financial incentives. We conclude by offering thoughts on the ways federal policymakers might influence the alignment of utility incentives with energy efficiency.

Background: Traditional Rate Regulation

State-level regulatory commissions oversee the rate-setting process for investor-owned utilities. Wisconsin's 1907 Public Utility Law has served as the model for most other state-utility laws. The law granted the state utility commission broad administrative authority, including rate-setting powers, and utilities received a monopoly on service in a given territory. "This 'regulatory compact' was a tradeoff for all parties. Utilities were subjected to wide-ranging regulation by the state commission and in return received a grant of a monopoly franchise. Customers gave up the right to choose a supplier for the assurance that government would guarantee a reasonable price" (Pescoe 2011, 215-16).

When setting electricity rates, most state utility commissions share common objectives, which the MIT Energy Initiative describes as:

- operational efficiency, which allows electricity to be delivered at a just and reasonable cost to consumers while also providing reliable and safe performance;
- dynamic efficiency, which encourages utilities to invest in innovation to meet future demands at reasonable costs; and
- consumption efficiency, which forces consumers to pay the incremental cost of their decisions to consume electricity service (MIT 2011).

In addition to these protections, state commissions also universally support providing an opportunity for IOUs to earn a just and reasonable rate of return on the capital investments required to provide service.

Under traditional regulation, regulatory commissions determine the revenue utilities need to cover their costs and provide a return to their investors. The simplest formula for determining this rate requirement is:

$$\text{Revenue requirement} = (\text{rate base investment}) \times (\text{rate of return}) + \text{operating expenses}$$

Source: York 2011, 2

After the regulatory commission sets the revenue requirements, rates are determined by dividing the revenue requirement by the expected sales volume. A few things from this historical structure are prima facie evident. First, utilities have no opportunity to earn a return on "operating expenses," so if efficiency is deemed "OpEx," and traditional generating resources are considered "CapEx," traditional resources will always be preferred by utilities, because they offer an opportunity to earn a return while efficiency does not. Moreover, the historic structure offers a utility only two ways to increase profits after a commission establishes rates: increase the rate base by adding more customers or increase per customer sales (York 2011).

This type of regulation establishes three clear barriers to utilities spending dedicated resources on energy efficiency:

- utilities need a mechanism by which they can recover the costs of providing an efficiency program;
- effective efficiency programs reduce sales, thereby reducing utility revenue and profits; and
- efficiency program spending does not provide an opportunity to earn a return.

There are a variety of ways to overcome these hurdles. All commissions approve some form of cost recovery to ensure that utilities are reimbursed for the cost of providing an efficiency program, though this typically happens either by treating efficiency as OpEx or through a “public benefits charge” wholly separate from rates (though paid on the same bill). The second two hurdles, however, are more pernicious, as they create an environment in which utilities view efficiency as a compliance requirement, rather than a business opportunity or viable option to meet load growth. Decoupling or a “lost revenue adjust mechanism” (LRAM) are the typical solutions to the second hurdle, known as the “throughput incentive,” and “performance incentives” are the favored way to overcome the final barrier.

Federal Policy and Utility Rate Design

The First Attempt: PURPA

Title I of the Public Utility Regulatory Policy Act (PURPA) of 1978 required state commissions to consider new rate structures and implement new ratemaking methods to promote three goals:

- increased energy conservation;
- increased economic efficiency; and
- equitable rates for consumers.

To achieve these goals, PURPA originally required state commissions to consider six ratemaking standards, outlined in Table 1.

By and large, PURPA was a success; in 1985, DOE reported that each standard had been adopted by at least sixty percent of the states (Nowell 1990).¹ The widespread implementation of PURPA’s ratemaking standards was a seminal moment in the application of federalism to electricity rate-setting. PURPA demonstrated that Congress could effectively influence state ratemaking practices without forcing them to adopt any particular standard. At the same time, PURPA did require that all state commissions create a transparent and open ratemaking process: “There had to be notice, hearing, consideration, and determination and, if it was decided not to adopt a standard, a written statement as to why the standard was not appropriate” (Miller 1983, 78).

Table 1. DOE-Reported PURPA adoption rates *Source: Nowell 1990*

Ratemaking standard	Percent adoption
Cost-of-service rates	85%
Declining block rates	83%
Time of day rates	64%
Seasonal rates	73%
Interruptible rates	64%
Load management techniques	77%

¹ Some question the accuracy of DOE’s adoption metrics because states often adopted new rate standards per the letter of PURPA, but did not adopt, for example, marginal cost-of-service rates. Such structures did not deliver the efficiency PURPA hoped to achieve. Even still, PURPA can be considered a success given the number of states that did adopt rates that meet the letter and spirit of PURPA (Nowell 1990).

At the onset of PURPA, it was unclear how successful federal legislation could be at influencing rate structures, as the ratemaking process had historically been decided exclusively by state commissions (Joskow 1979). Some states were skeptical that Congress had the authority to require them to follow particular procedures in their ratemaking, and Mississippi appealed the law to the Supreme Court. The Court determined that not only was the “cooperative federalism” of PURPA—in which states were required to follow federal procedures and “consider” national standards—legal, but that Congress had the ability to specifically dictate state rate regulation:

The Federal Government may displace state regulation even though this serves to ‘curtail or prohibit the States’ prerogatives to make legislative choices respecting subjects the States may consider important....[PURPA] establishes a program of cooperative federalism that allows the States, within limits established by federal minimum standards, to enact and administer their own regulatory programs, structured to meet their own particular needs (FERC v Mississippi 1982).

On the specific example of rate design, Congress has thus far decided not to impose its will directly on state commissions, out of respect for state sovereignty and in recognition of the differences between the states in the design and constitution of their electricity system. Three times since PURPA was originally enacted, Congress has required state commissions to consider additional standards to meet PURPA’s original goals: in the Energy Policy Acts of 1992 and 2005, and the Energy Independence and Security Act of 2007. In each case, Congress continued not to interfere with state commissions’ autonomy in the decision over whether to adopt a standard, but mandated that each commission consider specific standards. While these requirements undoubtedly impacted some states more than others, the mere requirement that commissions open dockets to consider progressive ratemaking itself ensures a basic amount of education must take place both by the commissions and their regulated utilities about alternative rate structures.

A Swing and a Miss: The Stimulus

The 2009 American Recovery and Reinvestment Act (ARRA, also known as “the stimulus”) allocated \$3.1 billion in funding for the State Energy Program (SEP). States could use these funds, administered by DOE, for four purposes:

- increasing energy efficiency for consumers, businesses, and government;
- reducing reliance on imported energy;
- improving the reliability of electricity and other energy services; and
- reducing the environmental impacts of energy production and use (DOE 2009).

However, states would only receive their portion of the funding:

If the governor of the recipient State notifies the Secretary of Energy in writing that the governor has obtained necessary assurances that each of the following will occur: (1) The applicable State regulatory authority will seek to implement, in appropriate proceedings for each electric and gas utility, with respect to which the State regulatory authority has ratemaking authority, a general policy that ensures that utility financial incentives are

aligned with helping their customers use energy more efficiently and that provide timely cost recovery and a timely earnings opportunity for utilities associated with cost-effective measurable and verifiable efficiency savings, in a way that sustains or enhances utility customers' incentives to use energy more efficiently (ARRA 2009).

Unlike PURPA's requirement that states must "consider" adopting national standards, section 410(1) of the ARRA required governors to "obtain necessary assurances" from their commissioners. The ambiguity of the condition – what constitutes "seeking to implement"? – made this section of the ARRA impossible to enforce and ultimately difficult to monitor. Neither DOE nor, to our knowledge, any other party, has yet documented the degree to which states did or did not meet the letter and the spirit of the law.

Most governors did not question the language of section 410(1) and swiftly notified the Secretary of Energy of their compliance and applied for their share of the funding. Only Alaskan Governor Sarah Palin refused these funds because of the compliance uncertainties, even after DOE's Chief Operating Officer, Steven Chalk, wrote the governor's staff to clarify that "it would be sufficient to simply 'promote'" the topics identified in section 410 (Farley 2009). Governor Palin resigned in July 2009, however, and the following month, her replacement, Governor Parnell, sent the necessary letter. By the end of the year all fifty state governors had submitted their assurance letters to then Secretary Chu.

The letters submitted from the governors to Secretary Chu vary in length and detail on the states' plans for compliance with the law. All of the letters, no matter the lack of content or accuracy of information, were accepted and all relevant funding disposed to the states.

Twenty-three governors submitted the same four-paragraph template that simply states, "I have requested our public utility commission to consider additional actions to promote energy efficiency, consistent with the federal statutory language contained in H.R. 1" (Rounds 2009). A number of other governors' offices exaggerated or wrote misinformed descriptions of what their states were already doing on efficiency. Governor Huntsman of Utah did not mention alignment of financial incentives, as requested in the ARRA, and simply wrote, "Utah's regulated electricity and natural gas utilities already have Demand Side Management programs, established through the Utah Public Service Commission, which meet the requirements of Section 410(1) of ARRA" (Huntsman 2009). Although Demand Side Management (DSM) programs are an excellent way to accrue long-term energy savings, particularly when paired with utility performance incentives, Utah has never aligned electric utility incentives with efficiency. Simply having DSM programs does not mean that utilities will have a financial incentive to invest in efficiency. Gov. Huntsman was not alone in misrepresenting his state's efforts. In his letter to Sec. Chu, Gov. Parnell writes, "Alaska is a national leader in promoting energy conservation and efficiency," (Parnell 2009) yet the American Council for an Energy Efficiency Economy's 2013 State Scorecard notes that Alaska is one of only two states that report no spending on electric efficiency programs (Downs et al. 2013).

Recall that there were two primary clauses in the ARRA 410(1) section: (i) align incentives of utilities with promoting energy efficiency, and (ii) decoupling or lost revenue adjustment. As to the first, since President Obama signed ARRA into law in early 2009, four states have adopted utility financial incentives for efficiency: Arkansas, Louisiana, Mississippi, and West Virginia (Eldridge et al. 2009; Downs et al. 2013). Yet there is little evidence that ARRA influenced these decisions and that they would not have happened otherwise. The docket in Arkansas for performance incentives was first filed in September 2008, before ARRA was

passed (APSC 2008). The Louisiana Public Service Commission approved a plan to develop efficiency programs in December 2012, but it reversed its decision just two months later, only to reinstate it with the anticipation of further modifications in June 2013. While Mississippi and West Virginia have approved regulation and legislation that clarifies that existing state law allows utilities to apply for performance incentives for efficiency programs, as of November 2013, no utility in either state had pursued these incentives (Downs et al. 2013).

As to the second stipulation of ARRA 410(1), from August 2009 to August 2013, fourteen states implemented either electric decoupling or some kind of lost revenue adjustment mechanism (LRAM) through regulatory or legislative action: Alabama, Arizona, Arkansas, Colorado, Indiana, Kansas, Louisiana, Missouri, Mississippi, New Jersey, Rhode Island, South Dakota, Washington, and Wyoming (Eldridge et al. 2009; Downs et al. 2013).

Of the fourteen states mentioned, Arizona is unique in its intention to comply with the goals of section 410(1). Since receiving stimulus funds, Arizona's regulatory landscape has evolved through thoughtful deliberation and collaboration at the Arizona Corporation Commission (ACC). In a December 2010 policy statement on utility disincentives to energy efficiency and decoupling, ACC staff wrote, "ARRA has asked participating states to consider general policies that ensure that utility financial incentives are aligned with helping customers use energy more efficiently. Arizona, in accepting ARRA funding, agreed to analyze and consider these policies" (ACC 2010). As part of this process, the ACC conducted a series of workshops and collaborated with policy groups such as the Regulatory Assistance Program, and commissioned a study from the Lawrence Berkeley National Laboratory that forecasted decoupling impacts and energy savings through 2030.

Arizona's first step came in December 2009 when the ACC proposed rules for an energy efficiency resource standard (EERS) which mandated cumulative average energy savings of 22 percent by 2020. However, without decoupled rates, a lost-revenue adjustment, or utility performance incentives, Arizona's largest utilities knew that compliance would immediately undercut their revenue stream. To address this issue, within two months of the EERS proposed rule the ACC issued a notice of inquiry into decoupling, and began holding workshops in April 2010. At these workshops, utility regulators, consumer groups, ACC staff, and other interveners convened and worked out a plan for full decoupling, resulting in the ACC's December 2010 policy statement with an order allowing utilities to file a proposal for decoupling or an alternative mechanism in their general rate cases. The policy results achieved in Arizona lead utility experts like Ralph Cavanagh, Co-Director of the Natural Resources Defense Council's (NRDC) Energy Program, to say, "[Sec. 410 of] the stimulus had the desired effect in Arizona, but nowhere else" (R. Cavanagh, pers. comm., February 25, 2014).

Determining if Sec. 410 of ARRA impacted rate structure changes in the other 13 states that have implemented decoupling or LRAM is difficult and in some circumstances impossible, especially in light of declining electric revenue from the economic recession and ongoing efficiency efforts that may have already spurred such conversations. The chief culprit may be the vague nature of the language that requires commissions to "seek to implement" a change to rate design. If the 111th Congress had, like their predecessors that drafted and amended PURPA, required state commissions to *consider* a "general policy that ensures that utility financial incentives are aligned with helping their customers use energy more efficiently," the provision would have ultimately been easier to monitor and, perhaps, enforce. It likewise would have guaranteed that the law actually resulted in state commissions undertaking a regulatory action,

even if no change in rates occurred. For most states, Sec 410(1) of ARRA simply created the requirement that the governor sign a benign, non-substantive letter.

Without doubt ARRA's impact on rate designs was less pronounced than that of PURPA (in any of its incarnations). Nevertheless, both offered fundamentally similar approaches to impact rate structures: Congress required or encouraged state commissioners to look into alternative rate structures more closely. Another similar approach by Congress would likely suffer from the law of diminishing returns. At a certain point, commissions may go through the motions of considering a new rate design, but neither they nor their regulated utilities will likely be motivated to accomplish more and seriously examine the potential of alternative rate structures unless a different tactic is employed. In the next section, we explore two separate and different tactics for federal policy to further encourage rate structures that better align utility incentives with energy efficiency.

Reflections on Utility Motivations and Potential Federal Policies

Increasing Stakeholder Collaboration

Regulatory reform that removes one or more of the barriers to efficiency imbedded in traditional regulation typically flows from a utility filing a rate case, and utilities voluntarily request new rate designs because they believe doing so is in their financial interest. A variety of factors can lead to a utility understanding that promoting energy efficiency, rather than supporting the traditional business model which is dependent on continued load growth, is in their financial interest.

Case studies of utilities supportive of energy efficiency published in December 2013 found that “utilities [that provide relatively large-scale customer energy efficiency programs in states with decoupling and/or shareholder incentives in place] share a number of characteristics that appear to be responsible for their successful energy efficiency programs and high associated energy savings. These included a strong commitment to energy efficiency by regulators and utilities...Ongoing collaboration among utilities and stakeholders [and] a shared sense of purpose and common goals” (York 2013, iv).

Although some states are well-educated about implementing energy efficiency policies and programs, others are undeniably not. Utility leaders and state policymakers alike can make use of one another's expertise through participating in federal initiatives such as DOE's State and Local Energy Efficiency Action Network (SEE Action). SEE Action is a state and local effort — facilitated by DOE and the Environmental Protection Agency (EPA) — contributing knowledge and technical resources for state and local decision makers as they advance energy efficiency policies and programs in their jurisdictions (DOE 2012). Established in 2010, SEE Action serves as the successor to the EPA's National Action Plan for Energy Efficiency and brings together a network of stakeholders from utilities, state and local government, businesses, and non-governmental organizations (EPA 2010; DOE 2012; Zetterberg 2012).

Rather than mandating the consideration of standards as in PURPA, the federal government can help facilitate interaction between utilities, efficiency advocates, and others, through programs like SEE Action. Below, we have identified three low-cost approaches that DOE likely has existing discretionary funding to support immediately. These simple steps could help promote alternative rate designs in the states, via programs like SEE Action, that aim to increase stakeholder information sharing and collaboration. DOE should work to:

- **Educate state regulators.** State regulators sometimes have limited experience in the business, technical, and policy fundamentals of electricity prior to their appointments. DOE, via SEE Action, could ensure that all state regulators have access to a suite of educational materials and one-on-one mentoring sessions, explaining the most pressing issues affecting the utility industry.
- **Establish working groups with utility efficiency staff and energy efficiency advocates.** Deep expertise already exists across several key stakeholder groups in the energy community. These groups, however, do not often have a consistent platform for meeting regularly to exchange ideas and recommendations outside of the formal policymaking process. Moreover, as discussed above, ongoing collaboration among utilities and stakeholders is a hallmark of utility efficiency programs that achieve high savings (York, 2013). DOE could fund state energy offices to establish and facilitate working groups between utility efficiency staff and efficiency stakeholders to share information, best practices, and collaborate to solve common problems.
- **Encourage third party vetting of state regulatory commissioners when they are appointed.** Governors sometimes appoint state regulatory commissioners regardless of their energy policy expertise. In at least one state that informally uses third party vetting of these appointments, the process has been considered a success (B. Jenks, Executive Director, Citizens’ Utility Board of Oregon, pers. comm., February 11, 2014). Such vetting need not force a governor’s hand or be consequential in the ultimate appointment, but it could help a governor differentiate between potential commissioners. Even if the discussion does not inform the governor’s decision, it could help potential commissioners quickly understand the issues most central to key stakeholders. DOE staff could encourage such vetting by educating state energy offices and other stakeholders about its merits, and promoting the idea directly to governors’ offices.

Accelerating Changing Market Dynamics through EPA Regulation

Utilities that pursue alternative rate structures likely do so because underlying market factors are negatively affecting their current business model. In January 2013, Edison Electric Institute (EEI), the trade association for the nation’s IOUs, published *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*. The paper identifies a host of basic economic forces that, collectively, are pressuring utilities to rethink the long-term sustainability of their business models and, accordingly, rate structures. These forces include declining sales and the impact of end-use efficiency on sales volumes, along with the “falling cost of distributed generation and other distributed energy resources (DER), enhanced focus on the development of new DER technologies, increasing customer, regulatory, and political interest in demand-side management technologies, government programs to incentivize selected technologies, the declining price of natural gas, and rising electricity prices in certain parts of the country” (EEI 2013,1).

Figure 1 describes a potential “vicious cycle” that could emerge to cause significant financial harm to utilities operating under traditional regulation. Increased efficiency programs along with more consumers generating their own electricity would reduce utility revenue. The lost revenue would require remaining customers to pay higher rates for utilities to recover their

investments. Those increased rates would increase the value proposition that distributed generation and efficiency offer consumers, encouraging them to likewise reduce their consumption through efficiency and generate their own electricity, further reducing revenue. This process would continue until the utility in question, like airlines in the late 1970s, files for bankruptcy (ibid).

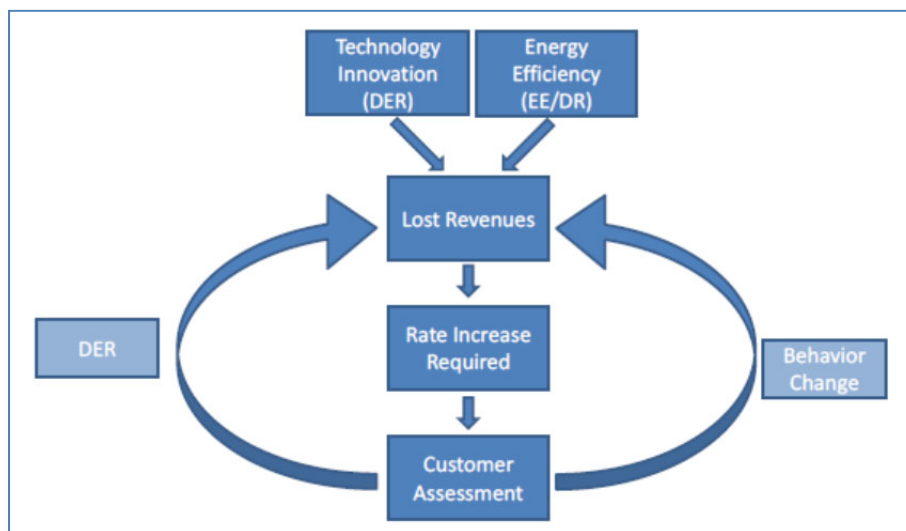


Figure 1. Vicious cycle from efficiency and distributed generation. *Source:* EEI 2013.

Increasingly, the utility industry recognizes that this vicious cycle poses a significant danger to their business. In February 2014, EEI and NRDC issued a “joint statement to state utility regulators” in which they state, “[r]ecovering the fixed costs of the grid is becoming more challenging....policy makers should rethink how utility costs are recovered, **with consideration needed for new rate designs** and new approaches that balance the desire to promote innovation while still enabling recovery of capital investment” (EEI/NRDC 2014, emphasis added).

The underlying market forces causing more utilities to contemplate alternative rate designs could be significantly accelerated by EPA’s pending regulation of greenhouse gas (GHG) emissions from power plants. In June 2014, EPA plans to propose performance standards for GHG emissions from existing power plants under Section 111(d) of the Clean Air Act. A variety of stakeholders have been debating the merits of different approaches EPA could take to meaningfully reduce GHG emissions from existing generators. One of the more popular – and interesting – ideas posits that end-use energy efficiency should be used as a means of compliance with EPA’s performance standard.²

If EPA permits utilities to use end-use efficiency as a means of compliance with GHG standards for existing power plants, it could potentially open the floodgates on energy efficiency throughout the country. According to the Energy Information Administration’s most recent figures, the five states with the most carbon intense energy supply are West Virginia, Kentucky, Wyoming, Indiana, and North Dakota – all states that feature coal as their dominant fuel (EIA 2013). None of these states has adopted decoupling (NRDC 2013). If EPA establishes

² There is also considerable interest and debate about EPA’s ability to use end-use efficiency as a means of determining the emissions standards, but efficiency as a compliance option is the policy mechanism that could greatly increase utility interest in efficiency around the country.

stringent GHG emissions on existing power plants, these states will be the most significantly affected.

Due to its relatively low cost, if EPA permits—and if the courts uphold their permission of—end-use efficiency as a compliance option for 111(d), most observers believe that a significant number of utilities will invest significantly in efficiency to meet the new standards. As discussed, and demonstrated by Figure 1 above, such investments in efficiency will undercut utilities' revenue streams and threaten their business model absent fundamental changes to their rate design to better align utility incentives and efficiency. As a result, if EPA allows utilities to meet stringent GHG standards through end-use efficiency, a large number of utilities will begin contemplating and may file rate cases to decouple their rates in order to maintain the viability of their business.

Conclusion

For more progressive rate designs to take hold throughout the country, regulators must understand alternative rate structures and the benefits inherent in them. At the same time, utilities themselves must understand that better aligning their incentives with efficiency benefits their investors. Only when both conditions are met will rates decouple and include performance incentives throughout the nation. Though the stimulus likely did not significantly affect rate designs, federal policy can – and likely will – play a meaningful role in prompting utilities to pursue such rate designs and regulators to adopt them in the coming years.

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