
Optimizing Incentives for Effective PIMs

Coordinating PIMs with Authorized ROE for Efficient and Effective Regulation

Prepared for Clean Virginia

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1. INTRODUCTION

In 2023, the Virginia state legislature enacted legislation that authorized the State Corporations Commission (SCC or Commission) to adjust authorized utility rates of return on common equity (ROE) according to performance criteria. Among other things, this law allowed the SCC to adjust ROE by up to 50 basis points (bps) based upon a range of performance factors, including reliability, generator performance, customer service, and utility operating efficiency. The legislation also established a procedure for biennial rate reviews – the setting in which ROE adjustments for performance would occur.

Adjustments to ROE for utility performance are typically referred to as performance incentive mechanisms (PIMs). This paper focuses on how PIMs should be set and the need to calibrate the ROE to take into account potential earnings from PIMs. While jurisdictions do not always approach utility incentive mechanisms with an integrated view, we believe that it is imperative to consider PIMs alongside ROE to ensure that utilities have the appropriate motivation to pursue actions in the public interest. In this paper, we also discuss the mixed record of energy efficiency incentives in Virginia and provide recommendations for future PIM design.

2. PIMs INTERACTIONS WITH OTHER UTILITY FINANCIAL INCENTIVES

The goal of PIMs is to induce desirable changes in utility behavior that would not otherwise occur. However, PIMs cannot be viewed in isolation; they must be understood in the wider context of incentives affecting utility behavior. For an investor-owned utility seeking to maximize profits, the main financial incentive comes from the return on rate base. Utilities therefore seek to increase both ROE and capital investment in order to maximize profits. The latter effect is often referred to as a utility’s “capital bias.” Depending on how PIMs are designed, and which outcomes are targeted, PIMs may either amplify or conflict with the utility’s existing financial incentive structure, in turn suggesting two design challenges: On the one hand, PIMs may exacerbate capital bias; on the other hand, PIMs may be insufficiently large to catch the utility’s attention or to counter existing financial incentives acting in opposition. These two challenges are discussed in more detail in the following sections.

As a preliminary matter, it is important to define when PIMs are appropriate. Financial rewards should not be deployed to reward a company for actions that it is already taking or planning to take. Rather, financial rewards are appropriate when a utility lacks a financial incentive to pursue a certain action. For example, PIMs may be deployed to encourage a utility to seek generation efficiencies when fuel costs are passed through to customers (to address a lack of financial incentives to operate its units efficiently). As another example, PIMs can be designed to encourage non-wires alternative solutions that avoid or

defer utility capital investments (to address a financial disincentive where the utility would forego a capital investment and the associated return on that investment if it implemented a non-wires alternative).

2.1. PIMs may Exacerbate Capital Bias (PIM Design Challenge #1)

As discussed above, PIMs can exacerbate capital bias by increasing the utility's ROE and encouraging it to increase its rate base (upon which the utility earns a return). This issue is discussed in the following sections.

Rate of Return and Capital Bias

Utilities are susceptible to capital bias because earnings are largely a function of capital investment. This issue is particularly apparent under a traditional cost-of-service regulatory framework. Under cost-of-service regulation –to which both Dominion and APCo are subject– the utility revenue requirement is directly related to utility expenditures, with the utility earning a return on capital investments dictated by the ROE. Under this structure, utilities are financially rewarded for increasing their rate base (the pool of capital assets like transmission lines, substations, and power plants), since earnings are tied directly to the total magnitude of these historical investments. Meanwhile, operational expenses including spending on energy efficiency programs and demand response initiatives are often recovered without a return, creating an asymmetry in incentives. Because programs that reduce sales also tend to reduce the need for future capital expenditure, this asymmetry in incentives is even greater.¹

In theory, the degree to which a utility is financially incentivized to grow its rate base through additional capital investment is a function of the difference between its allowed ROE and its cost of capital. Where the allowed ROE exceeds the cost of capital, the utility will have a financial incentive to pursue new capital investments – a phenomenon that is known as the Averch-Johnson effect and that was first formalized in the economic literature in the 1960s.² Empirical evidence of capital bias has been observed in multiple jurisdictions. For example, a recent University of California Berkeley study found that a 1 percent increase in allowed ROE led to a 3 percent to 4 percent increase in utility capital investments, driving up consumer costs.³ Similarly, the Rocky Mountain Institute (RMI) points out that inflated ROEs

¹ State law provides for the possibility of earning a return on energy efficiency program spending, to help balance this incentive asymmetry. Per Va. Code § 56-585.1: "Beginning January 1, 2022, and thereafter, if the Commission determines that the utility meets in any year the annual energy efficiency standards set forth in § 56-596.2, in the following year, the Commission shall award a margin on energy efficiency program operating expenses in that year, to be recovered through a rate adjustment clause, which margin shall be equal to the general rate of return on common equity."

² Harvey Averch and Leland L. Johnson, "Behavior of the Firm under Regulatory Constraint," *The American Economic Review* 52, no. 5 (1962): 1052–1069.

³ Karl Dunkle Werner and Stephen Jarvis, *Rate of Return Regulation Revisited*, Energy Institute at Haas Working Paper No. 329 (Berkeley, CA: University of California, Berkeley, Haas School of Business, September 2024), 5, <https://haas.berkeley.edu/wp-content/uploads/WP329.pdf>.

can delay the transition to clean energy by encouraging traditional infrastructure projects over operational solutions.⁴ Meanwhile, in the United Kingdom, misaligned regulatory assumptions that boosted the authorized ROE above the cost of capital led utilities to earn £4 billion in excess profits between 2021 and 2024.⁵ The drive to grow rate base may come at the expense of potentially lower-cost or more innovative alternatives.

The ROE may be set above the cost of capital because it is difficult to determine the utility's actual cost of capital. Investors are typically only willing to provide a utility with capital if they expect to earn a return on their investment commensurate with returns available from alternative investments with comparable risks. Thus, determining the utility's cost of capital requires an evaluation of its risk profile and an analysis of the returns on investments with similar risk profiles. Several different models are typically relied upon to determine an ROE "range of reasonableness." Regulators are generally required to ensure that rates are set high enough to allow the utility a reasonable opportunity to earn a sufficient return on its investments.⁶ However, within this range of reasonableness, the regulator has the ability to establish an ROE that is reflective of the utility's performance.

PIMs that Increase ROE can Worsen Capital Bias

Utility capital bias may be exacerbated by PIMs when the financial incentive is applied as an ROE adder, since this will increase the overall ROE when the subject utility meets PIM performance targets. As the difference between the authorized ROE and the utility's actual cost of capital grows, the utility faces even stronger incentives to increase capital investments, which may be at cross purposes to the goals of the PIM.⁷ For example, a utility seeking to meet a reliability-based PIM may choose expensive infrastructure upgrades, such as substation reinforcements or feeder automation, even when non-capital solutions like demand response or targeted DER deployment might deliver similar benefits at lower total cost.

⁴ Joe Daniel, Ryan Poelske, and Steve Kihm, "Rebalancing Return on Equity to Accelerate an Affordable, Clean Energy Future," *RMI*, February 21, 2024, <https://rmi.org/rebalancing-return-on-equity-to-accelerate-an-affordable-clean-energy-future>.

⁵ Rachel Millard, "UK Energy Network Owners Made Billions in Excess Returns, Says Report," *Financial Times*, February 15, 2025, <https://www.ft.com/content/68f8f011-d615-41fb-8ad8-65aa9b49b9ef>.

⁶ This standard was established by the U.S. Supreme Court in *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n*, 262 U.S. 679 (1923). There the Court ruled that "The return should be reasonable, sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise money necessary for the proper discharge of its public duties."

⁷ Cara Goldenberg, Dan Cross-Call, Sherri Billmoria, and Oliver Tully, *PIMs for Progress: Using Performance Incentive Mechanisms to Accelerate Progress on Energy Policy Goals* (Boulder, CO: Rocky Mountain Institute, July 2020), https://rmi.org/wp-content/uploads/2020/07/rmi_pims_for_progress.pdf.

2.2. PIMs may not Motivate Action (PIM Design Challenge #2)

The discussion above focused on the risk of PIMs exacerbating utility capital bias by increasing the overall ROE. In that case, the subject utility is motivated to achieve the targeted PIM outcomes, but there are unintended consequences that can drive up overall costs for customers and potentially even imperil the objectives of the PIMs and wider regulatory regime over the longer haul. On the other hand, there is the challenge of designing PIMs that provide sufficiently large financial repercussions to motivate a change in utility behavior. Companies such as Dominion and APCo are large corporations with net income in the billions of dollars. In this context, PIM incentives may be insufficient to alter entrenched utility practices – especially when the PIM objectives conflict with the existing capital bias.

There is no standard for how large PIM incentives must be to motivate change, but the context is critical. PIMs targeting energy efficiency, demand response, non-wires alternatives or other actions that tend to reduce sales, capital investment, or both should be sized to offer a meaningful countervailing incentive. In the next section, we consider the specific case of energy efficiency in Virginia and whether the incentives offered to Dominion were sufficient.

2.3. PIM Incentives Should be Coordinated with ROE

For PIMs to be effective, incentives must be large enough to motivate utility action. To be efficient, PIMs should not over-reward utilities or exacerbate capital bias. To jointly address these two design challenges, we recommend that PIM incentives be coordinated with utility ROE. Where PIMs provide an opportunity for the utility to earn additional profit, the ROE should be fixed at the cost of capital or lower, and PIMs should provide for supplemental earnings depending on utility performance. We further develop these recommendations and provide exceptions in Section 4.

3. CASE STUDY: ENERGY EFFICIENCY PIMs IN VIRGINIA

While the 2023 legislation opened the door to wider implementation of PIMs, the Virginia utilities have operated with energy efficiency (EE) incentives since 2022. The experience of these incentives has been mixed. In this section, we evaluate recent outcomes for Dominion and APCo and explore potential implications for future PIM design.

3.1. Background on Dominion's EE PIMs

On a gross savings basis, Dominion met or exceeded its energy efficiency savings goals for both 2022 and 2023.⁸ However, under the net savings requirement set forth by the SCC, Dominion fell short. Specifically, Va. Code § 56-596.2 mandated a 2.5 percent net energy savings target in 2023, while Dominion achieved only 1.4 percent net energy savings.⁹ Similarly, in 2022, Dominion achieved 1.23 percent net savings, slightly below the 1.25 percent target.

Had Dominion successfully met the net savings targets, it would have qualified for a margin on operations and maintenance (O&M) expenses, as outlined in Va. Code § 56-596.2. Additionally, had Dominion exceeded the targets, it could have earned an additional 20 basis points for each incremental 0.1 percent of savings beyond the requirement, capped at 10 percent of total energy efficiency program spending. Because Dominion did not meet these goals, it forfeited a \$6 million performance incentive for 2022 and faces delays in securing approval for new thermal generation resources.¹⁰

There are likely many factors affecting Dominion's EE performance. While the Company clearly missed the mark in both 2022 and 2023, it is difficult to determine where fault lies. As of the 2024 DSM proceeding, the Company had spent more than the minimum \$870 million on energy efficiency programs before the 2028 spending deadline but had not reached its net savings targets, raising questions about whether the underlying issue is the sufficiency of spending or the *effectiveness* of spending.¹¹ In the next section, we explore possible explanations for the failure of Dominion to meet its EE targets.

3.2. Diagnosing Dominion's Failure to Earn EE Incentives

There are several possible explanations for the Company's failure to achieve its EE targets:

1. A lack of clear understanding of the EE targets.
2. A lack of sufficient incentives to achieve EE targets.
3. A lack of ability to achieve EE targets.

⁸ Virginia State Corporation Commission, *Report of M. Renae Carter, Hearing Examiner, in the Matter of Virginia Electric and Power Company for approval of its 2023 DSM Update Filing Pursuant to Va. Code § 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2023-00217 (Richmond, VA: Virginia State Corporation Commission, June 26, 2024), 3, <https://www.scc.virginia.gov/docketsearch/DOCS/7zw401%21.PDF>.

⁹ Virginia State Corporation Commission, *Application of Virginia Electric and Power Company for approval of its 2024 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia*, 42.

¹⁰ Robert Walton, "Dominion miss on Virginia efficiency target could impact gas peaker approval."

¹¹ Virginia State Corporation Commission, *Application of Virginia Electric and Power Company for approval of its 2024 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia*, 46–47.

Lack of Clear Understanding of EE Targets

In previous proceedings dating back to 2022, Dominion expressed confusion regarding whether the energy efficiency savings targets set by Va. Code § 56-596.2 should be measured on a "gross" or "net" basis.¹² Initially, Dominion argued that the Virginia Clean Economy Act (VCEA) intended for compliance to be assessed based on gross savings. The Virginia State Corporation Commission (SCC) deferred ruling on this issue until the 2023 Demand-Side Management (DSM) final order, which was issued in July 2024. In that order, the SCC clarified that compliance must be measured using "net" savings, which account for free riders and other market effects.¹³ Given this timeline, Dominion may have formulated its EE strategy based on gross savings calculations. The SCC's decision, coming in July 2024, may have left Dominion with insufficient time to pivot its approach, contributing to its inability to meet the 2024 net savings target.

Lack of Sufficient Incentives/Motivation to Achieve EE Targets

Other evidence supports the view that Dominion may not have been sufficiently motivated to achieve its EE targets and therefore may not have adequately marketed its EE programs to customers. For example, market research indicated that only 15 percent of non-residential customers were aware of Dominion's available efficiency programs.¹⁴ Additionally, Dominion's array of energy efficiency programs lack a streamlined process for customers to access all programs, complicating access for consumers.¹⁵ This suggests that underinvestment or *ineffective* investment in marketing and outreach efforts may have impacted participation rates, making it more difficult for Dominion to achieve the required net energy savings.

Lack of Ability to Achieve EE Targets

While it appears that the EE targets set under Va. Code § 56-596.2 are appropriately ambitious for Dominion Energy, there is also some evidence to suggest that it is getting increasingly difficult and costly for the Company to meet these targets, suggesting that the Company's failure to achieve targets may not be the result of insufficient motivation in isolation. Dominion has publicly stated that incremental savings are becoming more expensive, with a 63-percent cost increase to achieve 21 percent more net

¹² Virginia State Corporation Commission, *Report of Nathan J. Frost, in the Matter of Virginia Electric and Power Company for approval of its DSM to Va. Code § 56-597 et seq.*, Case No. PUR-2021-00247 (Richmond, VA: Virginia State Corporation Commission), 9, <https://www.scc.virginia.gov/docketsearch/DOCS/67@c01!.PDF>.

¹³ Virginia State Corporation Commission, *Application of Virginia Electric and Power Company for approval of its 2024 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2024-00222 (Richmond, VA: Virginia State Corporation Commission, December 13, 2024), 41, <https://www.scc.virginia.gov/docketsearch/DOCS/831601!.PDF>

¹⁴ Virginia State Corporation Commission, *Report of Nathan J. Frost, in the Matter of Virginia Electric and Power Company for approval of its DSM to Va. Code § 56-597 et seq.*, 15.

¹⁵ Robert Walton, "Dominion miss on Virginia efficiency target could impact gas peaker approval," *Utility Dive*, July 31, 2024, <https://www.utilitydive.com/news/dominion-energy-miss-efficiency-savings-impact-gas-peakers-virginia/722940/>.

savings.¹⁶ While Dominion met prior targets on a gross savings basis, it continues to fall short on the net savings metric now required by the SCC.¹⁷ These shortfalls occurred despite substantial spending, potentially indicating that easily achievable efficiency opportunities may already be exhausted. It is important to note that these estimates of cost increases are based on Dominion's own cost forecasts and program structure. It is possible that with an improved EE program structure Dominion could achieve lower cost savings.

3.3. Lessons for Future EE Incentive Design

Moving forward, it appears that Dominion will need to adjust its program strategies, including increased marketing efforts, stakeholder engagement, and modifications to incentive structures, to boost participation and ensure compliance with the SCC's net savings requirement. Furthermore, stronger cost-control measures and enhanced evaluation of program efficiency will be necessary to prevent future overspending and improve overall performance in achieving mandated energy savings.

Modified EE incentives could play a major role in helping to promote achievement of EE targets. Among other options, the state could consider increasing the incentive earnings opportunity, introducing penalties, or both. We offer qualified support for modification of the incentive earnings structure to make this mechanism more lucrative but note that incorporating penalties for EE targets can come with certain potential downsides. While penalties can help to ensure that the subject utility does not neglect the target outcome, penalties may distort utility behavior – inducing the utility to push for easily achievable targets and generally encouraging an adversarial climate that can drain resources and run counter to the objective of collaborative engagement with all stakeholders. It is further worth noting that even if penalties were to be introduced, these would likely function as backstops to guard against substantially deficient EE performance rather than incentivizing achievement of high-end goals.¹⁸

The SCC should consider modification of the EE incentive structure. While we do not support increasing the EE PIM incentivizes in isolation, our recommendation, developed in more detail in the following section, is that the SCC consider reducing the allowed ROE on rate base while simultaneously increasing the earnings *opportunity* on EE PIMs (and potentially on other PIMs, too), with the implication that achieving EE incentive awards would be a necessary component of achieving revenue sufficiency. Under

¹⁶ Virginia State Corporation Commission, *Report of M. Renae Carter, Hearing Examiner, in the Matter of Virginia Electric and Power Company for approval of its 2023 DSM Update Filing Pursuant to Va. Code § 56-585.1 A 5 of the Code of Virginia*, 27.

¹⁷ Virginia State Corporation Commission, *Application of Virginia Electric and Power Company for approval of its 2024 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia*, 42.

¹⁸ In 2012, the New York Public Service Commission issued an order that abolished the penalty portion of energy efficiency incentives. The Commission's experience was that the threat of penalties "created an adversarial approach to setting targets and budgets, undue aversion to risk, and short-term allocation of resources that may not serve the long-term interests of a balanced program." In addition, consideration of mitigating circumstances presented a substantial drain on staff and utility resources that could have been better spent on administering programs. See NY Public Service Commission. *Order Establishing Utility Financial Incentives*. Case No. 07-M-0548. March 22, 2012, 5-6.

these conditions, we believe that the Company might more aggressively pursue EE targets. Moreover, by reducing the allowed ROE, the Company would have less innate incentive to pursue capital investments – an incentive that may be operating behind the scenes to blunt the Company’s drive to achieve EE targets because EE tends to reduce the need for future capital investments.

4. GENERAL GUIDANCE FOR COORDINATING PIMs AND ROE

While there may be many factors affecting the success of incentive mechanisms, as the EE example demonstrates, the core challenge in designing incentives is always the same – making incentives large enough to motivate utility behavior without being too large or exacerbating utility capital bias. We suggest that the SCC address this balancing challenge by coordinating reducing the utility’s ROE and increasing potential PIM incentives. By making PIMs a larger part of the financial calculus, the SCC can ensure that subject utilities are motivated to pursue targeted goals, and that any capital bias is reduced. Additional specific guidance is provided below.

4.1. Calibrating the ROE and PIMs

To mitigate the risk that PIMs exacerbate capital bias through inflated returns, regulators should carefully monitor and constrain the combined effect of base ROE and PIM-based ROE adders. Specifically, the total effective ROE, including any performance-based incentives, should be benchmarked against the utility’s actual cost of capital to ensure that it does not create an outsized incentive for capital spending. As noted in the literature, when a utility’s ROE significantly exceeds the cost of capital, the resulting surplus return can skew investment decisions toward capital investments.¹⁹ In some cases, regulators may justify higher returns—above the cost of capital—as a reward for truly exceptional performance, especially in areas such as customer satisfaction, decarbonization leadership, or system reliability. However, such exceptions should be rare, well-defined, and demonstrably beneficial to customers.

4.2. Considering Other Incentive Structures and Complementary Solutions

To address the challenge of counting existing financial *disincentives* to take the desired actions, certain other incentive approaches and complementary solutions may be helpful:

1. Shared savings mechanisms (SSM) may be effective in incentivizing actions to reduce utility spending, including capital expenditures. These mechanisms allow the utility to retain a portion of the net benefits achieved, thereby encouraging maximization of net benefits and not simply rewarding spending irrespective of benefits. SSMs have been

¹⁹ Karl Dunkle Werner and Stephen Jarvis, *Rate of Return Regulation Revisited*.

widely deployed across the country. For example, in Hawaii SSMs are used to incentivize the investor-owned utilities to reduce spending on pass-through expenses such as fuel and purchased power.²⁰

2. Mechanisms that provide the opportunity for the utility to earn a return on spending may also help to counter the capital bias. In Hawaii, the Exceptional Project Recovery Mechanism allows the utilities to earn a return on non-capital spending just as they might on capital investments.²¹

It is important to note that SSMs and special cost recovery treatment can coexist with the efforts to coordinate ROE and PIM incentives, maximizing the effectiveness of the regulatory regime.

4.3. Including Penalties and Calibrating Targets

The discussion thus far has mainly focused on the role of positive incentive earnings opportunities. However, in certain cases, PIMs should be specified to include penalties – either as penalty-only mechanisms or symmetrically, with both penalties and rewards.

Introducing penalties may complicate the coordination of PIMs with the authorized ROE. However, the same general principles elucidated above still apply: First, the combined earnings effects of PIMs and the return on rate base should not significantly exceed the cost of capital. Second, to the extent that the subject utility has an opportunity for earnings exceeding the cost of capital, this should be possible only with exceptional performance leading to incremental PIM earnings.

Specific guidance for coordinating PIMs with penalties with ROE is provided below:

1. For PIMs specified as penalty-only mechanisms, if penalty thresholds are set at baseline performance or worse, then the allowed ROE should not be adjusted upward by a corresponding amount, assuming all else is equal. If penalty thresholds are set at a level representing exceptional performance (with anything less being penalized), then the ROE should be set at the higher end of the zone of reasonableness, such that failing to achieve the aspirational PIM targets will result in penalization but not in ROE falling below the range of reasonableness.
2. For PIMs specified with both penalties and incentives, the same general guidelines as provided in (1) apply, but these guidelines must be balanced with consideration of the likelihood of positive earnings. If positive earnings are reasonably likely, for example, then ROE may be adjusted downward by an appropriate amount even if penalties are

²⁰ Hawaii Public Utilities Commission, *Summary of Phase 2 Decision & Order Establishing a PBR Framework* (Honolulu, HI: Hawaii Public Utilities Commission, December 23, 2020), https://puc.hawaii.gov/wp-content/uploads/2020/12/PBR-Phase-2-DO-5-Page-Summary.Final_12-22-2020.pdf.

²¹ Ibid.

set at the level of baseline performance or worse (and therefore not likely to be imposed/relatively easy to avoid).

