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Reducing Consumer Costs in California

Performance-Based Regulation for Investor-Owned Utilities

The Climate Center Policy Guidance

the climate center

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Introduction

California faces an electricity affordability crisis, with rates soaring far beyond national averages and contributing to financial distress for many households. The increasing costs and rates reflect distribution and transmission system upgrades, utility goldplating, rapid growth in electricity demand, the need to invest in climate resilience, and barriers to widespread[1] deployment of local, distributed resources, which are often cheaper than utility-scale solutions.

A key imperative for lowering electricity rates is to maximize the use of all cost-effective energy resources no matter where they are located or who owns them. This is not happening in California due to both regulatory and structural barriers.[2] For example, the Brattle Group has shown that Virtual Power Plants[3] (VPPs) that aggregate distributed energy resources (DERs) — such as electric vehicle (EV) batteries, rooftop solar and microgrids — could, if widely used in California, save consumers around $550 million per year.[4] Yet VPPs, despite successful pilots, remain a work-in-progress in California.

The slow adoption of cheaper, local DERs is primarily due to investor-owned utility (IOU) profit incentives, which promote utility-owned, capital-intensive resources. Since IOUs are compensated with a fixed rate of return as a percentage of total capital costs, the more large infrastructure they build, the more they profit. IOUs are regulated monopolies, which means the state sets the rules for how they are compensated and sets goals for their performance. The cost inefficiency[5] from not adopting the cheapest option can be addressed by using a cost recovery method that rewards cost savings rather than utility spending.

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[1] https://www.canarymedia.com/articles/virtual-power-plants/california-could-cut-utility-bills-with-distributed-energy-why-isnt-it

[2] https://www.microgridknowledge.com/policy/article/55141466/cpucs-proposed-microgrid-tariff-decision-seen-as-another-blow-to-meeting-california-climate-goals

[3] https://www.canarymedia.com/articles/virtual-power-plants/four-ways-virtual-power-plants-can-help-the-us-grid-keep-up-with-demand

[4] Microgrids provide another example of a cost-effective, alternative resource option that is not optimally deployed in California. A microgrid is a group of interconnected loads and DERs that acts as a single, controllable entity with respect to the grid. They can connect and disconnect from the grid to operate in grid-connected or island mode. https://www.brattle.com/wp-content/uploads/2024/04/Californias-Virtual-Power-Potential-How-Five-Consumer-Technologies-Could-Improve-the-States-Energy-Affordability.pdf

[5] Utility payments regulated by the California Public Utilities Commission (CPUC) are laid out in a regulation called the 'cost of service' regulation model. This compensates the utility for its costs of providing service (electric and/or gas).

This compensation method is called **performance-based regulation (PBR)**, which rewards utility performance for lowering costs while maintaining safety and other standards. PBR, which is used in Hawaii, the United Kingdom, and other places, is foundational for the development of an open-access energy market in which producers and consumers will compete and benefit by earning income from their energy investments. PBR has many tools in its toolbox. This policy brief focuses on tools relevant to California's current affordability crisis.

To optimize cost reduction, regulatory agencies could combine PBR with new regulations to expand energy trading between consumers and producers, making it more economically viable. These bidirectional energy trades, which are a common feature of DERs, will enable utility customers (often through third party providers) to make money by selling and managing their surplus energy, leading to even greater cost savings for consumers.

For consumers, this means they can sell their power from a fully charged energy storage battery[6] such as in an EV or a stationary home battery, in the energy market place. This power can be used to shift their energy use and avoid expensive peak demand by buying electricity at lower rates. EV batteries — "batteries on wheels" — can be used to provide resiliency to homes, schools, municipal buildings, and businesses by relieving stress on the grid during grid outages and also help consumers offset their energy costs. DERs can help the state reduce climate pollution by reducing reliance on polluting gas plants, meet the growing demand from the electrification of transportation, buildings, and other technologies such as Artificial Intelligence, and provide customers with more affordable energy prices. Further examples of potential cost savings through DERs are described in The Climate Center's recent report *Envisioning the California Grid for the Future,*[7] which provides a roadmap for integrating DERs into the energy marketplace.

In summary, regulatory authorities need to remove current regulatory barriers[8] that limit commercial opportunities for DER deployment.[9] These market inefficiencies are exacerbated by outdated utility payment mechanisms that promote conventional, centralized infrastructure instead of directing investments to new, local, distributed solutions that are cheaper, cleaner, and more reliable. To realize the full benefits of DERs, state agencies should replace traditional 'cost of service' regulation[10] with performance-based regulation for investor-owned utilities.

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[6]For example, solar panels with a battery, or a mobile storage unit such as an electric vehicle.

[7]https://theclimatecenter.org/community-energy-resilience/envisioning-the-california-grid-for-the-future/

[8]An example is the CPUC decision on multi-property microgrids (Proceeding R 19-09-009) that limits commercial operation of community microgrids.

[9]https://www.canarymedia.com/articles/virtual-power-plants/california-could-cut-utility-bills-with-distributed-energy-why-isnt-it

[10]The current utility payment recovery system is known as 'cost of service' regulation.

What is performance-based regulation?

Performance-based regulation (PBR) describes a set of policy tools that align a utility's financial interests with public policy goals and consumer benefits. Current 'cost of service' regulation uses a cost-plus methodology, meaning utilities earn a return on how much they spend on capital investments, which ensures cost recovery and the financial viability of a utility.[11] High electricity prices are a direct consequence of the cost inefficiencies that are exacerbated by the cost-plus approach. PBR provides a better and more flexible framework for delivering affordable and clean energy.

Experts regularly point to four key limitations[12,13,14] of cost of service regulation:

- Very weak (if any) incentives for minimizing costs;
- Skewed incentives for capital over other expenses;
- No incentives to promote energy efficiency; and
- No incentives to pursue climate and clean air goals over short-term profit.

In California, some elements of PBR are already successfully deployed. Since 1982, California utility revenues have been decoupled from electricity sales, which means that the utility's income does not depend on selling electricity. Instead utility revenues earned will vary based on the number of customers served rather than the amount of energy they consume. As a result, utilities have incentives to promote energy savings through energy efficiency, especially since they earn rewards for reaching state goals related to efficiency. This removes the potential conflict between utility profits and implementing energy efficiency programs.

Minimizing costs

A key element of PBR is that utility cost recovery payments are constrained by a competitive cost benchmark. The benchmarks, developed through a regulatory process, would establish cost performance based on the 'best in class' or superlative utilities. This external benchmark is beyond the control of the utility and provides motivation to contain costs. If the utility can beat the benchmark, it will be rewarded. If it fails, it will lose money.

[11] Historically, this cost recovery assurance mitigated the financial risk from the large investment costs of the build-out and expansion of delivery and accessibility of energy nationwide.

[12] https://rmi.org/wp-content/uploads/dlm_uploads/2024/07/RMI_how_to_restructure_utility_incentives.pdf

[13] https://ceepr.mit.edu/workingpaper/the-expansion-of-incentive-performance-based-regulation-of-electricity-distribution-and-transmission-in-the-united-states/

[14] https://irp.cdn-website.com/06615795/files/uploaded/EEI-PEG_Research_Altreg_Survey_Feb_2024.pdf

With the current payment system, a utility addresses growing energy needs by expanding its production and delivery capacity. Typically, this involves spending money on conventional, centralized, capital-intensive generation and large transmission or distribution delivery options. Non-wire, cheaper options, such as locally-owned, more affordable DERs, are neither considered nor rewarded financially. This is because local or customer-owned, distributed resources directly compete with the utility's goal to maximize short-term profits.

Of the total amount California ratepayers pay on their monthly electricity bills, roughly half goes to cover expensive distribution and transmission infrastructure investments. Non-wire alternatives, such as DERs, avoid these infrastructure investments and contain costs. Providing utilities incentives for lowering costs whether they own the infrastructure or not is critical to lowering electricity prices.

Skewed incentives for capital expenditures

Utilities prefer to invest in large, capital-intensive projects because they earn a return on these assets. This profit motive leads utilities to overlook less capital-intensive options, such as repairing or maintaining equipment, even though this may be cheaper. This bias for expensive capital expenditures raises consumer energy prices.

In PBR, this bias is removed by allowing all expenditures (including both capital expenses *and* operating expenses) to earn a return. This is in contrast to the current system in which utilities only earn a return on capital expenses.

PBR success story: Energy efficiency incentives

In the 1980s, California began utilizing a PBR tool to improve utility performance on state energy efficiency objectives. Energy efficiency affects electricity sales and demand. If revenue collection is tied to sales, then a utility has little interest to promote energy efficiency efforts. A key PBR strategy to mitigate this anti-energy saving bias is to decouple revenues from sales.

By 1982, all three California IOUs had decoupled revenues from sales, which propelled the state to become a global leader in energy efficiency.

Clean energy incentives

For a monopoly private utility, profit is the driver of investment and production decisions. Rarely, if ever, are such goals compatible with least-cost delivery and production by a third party, nor do these align with state goals for affordable, resilient, clean energy. Current

regulations that limit the widespread use of DERs are preventing California from making progress toward affordability, clean air, and a stable climate.
In PBR, climate and clean air goals can be explicitly included as performance metrics with rewards and penalties. For example, the Hawaii PBR mechanism has explicit performance incentive mechanisms (PIMs) for DER asset effectiveness.[15] PIMs are a critical component of PBR as they ensure safe, reliable, and high-quality service. PIMs can include minimum standards for attributes such as resilience, customer service, timely interconnection, and DER asset effectiveness.

These standards preserve societal goals that otherwise could be at risk given the strong incentives to minimize costs in PBR.

Conclusion

In summary, a more comprehensive PBR mechanism for California will:

- Provide strong incentives to minimize costs resulting from competitive cost benchmarks;
- Remove the bias for capital expenditures by allowing all expenditures to earn a return;
- Continue to decouple revenues from sales to encourage energy efficiency; and
- Advance critical clean air and climate goals by embedding these goals into performance targets with rewards and penalties if the targets are not met.[16]

Replacing the current utility payment system with comprehensive PBR is fundamental to providing California consumers clean, affordable, reliable electricity. PBR corrects the incentive inefficiencies inherent in the traditional cost of service regulatory framework. Furthermore, PBR can, by design, promote and reward specific societal goals — including clean air and climate goals — through explicit performance targets.

PBR, combined with new regulations that provide real-time pricing for DER and incentivize all the values they contribute to communities and the grid, will allow California to accelerate progress toward state climate goals while making electricity more affordable for ratepayers.

[15] https://www.hawaiianelectric.com/about-us/performance-scorecards-and-metrics/distributed-energy-resource-(der)-asset-effectiveness

[16] California already has some aspects of PBR within the current cost recovery mechanism. Decoupling is commonplace and there are some customer service and energy efficiency performance targets.