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Power Struggle: California's Electric Utility Ownership Dilemma

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I. Introduction

It's a tough time for Californians and their electricity system. California's electricity prices are among the most expensive in the country and interactions between the electric grid and dry vegetation have caused devastating wildfires. Meanwhile, mitigating climate change requires increased dependence on and expansion of the electric grid in order to displace oil and gas.

Electric utilities are central to California's ambitious effort to reach net zero carbon emissions from its power sector and state economy by 2045. To meet growing demand from homes, vehicles, and businesses as they electrify, electric utilities must procure clean energy and make investments in infrastructure while keeping electricity affordable and reliable. Utilities' efforts to meet the targets must not worsen California's cost-of-living crisis. Utilities must also respond to the growing risk of and liability for devastating wildfires. These goals sometimes conflict with each other.

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California's electricity rates are the second highest in the nation and a growing number of Californians are unable to pay their utility bills. This is partly because electricity rates have been used as a vehicle to fund a growing list of important but costly policy goals, including clean energy projects, wildfire-related costs, and subsidies for customers with rooftop solar.[2] Funding these policies through electric rates is regressive; lower income households and renters end up paying more toward these goals than they would if these priorities were funded through the tax base.[3]

A changing climate with more frequent extreme weather and an aging electric grid are a dangerous combination. In addition to posing severe danger to public health, property, and the environment, wildfires pose serious legal and financial concerns for utilities and the public. Reducing wildfire risk is expensive, and the costs of liability, remediation, and rebuilding after wildfires even more so. Destructive wildfires involving utility equipment, like those in Los Angeles in early 2025, also erode trust in the potential for electric utilities to reliably power the economy of the future.[4] So do service interruptions from grid failures and wildfire mitigation tools like public safety power shutoffs, which utilities use to reduce ignition risk on very high fire risk days.

Some advocates point to misconduct by investor-owned utilities and their profit motives as an explanation for poor performance and catastrophes in the electricity sector. Growing public frustration with investor-owned utility performance has spurred interest in changes to the investor-owned utility model. In the tradition of progressives over the past century, campaigns for public buyouts of investor-owned utilities are gaining steam nationwide.[5]

Interest in public buyouts of IOUs is not new to California. The City of San Francisco, in particular, has been evaluating a public takeover of Pacific Gas & Electric's distribution assets for over 20 years.[6] After the 2018 Camp Fire, in which a faulty Pacific Gas & Electric transmission line destroyed some 9,000 homes and killed 85 Californians, legislators and public figures including the then-San Francisco mayor London Breed, proposed transforming Pacific Gas & Electric into a publicly-owned utility; the idea gained over two thirds of public support at the time.[7] A handful of newer legislative and organizing efforts have arisen since.[8]

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Such campaigns are motivated in part by the idea that removing the profit motive from utility operations would break down obstacles to affordable, reliable decarbonization of the electric power system. This idea seems intuitive, akin to the notion that profit motives and a dissonance between private and social good created the conditions that brought climate change. But California's existing publicly-owned utilities have not, in practice, been immune to challenges of keeping electricity affordable while mitigating climate change and maintaining reliability, or even accusations of ulterior financial motives. California's largest municipal utility, the Los Angeles Department of Water and Power, has faced scrutiny over power outages amid heat waves and procures more coal-generated power than any other utility in the state, public or private. Electric bill affordability concerns persist in Los Angeles too.

2 *See* Mohit Chhabra, Natural Resources Defense Council, Powering Change: Understanding California's Electric Rate Challenge and Affordability Solutions (2025), https://www.nrdc.org/resources/powering-change-understanding-californias-electric-rate-challenges-and-affordability.

3 *See* Severin Borenstein, Meredith Fowlie, & James Sallee, Paying for Electricity in California: How Residential Rate Design Impacts Equity and Electrification (Report No. R 25-03-A), Next 10 (2022), https://www.next10.org/sites/default/files/2022-09/Next10-paying-for-electricity-final-comp.pdf.

4 Jenny Jarvie, *Edison Under Scrutiny for Eaton fire. Who Pays Liability Will Be 'New Frontier' for California*, L.A. Times (Jan. 15, 2025), https://www.latimes.com/california/story/2025-01-15/why-edison-likely-to-survive-even-if-its-lines-caused-horrific-l-a-firestorms.

5 Akielly Hu, *Meet the Communities Trying to Take Over Their Local Electric Utility*, Grist (Jan. 25, 2024), https://grist.org/politics/meet-the-communities-trying-to-take-over-their-local-electric-utility/.

6 *See* Public Power SF, www.publicpowersf.org (last accessed May 24, 2025).

7 Adam Brinklow, SF Residents Favor City-Run Power Company, Curbed San Francisco (April 5, 2019), https://sf.curbed.com/2019/4/5/18295626/city-power-electricity-pge-poll-public-breed-survey.

8 SB 332 (Wahab, 2025); SB 917 (Weiner, 2020). For city-level campaigns *see*, Akielly Hu, *Power to the People*, Grist (May 31, 2024), https://grist.org/energy/san-diego-ponders-a-bid-to-take-over-its-for-profit-energy-utility/.

Finding solutions requires an understanding of why utilities do what they do, and of the legal, regulatory, political, and financial characteristics that facilitate utility success. With a diversity of service territories and shareholder interests, local politics, and the risk of wildfires all in the fray, the answers are not obvious. An analysis of how public or private utility ownership shapes the constraints, obligations, and incentives driving utility behavior can inform evaluations of which reforms will most effectively address which challenges.

Our analysis echoes past findings: Neither ownership model offers a panacea for California's electricity challenges.

This paper addresses the question: what does a public buyout of California's investor-owned utilities buy us in terms of affordability, clean energy adoption, and reliability? Our approach recognizes that theoretical frameworks only go so far and considers the practical realities of utility ownership models in the California context, in addition to structural characteristics.

In Part II, we explore the current landscape of utility ownership in California, identifying the key characteristics that drive utility behavior: internal governance structures, regulatory obligations, financing and rate setting, service territory differences, and political accountability and susceptibility. In Part III, we consider how the ownership models and their characteristics contribute to performance outcomes in specific contexts, surveying data on electricity prices, clean energy progress, and reliability metrics while accounting for the complex confounding factors that make direct comparisons challenging and broad generalizations ill-advised.

Part IV turns to interventions with the potential to transform or reform California's utilities. We examine the ramifications of public buyouts, from the transition processes to coordination implications, while also exploring targeted reforms such as selective public ownership of generation and transmission infrastructure, enhanced regulatory oversight, rightsized utility returns, and elements of performance-based regulation.

Our analysis echoes past findings: Neither ownership model offers a panacea for California's electricity challenges. The underlying problems— wildfire mitigation costs, aging infrastructure, climate adaptation needs, and a cost-of-living crisis—persist regardless of ownership structure. We go further, however, breaking down each ownership model to identify the characteristics that impact outcomes and analyzing how interventions target these characteristics.

This work contributes to public conversations about electric utility reform by providing an analytical framework for understanding the characteristics that impact how the utility ownership models operate in practice and how changes to these characteristics can help deliver safe, reliable, affordable, and clean electricity for all Californians.

II. Utility Ownership Models in California

When Californians turn on their lights, they rely on one of over one hundred load-serving entities to deliver electricity.[9] These load-serving entities include six investor-owned utilities (IOUs), 48 publicly-owned utilities (POUs), 26 Community Choice Aggregators (CCAs), four rural electric cooperatives, and 18 non-utility electric service providers. California's six IOUs include the "Big Three"—Southern California Edison (SCE), Pacific Gas & Electric Co. (PG&E), and San Diego Gas & Electric (SDGE)—and three other IOUs that operate in smaller service territories in California.[10]

9 Load-serving entities are electricity providers that own part of the electricity distribution system; they purchase wholesale electricity and distribute it to retail customers. "Load" refers to electricity demand. Electric Load-Serving Entities (LSEs) in California, Cal. Energy Comm'n, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/electric-load-serving-entities-lses (last accessed May 19, 2025).

10 These include Liberty and Bear Valley, which are small, regional IOUs, and PacifiCorp, a very large IOU operating in six states but only a modest region in California. 2017 California Electric Utility Service Territories & Balancing Authorities, Cal. Energy Comm'n, https://cecgis-caenergy.opendata.arcgis.com/documents/4d87af4f27054544bb3be7fe03b9cd9c/explore (last accessed May 19, 2025).

The Big Three provide power for nearly 35 million Californians via 13 million residential and commercial electric accounts.[11] California's two largest POUs, the Los Angeles Department of Water and Power (LADWP) and Sacramento Municipal Utility District (SMUD), serve approximately 1.5 million and 675,000 electric accounts, respectively, in major urban centers.

California has another three dozen POUs which serve smaller territories, often along municipal lines. The range of load-serving entities in California reflects several distinct approaches to solving the basic problem of electricity provisioning: how to ensure just prices despite monopoly provisioning. This requires a brief explanation.

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Electric Utilities are Natural Monopolies

Electricity is not like apples. It cannot be distributed through typical logistics systems because a stable electric grid requires that electricity production and consumption are balanced in real time. With recent advances in energy storage technologies, electricity can be stored but doing so is still relatively expensive, especially for longer periods of time. So, we rely on extensive infrastructure designed to channel and adjust the flow of electricity: transmission lines and distribution lines, substations and transformers.

The need for such extensive infrastructure does not lend itself to a competitive market for two reasons. First, competing sets of infrastructure would entail redundancy and waste (multiple sets of lines along the same street for example), and second, the high fixed cost of this infrastructure creates barriers for new entrants to the market.[12] These features designate electric utilities "natural monopolies," setting up the question of how we can ensure just prices despite the market power of monopoly provisioning.[13] The two most common solutions in California—rate-regulation of IOUs and public ownership—use different tools to address this market power problem.

California's Electricity Market Structure

Both IOUs and POUs operate within a broader electricity market. California has a "partially deregulated" market.[14] California lawmakers pursued "deregulation" (also called restructuring) of the electric sector in the late 1990s in order to introduce competition into electricity generation.[15] The economists who advocated for deregulation argued that electricity generation could be spun off from electric utilities' monopolies if a separate wholesale market for buying and selling electricity was constructed, in contrast to the traditional model of vertically-integrated utilities.

Electricity generators in California now bid competitively into a wholesale market, operated by the California Independent System Operator (CAISO).[16] Today, California utilities operate as distribution monopolies rather than both generation and distribution monopolies. IOUs were encouraged to sell off most of their fossil generation assets during the late 1990s. California IOUs continued to own their hydroelectric and nuclear generation, and began to acquire new

11 14 million IOU customers also rely on CCAs for their generation, while their IOUs provide distribution and transmission service. Electricity Affordability, CalCCA, https://cal-cca.org/affordability/#:~:text=Community%20choice%20aggregators%20(CCAs)%20are,half%20of%20CCA%20customer%20bills (last accessed March 18, 2025).

12 *See* William Boyd, *Just Price, Public Utility, and the Long History of Economic Regulation in America,* 35 Yale J. Reg. 721, 754 (2018).

13 Both the distinguishing features and the resulting regulatory regime stem from the common law doctrine of just price. The common law doctrine of just price, in turn, has far older intellectual origins. *See* Boyd, *supra* note 12, at 730-731.

14 Kathryne Cleary & Karen Palmer, Resources for the Future, US Electricity Markets 101 (March 3, 2020), https://www.rff.org/publications/explainers/us-electricity-markets-101/.

15 Two key intellectual origins of restructuring in ecomonics were a critique of economic regulation that emerged in the 1970s and the marginal cost revolution. The conceit was that competitive markets would lower prices for consumers; the result has been mixed. *See, e.g.* William Boyd, *Decommodifying Electricity*, 97 S. Cal. L. Rev. 937, 952-963 (2024); Mark C. Christie, *It's Time to Reconsider Single-Clearing Price Mechanisms in U.S. Energy Markets, 44 Energy* L. J. 1 (2023); Alexander MacKay and Ignacia Mercadal, *Do Markets Reduce Prices? Evidence from the U.S. Electricity Sector,* Harvard Business School WP 21-095 (2024), https://www.hbs.edu/ris/Publication%20Files/21-095_ba6594bd-2648-4069-94bb-52dfd9495fb1.pdf.

16 *See* Cal. Pub. Util. Code § 345.5.

generation resources in the years following the 2000-2001 electricity crisis.[17]

The retail market in California remains regulated directly with limited customer choice. Load-serving entities are responsible for operating or purchasing generation for their customers from a mix of independent power producers including IOUs, POUs, and CCAs. Customers of POUs rely on their utility to operate or purchase generation on their behalf, while customers in an IOU territory may have a choice of IOU generation service, direct access, or power from CCAs, local non-profit procurement programs. However, a customer opting for CCA service will still have their power distributed and billing provided by the IOU.[18]

Although utilities also own transmission lines within their own service territories, third-party transmission companies increasingly own those high voltage transmission lines which cross multiple utility service territories. The transmission grid is federally regulated by the Federal Energy Regulatory Commission.

1. Legal Foundation of California's Utility Ownership Models

Both IOUs and POUs operate as distribution monopolies in their service territories. Both are also regulated to tie electricity rates to the cost of providing service. The IOU and POU models, however, reflect different approaches to oversight to ensure that utility actions are aligned with public interest.

POUs are public entities granted powers under constitutional or statutory legal authority. IOUs are private entities, but their franchise agreements with cities and counties grant them monopoly distribution rights within specific territories. This is a privilege that in turn subjects them to comprehensive regulatory oversight.[19]

These distinct legal foundations create fundamentally different accountability structures. POUs operate as self-regulating entities, where governance and regulatory functions are unified within the same public institution. While the operator and regulator are effectively one and the same for POUs,

17 IOUs both own some generation and purchase energy from over 400 independently owned plants and out-of-state power producers. *See, e.g.*, PG&E, *PG&E Customers' Electricity 100% Greenhouse Gas-Free in 2023* (April 22, 2024), https://www.pge.com/en/newsroom/currents/future-of-energy/articles-3962-pge-customers-electricity-100-greenhouse-gas-free-2023.html.

18 Community Choice Aggregation—Consumer Information, Cal. Pub. Util. Comm'n, https://www.cpuc.ca.gov/consumer-support/consumer-programs-and-services/electrical-energy-and-energy-efficiency/community-choice-aggregation-and-direct-access-/consumer-information-on-ccas---frequently-asked-questions (last accessed May 19, 2025).

19 Samuel Insull, *The Obligations of Monopoly Must be Accepted*, in Central Station Electric Service 118-22 (ed. William E. Keilly, 1915), https://energyhistory.yale.edu/samuel-insull-the-obligations-of-monopoly-must-be-accepted-1910/.

the IOU model has three distinct players: an operator (the IOU), an external regulator (the CPUC), and a franchisor (the political jurisdiction seeking the utility service). IOUs, therefore, are defined by a combination of state corporate law, their franchise contract, and the Public Utilities Code.

The Making of a POU

Even among POUs, however, distinct legal authorities define different legal rights and obligations:

Both IOUs and POUs operate as distribution monopolies in their service territories.

- **Municipal Utilities ("Munis"):** The California Constitution grants cities the right to establish and operate POUs.[20] Under this constitutional authority, many municipalities around the state have established and operate municipal utilities or "munis." Munis are effectively part of the city government. Examples include LADWP and Alameda Municipal Power.

But utility service territories don't always follow municipal lines. Many communities in California are not incorporated and lack a ready-made governance structure that could own and operate an electric utility. These communities rely on one of three state statutory authorities to establish and operate POUs:

- **Municipal Utility Districts**: Communities that include a mix of incorporated and unincorporated areas can establish a Municipal Utility District under the Municipal Utility District Act.[21] Examples include SMUD and Lassen Municipal Utility District.
- **Public Utility Districts**: Wholly unincorporated communities can establish a Public Utility District under the Public Utility District Act.[22] Examples include Trinity Public Utilities District and Kirkwood Meadows Public Utility District.
- **Irrigation Districts**: Some communities rely on Irrigation Districts, established under the Irrigation District Act, for their electricity. In these communities, Irrigation Districts typically predated electrification, and later added electricity service alongside water distribution duties.[23] Examples include Turlock Irrigation District and Imperial Irrigation District.

Enabling statutes define how these POUs can be formed and how they function,[24] including internal governance processes, board member makeup, the civil service system, the retirement system, corporate powers, and more.[25] For munis, requirements of this kind are defined by the city itself and set forth in a city ordinance or city charter provision.

The range of legal authorities for POUs indicate legislative attempts to carve out different balances of local and state control, depending on the presence of preexisting local governance in the relevant territory. To take the two extremes: Among POUs, the munis of charter law cities exercise the most local autonomy due to the presence not only of an existing general purpose city government but also the city's charter, which establishes home rule under the California

20 Cal. Const. Art XI §9(a); *see also Sacramento Mun. Util. Dist. v. Pac. Gas & Elec. Co.*, 72 Cal. App. 2d 638, 653 (1946).
21 Cal. Pub. Util. Code §§ 11501 – 14509.
22 Cal. Pub. Util. Code §§ 15501 – 18055.
23 Cal. Water Code §§ 20500 – 20627; *See, e.g., Chapter III: California Irrigation District Act and Related Laws, in* California Irrigation District Laws Bulletin No. 18-D at 67 (Cal. Div. Water Res., 1935 Revision), https://cawaterlibrary.net/wp-content/uploads/2019/12/Bulletin_18-D__1935.pdf. For one example of an Irrigation District buyout of local private water infrastructure and subsequent addition of electricity service, *see* M.J. Dowd, Imperial Irrigation District IID: The First 40 Years (1956), https://www.iid.com/home/showpublisheddocument/6000/635648001335730000.
24 Cal. Pub. Util. Code §§ 15701 – 15846 (formation of Public Utility Districts); Cal. Pub. Util. Code §§ 11561 – 11701 (formation of Municipal Utility Districts).
25 *See* Cal. Pub. Util. Code § 15951 *et seq.* (for organization and function of Public Utility Districts); Cal. Pub. Util. Code § 11801 *et seq.* (for organization and function of Municipal Utility Districts).

Constitution.[26] In contrast, Public Utility Districts, which encompass unincorporated territory with no general purpose local government, operate under more state control and a relatively prescriptive enabling statute.

The Making of an IOU

A new IOU can begin operations after a city or county grants the IOU a franchise to operate in its jurisdiction. The California Public Utilities Code lays out the requirements for IOUs applying for franchises and procedural requirements for general law cities considering granting such a franchise.[27] Charter cities, exercising their constitutional home rule authority, may establish their own franchise approval mechanisms.[28] When the IOU files a written acceptance, the franchise becomes legally effective, and when the utility begins service, it automatically falls under CPUC jurisdiction.[29]

2. Defining Characteristics of California's Utility Ownership Models

Utility ownership models are defined, not just by the legal foundation of each utility type, but by a broader set of structural and contextual factors. We identify five core characteristics of utility ownership models in California today. Put together, these characteristics provide an analytical framework for understanding how private and public utilities behave and the landscapes in which they operate. These five core characteristics are:

Utility models are defined, not just by the legal foundation of each utility type, but by a broader set of structural and contextual factors.

- **Internal Governance Structures** explain who calls the shots at each utility and how they do so.
- **Regulatory Obligations** explain the main external requirements for each utility type.
- **Financing, Rate Setting, and Revenue Collection** explain the financial motivations of each utility type and how these motivations impact customer bills.
- **Geography, Density, and Scale** of utility service territories have a significant impact on the costs to provide service.
- **Political Accountability and Susceptibility** explain the political pressures affecting each utility type.

Internal Governance Structures

All utilities are governed by boards, but member composition and selection processes vary. POUs operate as not-for-profit entities governed by local boards. The district-type POUs' enabling statutes all lay out specific internal governance structures and processes for elections of board members. Municipal Utility Districts are required to operate with are required to operate with five-member boards.[30] Public Utility Districts are required to operate with a board comprised of an odd number of directors and if the district is entirely situated in one county, directors are to be elected at large.[31] Munis are permitted to govern themselves according to municipal charter or ordinance. As a result, there can be more variation among muni internal governance struc-

26 Municipal utilities are subject to one dedicated chapter of the Public Utilities Code which primarily confirms and elaborates on the constitutional power of municipal corporations to own and operate public utilities. Cal. Pub. Util. Code §§ 10002, 10003. Charter cities have additional autonomy relative to general law cities, because their charters have the force and effect of state law and grant them supremacy over all "municipal affairs." Cal. Const. art. XI, § 3, 5. General law cities are required to operate a form of government prescribed by state law. *See generally* Cal. Gov't Code §§ 34300 – 34906.

27 Cal. Pub. Util. Code §§ 6231, 6232.

28 Cal. Pub. Util. Code § 6205.

29 Cal. Pub. Util. Code §§ 6235, 216, 701.

30 Cal. Pub. Util. Code § 11801. The directors must be "residents and voters of the respective wards from which they are nominated." *Id.*

31 Cal. Pub. Util. Code § 15951.

tures than among the governance structures of either IOUs or other POUs governed by statute.

IOUs operate as for-profit corporations governed by boards accountable to shareholders with a primary objective of maximizing investor returns while meeting regulatory requirements. IOUs' legal obligations regarding internal governance depend on the state where the IOU is incorporated.[32] Nearly all California IOUs, and all of the Big Three, are incorporated in California, and therefore subject to the requirements for boards set forth in the California Code of Corporations.[33] There are exceptions, however, like PacifiCorp, which operates in multiple western states and is incorporated in Oregon.[34]

Regulatory Obligations

IOUs are regulated by the CPUC to ensure that they provide service at just prices.[35] IOU operations are extensively overseen by the CPUC and subject to comprehensive state legislation, creating coordinated but bureaucratic regulatory compliance.

The CPUC must ensure IOU compliance with all state policy related to the electric sector and can fine IOUs for non-compliance. For example, the CPUC is required to ensure that each IOU procures enough generating capacity to maintain adequate electricity supply through a resource adequacy proceeding. The CPUC is also required to ensure that IOUs comply with the state's Renewable Portfolio Standard and meet clean energy goals set by Senate Bill 100.[36]

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The Public Utilities Code also sets out a range of obligations related to social goals. For example, IOUs must administer a low-income discount program called California Alternative Rates for Energy (CARE) and publish information about CARE in multilingual and accessible formats.[37] IOUs are also required to develop and implement rate assistance programs for food banks.[38]

Generally, IOUs must report information to the CPUC and the CPUC itself must submit a barrage of annual reports to the legislature on IOU service.[39] A key regulatory challenge for the CPUC is the information asymmetry between IOUs and regulators, limiting effective oversight of spending decisions.

POUs benefit from regulatory independence with limited oversight by the California Energy Commission (CEC), rather than comprehensive CPUC regulation, allowing them to prioritize local interests first and state goals second. POUs' internal governance bodies determine the utility's priorities and operating standards. The Public Utilities Code occasionally encourages certain actions by POUs—for example, POUs are "encouraged" to establish a rate assistance program for food banks like the one required for IOUs—but the Code rarely requires specific action of local POUs.[40] POUs are subject to state clean energy targets and resource planning requirements like IOUs, but requirements are less stringent, with compliance overseen by the CEC.[41]

32 9 Fletcher Cyc. Corp. § 4223.50.
33 Cal. Corp. Code §§ 102, 300.
34 PacifiCorp, 2022 Annual Report in Compliance with General Order No. 166 (D. 98-07-097) (May 2, 2023), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/safety-policy-division/reports/pacificorp-2022-go-166-report-public.pdf.
35 Cal. Pub. Util. Code §§ 726-758; *Munn v. Illinois*, 94 U.S. 113 (1877).
36 SB 100 (De Léon, 2018).
37 Cal. Pub. Util. Code §§ 739.1 (all IOUs that serve over 100,000 customers), 739.4.
38 Cal. Pub. Util. Code § 739.3.
39 *See generally* Cal. Pub. Util. Code §§ 910 - 920. These include, for example, annual reports on electric disconnections, ratepayer-funded energy efficiency programs, and the growth of distributed resources among residential customers in disadvantaged communities and low-income households. Cal. Pub. Util. Code §§ 910.5, 913.9, 913.13.
40 Cal. Pub. Util. Code § 739.3.
41 POUs obligations regarding Integrated Resource Planning, in particular, are relatively lax. POUs are required only to submit plans to the CEC. POU can be subject to penalties, however, for failing to comply with Renewable Portfolio Standard requirements. Publicly Owned Utility Integrated Resource Plans, Cal. Energy Comm'n, https://www.energy.ca.gov/rules-and-regulations/energy-suppliers-reporting/clean-energy-and-pollution-reduction-act-sb-350-0 (last accessed May 24, 2025); Renewable Portfolio Standard, Cal. Energy Comm'n, https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard (last accessed May 24, 2025).

Financing, Rate Setting, and Revenue Collection

To build, operate, and maintain infrastructure, utilities need to raise money, spend it, and pay it back to their creditors. As part of this process, utilities collect the money they spend from electric customers through rates. These interconnected aspects of utility operations—how utilities finance their investments, how they get approval for spending, and how they design rates to recover costs—tend to receive the most interest and scrutiny, given IOUs' profit motive and POUs' lack thereof. Understanding these financial mechanics is crucial because they fundamentally shape how utilities make decisions and what customers ultimately pay.

The two streams of savings for POUs, lower cost of public financing and tax advantages, are key selling points for public ownership

Financing

In the IOU model, the responsibility for owning and operating the grid is outsourced to a private company. In return, the IOU is allowed to earn a rate of return on its capital investments. In California, IOUs receive multi-year budgets through general rate cases for operations and maintenance of the grid. If IOUs operate efficiently within budget, they are guaranteed a profit; any overspending eats into shareholder profits.

In the POU model, the public utility, and thus the jurisdiction within which and for whom that utility operates, holds the risk that would be privately managed in the IOU model. These seemingly simple differences have a cascade of complex implications for how cost and risk are shared in the two utility ownership models.

IOUs raise money by offering both debt and equity, with a weighted average rate of return around 7 to 8%.[42] POUs rely on debt financing alone (through the sale of municipal bonds), raising money at lower cost, usually around 4-5%.[43] In addition to their rate of return, IOUs pay taxes on the profit they earn. These differences accumulate over the life of a given asset, which can be more than 30 years. The combined effect can generate large cost savings under public ownership. In California, the difference between public and private financing after accounting for taxes can lead to publicly financed projects being significantly cheaper than privately financed ones. One recent analysis concluded customers could see savings of over 50%.[44]

The two streams of savings for POUs, lower cost of public financing and tax advantages, are key selling points for public ownership and financing. But there is more to the story. First, the tradeoff of not paying an ROE to investors, and instead only taking on debt, is that POUs also hold the investment and operational risk. Any budgetary overruns and the costs of damage caused by the POU's infrastructure must be paid—usually by POU customers or by borrowing more money. Second, the reduced tax burden on POU operations means lower costs for electricity customers but also reduced tax income for the state. In sum, these savings reflect a different model of cost and risk sharing, rather than a simple reduction in cost or risk.

Revenue Pressures

IOUs have a structural bias toward capital investments, which generate returns, rather than operational expenses. This can potentially lead to goldplating, unconstrained capital spending on programs that provide questionable benefits, and affordability challenges. Keeping the IOU profit motive in check starts with setting the right ROE.[45]

42 Return on Equity (ROE) (Actual and Authorized), Cal. Pub. Util. Comm'n, https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/historical-electric-cost-data/return-of-equity (last accessed May 24, 2025).

43 Municipalities can issue municipal bonds. Both Municipal Utility Districts and Public Utility Districts are authorized by their enabling statutes to issue bonds, borrow money, and incur debt. Cal. Pub. Util. Code §§ 12841, 16571. *See, e.g.*, Sacramento Municipal Utility District Bond, 5%, CBonds (Aug. 15, 2022), https://cbonds.com/bonds/1121649/.

44 Sam Uden and Neil Matouka, *Policy Reforms to Address California's Electricity Rate Crisis, Conservation Strategy Group*, CSG Blog (Aug. 20, 2024), https://www.csgcalifornia.com/blog/policy-reforms-to-address-californias-electricity-rate-crisis/.

45 "Goldplating" is also referred to as the Averch-Johnson effect.

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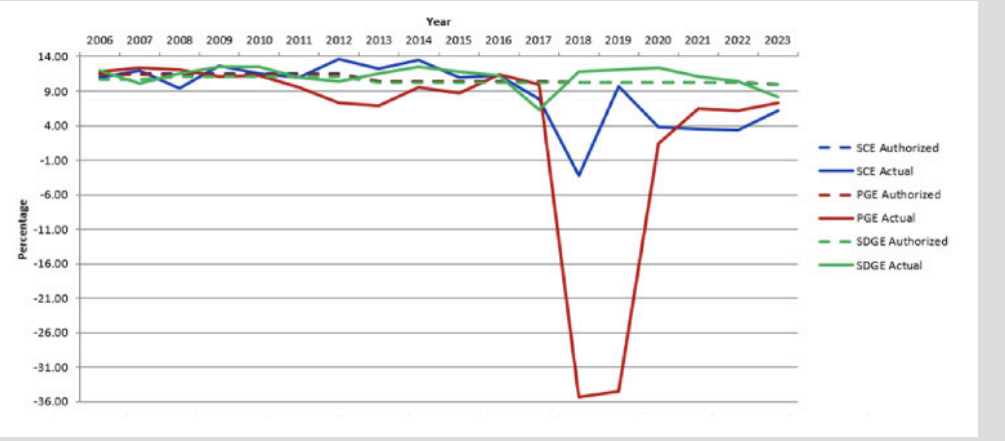
Return on Equity

IOUs are motivated by profit; by outsourcing risk and leveraging private capital, the IOU model is intended to harness this motive. IOU profit is determined by IOU overall spending and the rate of return, both of which are approved by the CPUC. The CPUC determines shareholder compensation levels through the return on equity (ROE), making this complex task a key determinant of IOU financing capacity, incentives, and customer costs.

In theory, the CPUC should authorize ROEs that reflect the investment risk IOUs take on.[46] If set too low, utilities may not be able to raise sufficient funds for grid investments. If set too high, utilities have incentives to "goldplate" or overinvest in capital infrastructure for outsized returns.

Because IOU profit is a combination of overall spending and their authorized ROE, IOUs can end up earning more or less than their authorized ROE based on their actual spending during a given period. If IOUs function more efficiently and spend less than budgeted, their actual earnings can exceed their authorized ROE. If they overspend, their actual earnings will be lower. For example, the following figure from the CPUC shows the difference between actual and authorized ROE. After the wildfires in 2017-18 PG&E made huge losses and went bankrupt; to this day their earned ROE is lower than their authorized ROE.

Figure 1: Return on Equity, Cal. Pub. Util. Comm'n.[47]
Dashed lines are approved ROEs, and solid lines are actual ROEs based on utility performance.



Though structured as not-for-profit entities, POUs are not entirely immune to revenue pressures. POUs can face institutional pressures to generate surplus revenue. Some municipal utilities transfer excess funds to their city's general fund through mechanisms known as Payments in Lieu of Taxes (PILOTs). These transfers compensate municipalities for services provided to utilities and replace tax revenue that would otherwise be collected from a private utility.

46 The CPUC's 2023 Cost of Capital Proceeding set PG&E's ROE at 10.00% compared to the 9.39% national average for electric utilities. *Decision 22-12-031 on Application of Pacific Gas and Electric Company for Authority to Establish Its Authorized Cost of Capital for Utility Operations for 2023 and to Reset the Cost of Capital Adjustment Mechanism (U39M)* 35-38, Cal. Pub. Util. Comm'n (Dec. 19, 2022), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M500/K015/500015851.PDF.

47 Return on Equity, Cal. Pub. Util. Comm'n, https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/historical-electric-cost-data/return-of-equity (last accessed May 23, 2025).

LADWP, for example, has a "city transfer" program. Established initially as a "repayment of taxes" mechanism, these transfers were designed to reimburse city taxpayers for their historical investments in developing the utility's infrastructure.[48] Today, the Los Angeles City Charter explicitly authorizes periodic transfers of LADWP's surplus funds to support general municipal services.[49]

These transfers provide a revenue stream for municipal governments and have been viewed with suspicion by some as an indication of POUs imposing rates above the cost of service. These concerns gained a legal foothold after passage of Proposition 26, leading to litigation.[50]

Proposition 26

In 2010, Proposition 26 amended the California Constitution to reclassify fees and charges as taxes, resulting in a prohibition on local governments imposing, increasing, or extending any tax without voter approval.[51] California courts have ruled that rate increases are not considered tax increases under Proposition 26 if they accurately reflect costs of providing electricity service.[52] Even so, Proposition 26 has created legal uncertainty for POUs, along with other public entities, since they must be able to show that their rates accurately reflect the costs of providing electricity service. This calculation sounds simple, but providing electricity service increasingly involves tradeoffs and value judgements to maintain affordability while pushing for decarbonization and wildfire mitigation. Proposition 26 is not the first ballot initiative to limit local governments' ability to raise revenue. The industry power and political sentiment behind these kinds of initiatives represent real challenges for POUs.[53]

Proposition 26 is not the first ballot initiative to limit local governments' ability to raise revenue. The industry power and political sentiment behind these kinds of initiatives represent real challenges for POUs.

Rate-Setting and Revenue Collection

In the standard approach to rate regulation, called "cost of service regulation," IOUs forecast how much spending is necessary to meet their obligations and the regulatory body approves whatever spending it considers prudent. IOUs can then collect approved spending from ratepayers, including a rate of return on capital investments.

Determining which costs are prudent can be a difficult and highly technical exercise. A key challenge is the information and resource imbalance between the IOUs and the CPUC. IOUs put forward initial cost estimates and know system needs well. The CPUC is then charged with reviewing the IOU's revenue requests, including both forecasts and recorded spending.

Once total revenue that the utility needs to recover (called the "revenue requirement") has been determined, these amounts are allocated amongst the different classes of customers—residential, industrial, and commercial. Once customer class allocation has been determined through a litigated process, rate structures are developed for each customer group. These "rate designs" are formulas that determine how much customers will pay on their bills, for what, and when. Designing the rate structure is a zero-sum distributive exercise, presenting challenging

48 Frederick Pickel, Off. of Pub. Accountability, Report on 2015 LADWP Power Rate Proposal 79 (Jan. 15, 2016), https://ens.lacity.org/opa/importantdoc/opaimportantdoc3249101037_01152016.pdf.

49 L.A. City Charter § 344.

50 *See e.g.*, *Eck v. City of Los Angeles*, Case No. BC577028 (L.A. Cty. Superior Ct.); Riverside General Fund Transfer Settlement, City of Riversde (Sept. 30, 2022), https://riversideca.gov/press/riverside-general-fund-transfer-settlement.

51 Cal. Const. Art. XIIIA, § 3; Constitutional Amendments—Taxation, 2010 Cal. Legis. Serv. Prop. 26 (Proposition 26).

52 *Citizens for Fair REU Rates v. City of Redding*, 6 Cal. 5th 1, 11 (2018).

53 Major donors included oil, gas, and beverage companies, along with the California Chamber of Commerce. Stop Hidden Taxes – No On 25 & Yes on 26: Top Donors, Open Secrets (Oct. 13, 2024), https://www.opensecrets.org/ballot-measures/committees/stop-hidden-taxes-no-on-25-yes-on-26/17445476/2010.

questions about how to balance various outcomes, from incentivizing efficient use of electricity to affordability to equity. The CPUC approves rate structures for IOUs.

POUs set rates via the internal governance structures. The legislature can exercise control over district-type POUs' rates through their enabling statutes, but in practice, these requirements only dictate the process for rate setting.[54] Both Public Utility Districts and Municipal Utility Districts are required by statute to have their rates fixed by their boards and are intended to be financially self-sustaining.[55] Muni boards generally set electric rates, though some cities require that those rates are approved by the city council.

IOUs on the other hand are more accountable and susceptible to state-level politics than to local politics, and to the interests of their shareholders.

Geography, Density, and Scale of Utility Service Territories

Characteristics of a utility's service territory such as size, geography, and population density greatly affect the cost of service. Denser urban areas require less investment per customer than sprawling rural areas. Historically, POUs and in particular munis, have been more common in denser, urban environments. In these environments, city governments offer ready-made governance structures and POUs can leverage existing municipal infrastructure and higher customer density for operational efficiency.[56]

California IOUs typically serve more diverse and more rural areas, facing higher per-customer infrastructure costs. In many parts of the country, rural cooperatives historically emerged to fill the gaps in rural areas which IOUs deemed not cost-effective to provide service to and where no political jurisdiction developed a POU.[57] Rural electric cooperatives are relatively uncommon in California, likely because California's IOUs expanded rapidly in the early 20th century, before the national Rural Electrification Act in 1936, which provided loans for rural cooperatives to form nationwide.[58]

Political Accountability and Susceptibility

POUs are local actors. They are responsive to the jurisdiction in which they operate, making them both accountable and susceptible to local politics. Where a conflict between a state goal and local priority may arise, POUs are likely to side with local priorities.

IOUs on the other hand are more accountable and susceptible to state-level politics than to local politics, and to the interests of their shareholders. The five Commissioners who lead the CPUC are appointed by the governor. Because IOUs are subject to statutory requirements through legislative changes to the Public Utility Code, it's simpler for stakeholders to implement policy changes and reforms impacting all IOUs. The decentralized nature of POUs makes it more challenging for an individual stakeholder to wield the same level of broad influence on POUs.

Participating in decisionmaking about both IOU and POU service can be a challenge for members of the public. The complexity of the subject matter can make it difficult for the public to engage, as decisionmaking often includes interrelated technical legal, engineering, and economic concerns.

Opportunities for public engagement arise differently at IOUs and POUs. The public can seek to influence IOUs through the CPUC's regulatory process and at the legislature in Sacramento, which sets requirements for the CPUC. At the CPUC, in contrast to some other state agencies, the meatiest decisionmaking and public engagement occurs in formal multi-party proceedings, rather than general meetings. Unlike one-off meetings, proceedings can be ongoing for months or years, requiring long-term participation.

54 *See, e.g.*, Cal. Pub. Util. Code §§ 14401 – 14403 (for Municipal Utility Districts).
55 Cal. Pub. Util. Code §§ 16467 (for Public Utility Districts), 12809 (for Municipal Utility Districts).
56 Early reliance on direct current electricity also contributed to limiting distribution to local areas. See David E. Nye, Electrifying America 7 (1992).
57 David E. Nye, Electrifying America 24 (1992).
58 Nat'l Rural Elec. Coop. Ass'n, History (updated 2025), https://www.electric.coop/our-organization/history.

For POUs, organized public meetings offer both political and regulatory access to decision-makers. POUs typically do not hold proceedings like the CPUC and decisionmaking processes vary across POU jurisdiction. As a result, engaging with POUs may be less labor intensive, but can also be confusing to navigate.

Both POUs and the CPUC are subject to transparency and open meetings requirements. As local public entities, POUs are subject to the Brown Act and the California Public Records Act.[59] Because IOUs are private, they aren't governed directly by these laws. Instead, the CPUC is subject to the Bagley-Keene Act and the California Public Records Act.[60] In all cases, accessibility to information and participation can still be limited in practice depending on the location and time of the convening, presence of interpretation services, clear agendas and schedules, and associated financial costs, among other factors.[61]

The smaller-scale, local operations of POUs can be a double-edged sword. Public meetings are more likely to be geographically closer to the relevant public and fewer participants can make it easier for general members of the public to contribute. However, small POUs have fewer resources to dedicate to accessibility measures than the CPUC, where all IOU proceedings are centralized and documented. Small-scale POU elections also mean that organized interests—whether local environmental advocates or large commercial customers—can shape outcomes through targeted mobilization of relatively few voters.

Easier political access means more political activity. In 2024, the legislature considered more than 80 bills related to energy regulatory issues.

The high impact IOU proceedings at the CPUC draw in many well-resourced parties, ranging from the IOUs themselves to technology manufacturers to renewable energy developers. To provide a counterbalancing voice for the public, the CPUC has a consumer advocacy office dedicated to representing the interests of all customers in IOU proceedings.[62] The CPUC also operates one of the country's most robust intervenor compensation programs, which makes it possible for smaller and non-for-profit actors representing residential and small commercial customers to be compensated for participation that contributes meaningfully to decisions.[63] Some POUs also have public advocates, though they are far smaller.[64] This reflects both the smaller size of POUs and the assumption that, without a private utility company, there's less need to offset corporate influence in utility decisions.

Easier political access means more political activity. In 2024, the legislature considered more than 80 bills related to energy regulatory issues. Usually, bills reflect problems and solutions to IOU regulation and related state policy goals that are defined by influential stakeholders. IOUs are politically active as well. PG&E spent nearly $40 million over the past twenty years lobbying the CPUC and the State of California.[65] Some POUs also lobby in Sacramento, though their efforts are more limited and often conducted through their trade associations.[66]

59 Cal. Gov't Code §§ 54950, 7920.000.

60 Cal. Gov't Code §§ 11120, 7920.000.

61 *See, e.g.*, Michelle Fleurantin, Natalie Britton, Justin Schott, and Burçin Ünel, , N.Y. Univ. Inst. for Policy Integrity, Public Utility Commission and Procedural Equity (2025), https://policyintegrity.org/files/publications/Public_Utility_Commissions_and_Procedural_Equity_Report_vF.pdf.

62 Pub. Advocates Off., Cal. Pub. Util. Comm'n, https://www.publicadvocates.cpuc.ca.gov/ (last accessed May 20, 2025).

63 Christopher Tonnu Jackson, *Putting the Public in Public Utilities Commissions*, Issues in Sci. & Tech. (Fall 2021), https://issues.org/wp-content/uploads/2021/11/23-25-Jackson-Putting-the-Public-in-Public-Utilities-Commissions-Fall-2021.pdf; Intervenor Compensation Program, Cal. Pub. Util. Comm'n, https://www.cpuc.ca.gov/proceedings-and-rulemaking/intervenor-compensation (last accessed May 19, 2025).

64 *See, e.g.*, Off. of Pub. Accountability, City of L.A., https://opa.lacity.gov/ (last accessed May 19, 2025).

65 Jeremia Kimelman, *California Lobbyists are on Pace for Another Record Year*, CalMatters (May 21, 2024), https://calmatters.org/politics/2024/05/california-lobbying-state-government-2/.

66 For direct lobbying, *see, e.g.*, SMUD Legal, Government Affairs & Contracts, SMUD, https://www.smud.org/Corporate/About-us/Company-Information/Executive-management/Legal-Government-Affairs-Reliability-Compliance (last accessed May 14, 2025). For trade associations, *see, e.g.*, Bill Tracking, California Municipal Utilities Association, https://www.cmua.org/bill-tracking (last visited May 23, 2025); Policy, Northern California Power Agency, https://www.ncpa.com/policy/issues/ (last visited May 23, 2025); About Us, Southern California Public Power Authority, https://scppa.org/about-us/ (last visited May 23, 2025).

Putting it All Together

POUs are smaller, generally more urban not-for-profit entities beholden to local politics and dependent on public financing. IOUs are private entities willing to invest and manage large grids at a price. IOUs must be effectively regulated to align corporate interests with those of the public.

III. Utility Ownership Models Side by Side

In the last section, we identified five core characteristics that shape IOU and POU behavior. Next, we compare the performance of IOUs and POUs with respect to electricity prices, clean energy progress, and reliability. We analyze the core characteristics in context, investigating if and how either ownership model offers clear benefits for affordability, clean energy, or reliability.

Evaluating the causal relationship between ownership models and utility performance is challenging but critical when considering structural reforms.

California's IOUs and POUs demonstrate varied performance across key metrics. POUs generally offer more affordable electricity rates than IOUs, while IOUs tend to outperform POUs in clean energy adoption, despite both being subject to the same state targets. Regarding reliability and wildfire safety, POUs show better metrics than IOUs, though direct comparisons are complicated by significant differences in service territory size, geography, and inherent risk profiles.

Evaluating the causal relationship between ownership models and utility performance is challenging but critical when considering structural reforms. Existing literature lacks consensus on how ownership affects utility performance. Traditional economic theory suggests that profit-motivated IOUs should operate more efficiently than their public counterparts,[67] but empirical evidence remains inconclusive. Similarly, while removing the profit motive from essential services might theoretically better align performance with public interest objectives, POU outcomes don't consistently vindicate this assumption.

Multiple comparative studies examining whether IOUs or POUs deliver more efficient service have yielded contradictory findings.[68] More recent findings suggest that POUs and IOUs may have unique operational strengths, but do not explore underlying causes or contextual factors.[69] Attempts to conduct "apples-to-apples" performance comparisons often fail because IOUs and POUS are extremely diverse, with differences territory size, energy resource portfolios, climate conditions, and regulatory histories.

The California utility landscape illustrates these complexities.

In Southern California, SCE, a private utility, charges electric rates approximately 50% higher than LADWP, a public utility.[70] However, SCE serves three times more customers across a service territory 100 times larger than LADWP's, with different geographic challenges, resource access, and financing structures. Historical events have also shaped the current rate structures differently. During the 2000-2001 electricity crisis, SCE faced near-bankruptcy from wholesale price spikes and the state of California took over power power procurement on an interim basis,[71] requiring government-issued bonds that SCE customers paid for through 2021 as 'legacy costs'

67 *See* S.E. Atkinson and R. Halvorsen, *The Relative Efficiency of Public and Private Firms in a Regulated Environment*, J. of Pub. Econ. 29(3): 281-294 (1986).

68 *See* R. Fare, S. Grosskopf, and J. Logan, S.E. Atkinson and R. Halvorsen, S.E. Atkinson and R. Halvorsen, *supra* note 67; D.S. Koh, S. V. Berg, and L. W. Kenny, *A Comparison of Costs in Privately Owned and Publicly Owned Electric Utilities: The Role of Scale*, Land Econ. 72(1):56–65 (1996).

69 *See, e.g.*, J. E. Kwoka, *The Comparative Advantage of Public Ownership: Evidence from U.S. Electric Utilities*, Canadian J. of Econ. 38(2):622–640 (2005); R. T. Boylan, Does Private Ownership Reduce Political Distortions? Evidence from U.S. Electric Utilities (2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3194688.

70 Compare Rates, SMUD, https://www.smud.org/Rate-Information/Compare-rates (last accessed May 12, 2025).

71 The California Crisis Timeline, PBS Frontline, https://www.pbs.org/wgbh/pages/frontline/shows/blackout/california/timeline.html (last accessed Sept. 30, 2024),

on their bills.[72] Meanwhile, LADWP and its customers were insulated from this crisis through their unique ownership of generation resources and access to hydropower via transmission infrastructure financed by public bonds.[73]

Northern California presents similar contrasts. PG&E, an IOU, charges electric rates more than double those of Roseville Electric, a POU,[74] and experiences significantly higher service disruptions (2.2 versus 0.1 sustained outages per customer annually).[75] But PG&E serves over 5 million customers across 70,000 square miles[76]—California's largest service territory—with 50% classified as high fire risk.[77] This has driven substantial wildfire mitigation expenditures, with the CPUC projecting nearly $24 billion in required spending by 2030.[78] Roseville Electric, serving fewer than 100,000 customers across just 42 square miles, has no high fire risk territory.

Research attempting to predict utility performance on specific outcomes like affordability, clean energy, and reliability often implicitly assume specific contextual factors. For example, a 2019 Hawaii state report evaluating different ownership and regulatory models concluded that a cooperative utility structure would better encourage distributed energy resource adoption compared to an IOU model due to its member-owned nature.[79] However, this conclusion depends on several assumptions, including local policy priorities (which don't universally favor clean energy or distributed resources), existing electricity price levels, and specific incentive structures.

All five core characteristics affect utility performance. Certain characteristics force behavior, either constraining or obligating action. Other characteristics incentivize action. In between, there is a lot of uncertainty, shaped by highly variable and context-dependent factors. Given these analytical complexities, this paper does not attempt to evaluate historic IOU versus POU performance based on isolated metrics, which are difficult to assess independent of local context and history. Instead, we survey outcomes and identify where core characteristics impact those outcomes and where the contributions of these characteristics are less clear.

California's IOUs have a serious electricity affordability problem.

1. Ownership Model Impacts on Affordability

California's IOUs have a serious electricity affordability problem. Electric rates have skyrocketed in recent years, with rates up 71-104% across the three large IOUs between 2015 and 2025.[80] While the national average residential electricity rate is around 17 cents per kWh, PG&E, SCE, and SDG&E have average rates for non-discount residential customers over 30 cents per kWh.[81] Today, nearly a quarter of low-income households and a fifth of all households in California IOU territory are behind on paying their electricity bills.[82]

72 Understand Your Bill, Orange Cnty. Power Auth. (Dec. 25, 2022), https://www.ocpower.org/wp-content/uploads/2022/12/OCPA-P-DM-SCE-Bill-Explanation.pdf.

73 Power Past & Present, LADWP, https://www.ladwp.com/who-we-are/our-history/power-past-present#:~:text=Rolling%20blackouts%20and%20skyrocketing%20wholesale,compete%20in%20the%20deregulated%20marketplace (last accessed Sept. 30, 2024).

74 Compare Rates, SMUD, https://www.smud.org/Rate-Information/Compare-rates (last accessed May 12, 2025).

75 U.S. Energy Info. Admin., Form EIA-861: Annual Electric Power Industry Report - Reliability Data File (2023). https://www.eia.gov/electricity/data/eia861/.

76 Company Profile, PG&E, https://www.pge.com/en/about/company-information/company-profile.html (last accessed Sept. 26, 2024).

77 PG&E, Safety Briefing for CPUC 7 (Nov. 10, 2021), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/safety-policy-division/meeting-documents/2021-pge-presentation_111021.pdf.

78 Cal. Pub. Util. Comm'n, Utility Costs and Affordability of the Grid of the Future 64 (Feb. 2021), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/en-banc/feb-2021-utility-costs-and-affordability-of-the-grid-of-the-future.pdf.

79 London Economics International LLC et al., Evaluation of Utility Ownership and Regulatory Models for Hawaii, prepared for Hawaii Dep't of Business, Econ. Dev. & Tourism (2019), https://energy.hawaii.gov/wp-content/uploads/2019/06/HI_DBEDT_UtilityModelStudy.pdf.

80 Cal. Pub. Advocates Off., Q1 2025 Electric Rates Report (May 20, 2025), https://www.publicadvocates.cpuc.ca.gov/-/media/cal-advocates-website/files/press-room/reports-and-analyses/242005-public-advocates-office-q1-2025-rates-report.pdf.

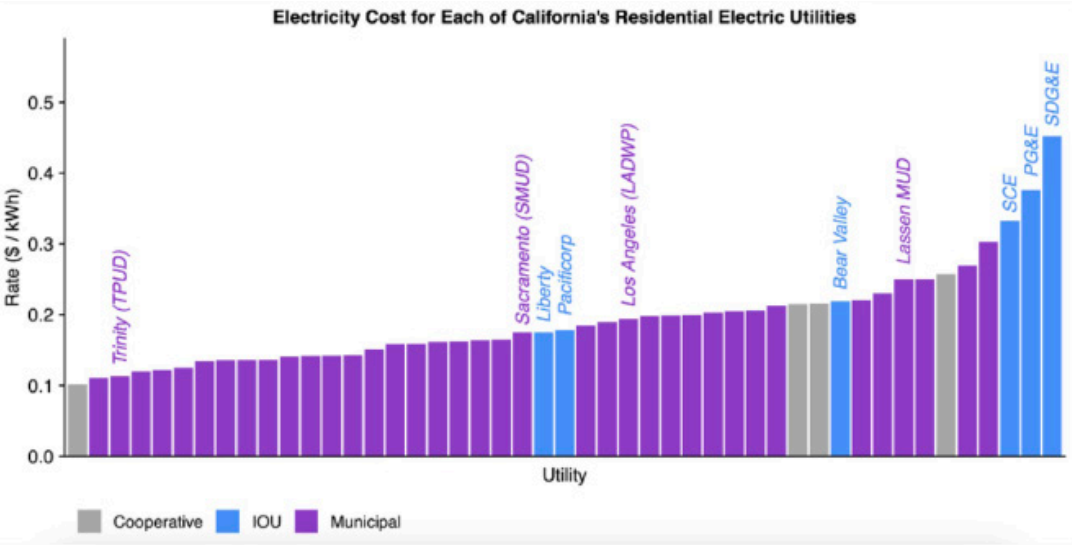
81 Average Price of Electricity to Ultimate Customers by End-Use Sector (March 2025), U.S. Energy Info. Admin., https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a (last accessed June 12, 2025).

82 Data from the Cal. Pub. Util. Comm'n (R.18-07-015) Monthly Disconnection Reports.

Average electricity rates at California's POUs tend to be lower for the average residential customer.[83] The average rate in July 2023 was 29 cents per kilowatt-hour offered by California's IOUs (and 39 cents by the three largest IOUs), and just 18 cents at California's POUs. This price gap aligns with the expected outcomes of different ownership structures: POUs, who place a greater focus on affordability, have no high-cost equity and rely entirely on lower-cost public financing (often tax exempt) which enables lower prices.

POUs, who place a greater focus on affordability, have no high-cost equity and rely entirely on lower-cost municipal financing (often tax-exempt) which enables lower prices.

Figure 2: Electric Rates at California Utilities in 2023 from Energy Institute at Haas[84]



To understand the interaction between utility ownership models and affordability, we look beyond rates alone, which don't fully capture a utility's efficiency in serving its customers. The prices customers see on their bills are a function of three main factors: 1) the total utility revenue requirement, 2) total electric sales, and 3) rate design.

Revenue Requirements and Profit

As discussed in Part II, the CPUC authorizes IOUs' revenue requirements, while POUs typically have revenue approved by their boards and in some cases a city council vote. A revenue requirement is mainly made up of generation, transmission, and distribution costs, as well as "non-bypassable" charges (charges that are collected from customers regardless of usage) or other miscellaneous charges, which include items like paying off historic bonds and funding for low-income energy discount programs.

Generation costs account for all energy and capacity contracts and are mostly a function of projected electricity demand, policy requirements for clean energy and capacity, and the conditions of the wholesale market. All utilities are subject to the same CAISO market conditions, so the costs of procuring generation on the market should not be different based on ownership model.

A key structural difference between IOUs and POUs is that IOUs in California do not typically own much of their own generation and IOUs profit based on investments, not sales (through "decoupling"). While decoupling removes the incentive to increase electricity sales, it creates an incentive

83 Meredith Fowlie, *Not All of California's Electricity Prices Are High*, Energy Inst. Blog (July 10, 2023), https://energyathaas.wordpress.com/2023/07/10/not-all-of-californias-electricity-prices-are-high/.

84 This chart is sourced from a Haas Energy Institute Blog post by Meredith Fowlie and Duncan Callaway. *Id.*

to maximize rate of return and to make more capital investments. By contrast, POUs may own and manage a larger share of their own generation assets in addition to relying on the market. For many smaller municipal utilities, this procurement is facilitated through a public power authority, a joint effort to increase POUs' collective purchasing power and achieve economies of scale.[85]

Distribution spending is approved and regulated by the CPUC for IOUs, but spending on transmission is approved through federal proceedings at the Federal Energy Regulatory Commission. The CPUC participates in Federal Energy Regulatory Commission proceedings as a stakeholder representing the interests of the IOUs as well as California ratepayers.[86] Although most California transmission infrastructure is owned by the IOUs and a smaller share by the POUs,[87] newer large transmission infrastructure is increasingly owned by third parties.[88]

In addition to generation, transmission, and distribution costs, both POUs and IOUs pass through the costs of attaining social policy goals to customers. These policies are often legislatively mandated. For IOUs, these include expenditures on customer programs for energy efficiency, demand response, and storage. Intentional cross-subsidies such as the California Alternative Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) programs provide bill discounts to qualifying lower-income customers. POUs are also required by law to collect a public benefit charge from utility customers which they can use for several enumerated purposes, including energy efficiency programs, investments in renewable resources, and low-income rate discounts.[89]

Wildfire Mitigation: A Major Rate Driver with Structural Implications

While distribution, generation, and transmission make up core utility costs everywhere, in California (and especially in PG&E territory), the largest recent driver of revenue requirement increases has been wildfire mitigation.[90] Large IOU spending on wildfire mitigation has increased dramatically since major wildfires in the late 2010s were ignited by PG&E equipment. Legislation passed in 2018 requires the IOUs to develop wildfire mitigation plans for CPUC approval, encompassing a large suite of maintenance improvements and infrastructure projects.[91]

POUs are also required to develop wildfire mitigation plans, although they tend to be less intensive and costly than IOU initiatives, with a focus on maintenance as opposed to multi-billion dollar grid hardening projects.[92] This difference could illustrate the IOU incentive to max-

85 The Northern California Public Power Authority sources power for 16 such members including Alameda Municipal Power and Roseville power. Members, N. Cal. Power Auth., https://www.ncpa.com/about/ncpa-members/. The Southern California Public Power Authority, supplying 16% of California's power, is comprised of eleven municipal utilities and one irrigation district. About Us, S. Cal. Pub. Power Auth., https://scppa.org/about-us/. Other POUs manage their own power supply, such as LADWP, which owns and operates four natural gas powerplants, a hydroelectric plant, and installed local solar. 2022 Power Strategic Long-Term Resource Plan, LADWP, https://www.ladwp.com/sites/default/files/2023-08/2022%20LADWP%20Power%20Strategic%20Long-Term%20Resource%20Plan_0.pdf.

86 Cal. Pub. Util. Code § 385. Electric Transmission Rates and FERC Proceedings, Cal. Pub. Util. Comm'n, https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/electric-transmission-rates-and-ferc-proceedings (last accessed May 26, 2025).

87 Who Is Responsible For Transmission, Cal. Energy Comm'n, https://www.energy.ca.gov/programs-and-topics/topics/california-transmission-system/who-responsible-transmission (last accessed May 26, 2025).

88 *See, e.g.*, Ethan Howland, *SoCalEd-Lotus Infrastructure Consortium Wins $503M CAISO Transmission Project*, Utility Dive (May 21, 2024), https://www.utilitydive.com/news/caiso-sce-edison-lotus-infrastructure-nextera-transmission/716683/.

89 Energy Efficiency in California's Public Power Sector, Cal. Municipal Util. Ass'n 22-23 (March 2011), https://scppa.org/wp-content/uploads/2022/05/2011_Energy_Efficiency_Report.pdf. About 20% of SMUD's customers are enrolled in the Energy Assistance Program Rate. SMUD Comments Re Senate Bill 350 Low-Income Barriers Study Implementation, 17-IEPR-08 (Aug. 15, 2017); https://www.smud.org/-/media/Documents/Rate-Information/Rates/01_EAPR.ashx; California Ratepayer Funded Programs, LIHEAP, https://liheapch.acf.hhs.gov/dereg/states/casnapshot.htm (last accessed May 26, 2025). LADWP offers an EZ-SAVE Program, with similar 20% enrollment, which is recovered through an Energy Subsidy Adjustment factor in customer rates. LADWP Simplifies Low-Income Customer Assistance Program, LADWP (Nov. 2, 2021), https://www.ladwpnews.com/ladwp-simplifies-low-income-customer-assistance-program-sign-up-to-help-la-families-save-money-on-their-monthly-utility-bills/; Residential Adjustment Billing Factors, LADWP, https://www.ladwp.com/account/customer-service/electric-rates/residential-adjustment-billing-factors (last accessed May 20, 2025).

90 Mohit Chhabra, Powering Change, *supra* note 2; Madalsa Singh, Alison Ong, and Rayan Sud, *Wires and Fires: Wildfire Investment and Network Cost Differences Across California's Power Providers*, 38 The Electricity J. 107475 (2025).

91 SB 901 (Dodd, 2018); Cal. Off. of Energy Infrastructure Safety, Wildfire Mitigation Plans, https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/ (last accessed May 20, 2025).

IOUs also tend to serve larger, more rural areas with higher wildfire risk, and therefore have additional infrastructure needs and higher average cost of service.

imize capital spending, but confounding factors need acknowledgement. It could also reflect POU concerns over legal exposure under Proposition 26 if they move too aggressively to invest in wildfire mitigation or other priorities.

IOUs also tend to serve larger, more rural areas with higher wildfire risk, and therefore have additional infrastructure needs and higher average cost of service. SMUD and LADWP's more urban service territories span 900 and 2,300 square miles respectively; private utilities SCE and PG&E, in contrast, each manage vast and diverse territories of 50,000 and 70,000 square miles. Distributing service over such expansive territory relies on more extensive infrastructure, heightening safety risks and the potential need for investments in safety measures.

IOUs have been criticized and penalized for poor infrastructure upkeep. Independent evaluation reports notably found that PG&E neglected routine inspections and maintenance for decades, leading to significant catchup costs today.[93] We do not have the equivalent comprehensive evaluations of California's POUs to draw a comparison. POUs could potentially make similar decisions to defer maintenance if they prioritize keeping rates low in the short term.

Consumer advocates have criticized IOU wildfire mitigation proposals for maximizing capital spending, such as power line undergrounding, over cost-effective alternatives.[94] While we cannot definitively attribute this solely to differences in ownership models without comparable data for POUs, these patterns align with the IOU incentives to maximize capital investments discussed in Part II.

Electric Sales and Rate Design Effects

Utilities' total revenue requirement is spread over expected usage to determine the rate in terms of dollars per kilowatt hour. California's large IOUs manage the significant fixed costs of a large grid but see relatively low consumption levels due to a large coastal population with low heating and cooling needs, and California's historical focus on energy efficiency. As a result, grid

92 *See, e.g.*, SMUD, 2023-2025 Wildfire Mitigation Plan (2024 Update), https://www.smud.org/-/media/Documents/In-Our-Community/Safety/Wildfire-Safety/WMP_2024-Update_rev0_FinalPublish.ashx.

93 Kirkland and Ellis LLP, PG&E Independent Monitor Report (Nov. 19, 2021), https://s1.q4cdn.com/880135780/files/doc_downloads/wildfire_updates/2021/11/1524-1.Exhibit-Monitor-Report.pdf.

94 *Testimony of Eric Borden of The Utility Reform Network Addressing Pacific Gas and Electric's Test Year 2023 General Rate Case Wildfire Mitigation Measures*, Cal. Pub. Util. Comm'n A.21-06-021 (June 13, 2022), https://docs.cpuc.ca.gov/PublishedDocs/SupDoc/A2106021/5107/483864943.pdf#page=47.

costs are spread over fewer kilowatt hours, contributing to higher rates.

While the revenue requirement is the total amount recouped by a utility, actual electricity use and rate design determine how specific costs are distributed among customers and on what basis, such as usage or time of use. Rate design, therefore, has a major impact on the price of using electricity. Like utility revenue requirements, rate designs are established administratively by the CPUC for IOUs and by individual POU boards.

IOUs' and POUs' different treatment of one rate design component, the fixed charge, is a key contributor to IOUs' relatively higher rates. Historically, most POUs have included fixed charges, flat monthly fees that pay for a portion of utility costs that do not vary with usage, on all monthly bills. IOU bills have not historically included fixed charges for residential customers. All costs have instead been collected based on usage, resulting in inherently higher usage rates (dollars per kilowatt hour). Recent legislation is changing this rate design imbalance in order to encourage beneficial electrification by lowering usage rates, and to increase the monthly bill discount for low-income customers.[95] IOUs will begin offering fixed charges in late 2025.

Another important rate design component which has led to higher IOU rates is net energy metering (NEM), the rate tariff and compensation policy for customers with rooftop solar panels. This policy historically compensated customers for solar generation at retail rates, which meant solar customers did not fully contribute to fixed grid costs.[96] While 1995 legislation required both POUs and IOUs to develop NEM rates,[97] greater solar adoption at IOUs, driven by their higher retail rates, led to a significant shift of fixed costs from solar to non-solar customers in IOU service territories. Analyses suggest that legacy NEM policy is the second major driver of IOU rate increases, after wildfire mitigation. To be clear, clean energy investments themselves have not been a driver of higher rates, rather, this particular rate design has shifted costs, increasing rates for a large subset of customers.[98] As a result, the CPUC has revised NEM policy multiple times to mitigate this cost shift, although earlier solar adopters remain on legacy tariffs.

Certain POUs have taken similar steps to address equity and promote decarbonization through rate design.[99] Notably, ahead of the IOUs, SMUD adopted electric rates which vary at different times of day based on when the grid is cleanest (time-of-use rates); reformed its NEM customer compensation program to reduce the cost shift; and implemented a fixed charge with discount tiers. As a result, the municipal utility serves as a frequent reference point for the CPUC's regulation of IOU rate design.

Because the CPUC does not have authority to implement rate design changes at POUs, however, and because specific municipal legal contexts may prohibit similar reforms, there is greater variation among POU rate designs. Additionally, concerns around legal exposure under Proposition 26 create another hurdle for POUs seeking to offer new rate designs, like low-income rate discounts, or even to change time-of-use period definitions.

95 A 2022 California law, AB 205, required the CPUC to develop residential tariffs for IOUs that collect fixed charges in an income-graduated manner. AB 205 Factsheet, Cal. Pub. Util. Comm'n, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/demand-response/demand-flexibility-oir/ab205_factsheet_050824.pdf.

96 Cal. Leg. Analyst's Off., Assessing California's Climate Policies—Residential Electricity Rates in California (Jan. 7, 2025), https://lao.ca.gov/Publications/Report/4950.

97 SB 656 (Alquist, 1995).

98 *See, e.g.* Severin Borenstein, *California's Exploding Rooftop Solar Cost Shift*, Energy Inst. Blog (April 22, 2024), https://energyathaas.wordpress.com/2024/04/22/californias-exploding-rooftop-solar-cost-shift/; Rooftop Solar Incentive to Cost Customers Without Solar an Estimated $8.5 Billion by the End of 2024, Cal. Pub. Advocates' Off., https://www.publicadvocates.cpuc.ca.gov/press-room/reports-and-analyses/nem-cost-shift-methodology-fact-sheet-2024.

99 Thomas Bowen et al., Chapter 5: *Low-Income Energy Bill Equity and Affordability*, in LA100 Equity Strategies (ed. Kate Anderson, Megan Day, Patricia Romero-Lankao, Sonja Berdahl, and Casandra Rauser, Nat'l Renewable Energy Lab., 2023), https://www.nrel.gov/docs/fy24osti/85952.pdf.

Decarbonization and wildfire mitigation offer prime opportunities for IOUs to exercise their incentive to overbuild.

How do utility ownership model characteristics affect electricity affordability?

The primary causes of the sharp increase in California IOU rates, as explained above, are high utility revenue driven by spending on wildfire mitigation in IOUs' larger and higher-risk service territories, and the way costs are recovered through rates. Any intervention would need to address these two issues to meaningfully reduce rates. In current IOU service territories, wildfire mitigation is a major challenge and only getting more difficult, while cost allocation and rate design remain thorny political issues.

Changing ownership models would not inherently resolve challenges related to wildfire mitigation. A public buyout would also not inherently resolve issue with rate design. A POU would face many of the same political challenges if it sought to modify rate design and change incentives for energy behaviors, like rooftop solar adoption. Industry groups and customers that stand to lose would still object. However, structural characteristics do contribute to IOU and POU affordability performance. The following characteristics, in particular, impact affordability outcomes:

- **Geography and Density of Service Territories:** Utilities operating in more forested, higher fire risk service territories have higher fixed costs. These geographic features would be unchanged by an ownership transition.
- **Financing, Rate Setting, and Revenue Collection:** Decarbonization and wildfire mitigation goals offer prime opportunities for IOUs to exercise their incentive to overbuild. POUs are free from the burden of maximizing shareholder profit in their derisking determinations about wildfire mitigation. This could result in more targeted and less expensive interventions. Like the CPUC, however, local POUs may prefer to make large capital investments through raising utility rates to reduce the risk and liability of future wildfires.
- **Political Accountability and Susceptibility:** As local, special purpose goverments, POUs are subject to Proposition 26 (and susceptible to the general anti-tax sentiment that fueled Proposition 26 and other related ballot measures). This political risk and legal exposure is a check on costs for POUs. POUs' local focus and accountability also usually means a greater motivation to keep rates low, but POUs' relative susceptibility to customers and local interest groups could change this, depending on the political context.

2. Ownership Model Impacts on Clean Energy

California is currently ahead of schedule in meeting its greenhouse gas reduction and Renewable Portfolio Standard targets. In 2016, California achieved its goal of returning to 1990 carbon emission levels four years ahead of schedule.[100] By 2022, over 60% of California's electricity came from non-fossil sources, with 39% specifically supplied by Renewable Portfolio Standard-eligible resources such as wind and solar.[101] As of 2023, California's average utility greenhouse gas emissions intensity was approximately half the U.S. average, measuring 373 pounds of carbon dioxide equivalent per megawatt hour compared to the national 760 pounds.[102]

This progress is due to a mix of decreasing costs of renewables as renewable markets mature and California's forward-looking clean energy policy goals which helped develop the market for renewables, particularly low-cost wind and solar. However, these weather-dependent renewable technologies have not yet eliminated the state's reliance on natural gas, which still powers around 40% of California's electricity needs to meet nighttime demand, consumption spikes, and emergency situations.

California is currently ahead of schedule in meeting its greenhouse gas reduction and Renewable Portfolio Standard targets.

Looking ahead, clean energy production and storage capacity must significantly expand to serve growing electrical load from multi-sector electrification, including buildings, transportation, industry, and increasingly, data centers.[103] Utilities need to secure sufficient clean energy resources in time to meet increased demand. Utilities also need to expand distribution and transmission infrastructure to connect new load to the grid.

To evaluate utilities' clean energy adoption, we look primarily at the pace of utility-scale renewables procurement and adoption of distributed generation. California IOUs currently outperform POUs on both fronts.[104] The simple fact that clean energy serves a larger fraction of sales to IOU customers than their public counterparts, however, belies complexity. The trends are shaped by California clean energy mandates, economic forces in the CAISO market, and several more idiosyncratic features of specific utilities.

California's Clean Energy Mandates Apply to Both IOUs and POUs

California's clean energy mandates take two primary forms. First, the Renewable Portfolio Standard requires both IOUs and POUs to procure at least 60% of all retail sales from renewable generation by 2030.[105] Second, clean energy procurement orders issued through the CPUC's Integrated Resource Planning proceeding ensure IOU compliance with net-zero targets for retail electricity sales, pursuant to Senate Bills 350 and 100.[106]

While these mandates apply to both POUs and IOUs, the enforcement regimes are different,

100 Jonathon Camuzeax, *Why It Matters That California Hits Its 2020 Emissions Target Four Years Early*, Envt'l Defense Fund Blog, (July 12, 2018), https://blogs.edf.org/climate411/2018/07/12/why-it-matters-that-california-hit-its-2020-emissions-target-four-years-early/.

101 Cal. Energy Comm'n, *New Data Shows Investments to Build California's Clean Energy Grid of the Future Are Paying Off* (May 9, 2024), https://www.energy.ca.gov/news/2024-05/new-data-shows-investments-build-californias-clean-energy-grid-future-are-paying.

102 U.S. Energy Info. Admin., *What is U.S. Electricity Generation by Energy Source?* (updated Feb. 29, 2024), https://www.eia.gov/tools/faqs/faq.php?id=427&t=3.

103 Studies suggest California will need to build an additional 148,000 MW of clean energy resources by 2045 to meet rising demand from building and transportation sector decarbonization. For perspective, California had 35,000 MW of renewable resources serving the grid in 2023. Cal. Governor Gavin Newsom, Building the Electricity Grid of the Future: California's Clean Energy Transition Plan (May 2023), https://www.gov.ca.gov/wp-content/uploads/2023/05/CAEnergyTransitionPlan.pdf.

104 Cal. Pub. Util. Comm'n, 2024 Padilla Report 1, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/energy/rps/2024/2024-padilla-reportvfinal.pdf; CPUC Summary of Compliance with IRP Filing 13 (Feb. 2023), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/d1911016andd21.pdf.

105 60% RPS Procurement Rules, Cal. Pub. Util. Comm'n, https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/rps/rps-compliance-rules-and-process/60-percent-rps-procurement-rules (last accessed May 20, 2025).

106 SB 350 (De Léon, 2015); Senate Bill 100 additionally requires all retail electric sales in California to be net-zero carbon by 2045. Cal. Energy Comm'n, SB 100 Joint Agency Report (March 2021), https://www.energy.ca.gov/sb100.

primarily because the CEC oversees POU compliance while the CPUC regulates IOUs. The CEC's monitoring of POU compliance falls short of enforcement, as the CEC cannot impose penalties or fines without explicit statutory direction.[107] In the case of Renewable Portfolio Standard requirements, the CEC can only refer POUs to the California Air Resources Board to determine potential penalties.[108] For Integrated Resource Planning requirements, POUs are required only to submit their plans. If the CEC finds that a POU's plan is inconsistent with legal requirements, it must provide recommendations in response.[109]

The impact of broader market forces on clean energy adoption is relatively straightforward in California. Both IOUs and POUs procure electricity through a mix of standalone contracts and the CAISO wholesale markets. They can also pursue opportunities to build their own generation. The primary way utilities have agency over generation is through long-term contracts, shaped by negotiation and financing terms. POUs, for instance, can use low-cost financing to support cheaper contracting structures.

The CAISO market fills the gaps to match supply with demand. When utilities bid into the CAISO market, they bid on the amount of energy they need to meet their demand, not a particular kind of generation. CAISO market rules, not utility preference, determine the source of electricity that flows to utility customers.

Different Procurement Incentives

Despite being subject to many of the same clean energy mandates and the same wholesale market rules, IOUs and POUs have different procurement incentives. IOUs have an inherent preference for certain clean energy costs over others. IOUs are more likely to support policy interventions that will require or improve their odds of justifying more capital investments in the long term. IOUs are more likely to push back against those goals that increase rates for customers or otherwise generate backlash without providing the utility an opportunity to earn a rate of return.

Since generation spending is directly passed through to customers, IOUs don't have an incen-

107 Cal. Gov't Code § 11145.
108 Renewable Portfolio Standard – Verification and Compliance, Cal. Energy Comm'n, https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard (last accessed May 20, 2025).
109 Cal. Pub. Util. Code § 9622.

tive to flout compliance with targets for renewable generation. Complying can help IOUs develop more goodwill with the CPUC and their customer base. Additionally, the Renewable Portfolio Standard, along with clean energy targets, and economy-wide decarbonization goals each also require an expansion of grid capacity over the long term—either more transmission lines to carry renewable electricity to customers or more distribution capacity to energize electric cars. These kinds of infrastructure projects require capital investments on which IOUs earn a rate of return. That being said, IOUs still aren't completely indifferent to requirements that increase rates. Higher rates create a more challenging political environment for IOUs in Sacramento and at CPUC.

While IOU incentives to build are broadly aligned with state clean electricity and decarbonization goals, there is no guarantee IOUs will spend money on the most effective or efficient capital investments in terms of economic value or emissions reductions.

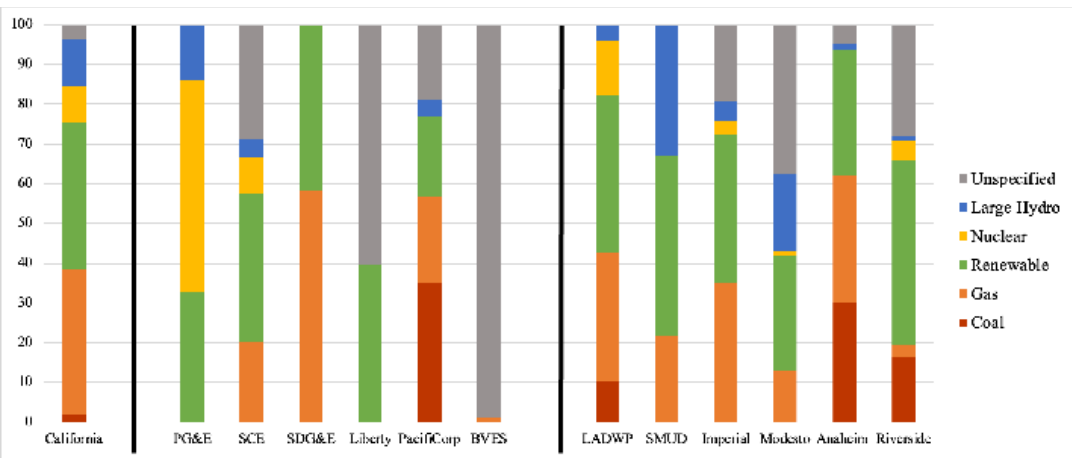
While IOU incentives to build are broadly aligned with state clean electricity and decarbonization goals, there is no guarantee IOUs will spend money on the most effective or efficient capital investments in terms of economic value or emissions reductions. The CPUC conducts analysis, through the Integrated Resources Planning Proceeding, to identify the most efficient mix of clean energy resources, but it cannot enforce the exact contracts IOUs enter with private generators.

POUs, which are size- and resource-constrained relative to IOUs, and which lack the incentives to over-invest, are differently situated. While POUs can pass through all costs to customers, they seek to reduce costs generally. To the extent POUs are diligent about conducting efficient contracting, this can support the clean energy transition, but may also discourage development if it seems too costly for customer acceptance. POUs have also opposed new legislative requirements related to clean energy, citing costs.[110]

Resource Mix Comparison

When adjusting for population served, IOU power content labels report lower emissions intensity than POUs.[111] This is primarily due to the clean energy progress of one IOU in particular—PG&E. In 2023, 100% of PG&E's power mix was greenhouse-gas free or renewable, while a quarter of neighboring POU SMUD's electricity came from natural gas.[112] Setting aside PG&E's results, IOU and POU performance is mixed.

Figure 3: Comparison of POU and IOU 2023 Power Content Labels[113]



110 *See generally* Cal. Municipal Util. Ass'n, Digital Democracy CalMatters, https://docs.google.com/spreadsheets/d/1jFK2ynCdbOGjH-vDtPPGvPjW98ACXcgRtV7FIU7m6hVU/edit?usp=sharing (last accessed May 23, 2025).

111 Calculated in terms of pounds of carbon dioxide equivalent per MWh, data available here and here.

112 Ethan Howland, *PG&E Highlights 100% Emissions-Free Power in 2023 as Generation Spin-Off Hits Snag*, Utility Dive (April 24, 2024), https://www.utilitydive.com/news/pge-pacific-gas-electric-emissions-free-power-pacific-generation-puc/714107/.

113 Based on utilities with available 2023 power content labels. Where utilities provide multiple content labels for different service offerings, displayed is the base or general mix with the highest GHG emissions intensity.

Further, there are several factors that complicate PG&E's results. First, power content label accounting rules obscure the gas power in PG&E's complete portfolio.[114] Second, PG&E owns and operates California's only remaining nuclear plant, Diablo Canyon, which provides about 8% of the state's total electricity.[115] Due to regulatory changes, in future years this supply will be attributed across load serving entities, reducing PG&E's share. Finally, PG&E signed renewable contracts commensurate with their full load, but a fraction of their load is now served by CCAs and high levels of rooftop solar adoption have decreased customer demand.

Compliance with clean energy mandates is more varied among POUs, as each POU faces different resource constraints, serves a unique political constituency, and operates under different internal governance structures.

Both IOUs and POUs rely on coal power to varying extents. Multistate investor-owned PacifiCorp directly owns coal plants.[116] The City of Anaheim holds a contract with a power provider which will transition from coal to natural gas later this year.[117] Coal imports make up 13% of LADWP's power, compared to 2% of the state's energy mix, but the utility plans to replace its coal use with gas by 2025, and later hydrogen.[118]

IOUs have lower average emissions intensity in large part because customers have "departed" to CCAs. When customers depart to CCAs, their electricity is still delivered and billed through IOU infrastructure, but CCAs procure electricity to meet their demand. On the one hand, this means that not-for-profit CCAs bear significant responsibility for IOUs' better performance on clean energy procurement. But this doesn't necessarily cut against the IOU model. Instead, it's an example of how more public, in this case not-for-profit, control can be exercised within the IOU ownership model to achieve public goals.

Greater Compliance Variation Among POUs

Compliance with clean energy mandates is more varied among POUs, as each POU faces different resource constraints, serves a unique political constituency, and operates under different internal governance structures. Over 2017-2020, for instance, the CEC found that seven POUs were out of compliance with Renewable Portfolio Standard requirements, due to their reliance on ineligible Renewable Energy Credits, although this comprised a small portion of overall POU load.[119]

In contrast, SMUD and LADWP have committed to some of the state's most ambitious climate goals. SMUD has set a target of zero carbon emissions by 2030, earlier than any large utility in the country.[120] For its part, LADWP is the first municipal utility to establish "science-based targets" to strategically reduce emissions and has committed to 100% clean energy by 2035.[121]

Both SMUD and LADWP have hydropower resources that contribute to these goals. SMUD's Upper American River Project generates approximately 16% of its power needs in a normal water year,[122] while LADWP operates several hydroelectric facilities including plants throughout the Owens Valley and along the Los Angeles Aqueduct.[123]

114 Gas is a significant portion of PG&E's baseline portfolio resources. See 2022 Integrated Resource Plan, PG&E 30 (Nov. 1, 2022), https://www.pge.com/assets/pge/docs/about/doing-business-with-pge/2022-PGE-Integrated-Resource-Plan.pdf.

115 2022 Totaly System Electricity Generation, Cal. Energy Comm'n, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2022-total-system-electric-generation (last accessed June 8, 2025).

116 Thermal, PacifiCorp, https://www.pacificorp.com/energy/thermal.html (last accessed May 20, 2025).

117 Power Content Label, City of Anaheim, https://www.anaheim.net/3452/Power-Content-Label (last accessed May 20, 2025).

118 LA 100 Plan, Advisory Group Meeting #7, LADWP at 16 (March 20, 2025), https://www.ladwp.com/sites/default/files/2025-03/LA100%20Plan%20Advisory%20Group%20Meeting%207%20March%2020%2C%202025.pdf.

119 RPS compliance data from, Compliance Period 3 POUs Verification Reports - Commission Final Reports, Cal. Energy Comm'n, https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard-6 (last accessed Sept. 30, 2024).

120 SMUD, 2030 Zero Carbon Plan (April 2021), https://www.smud.org/-/media/Documents/Corporate/Environmental-Leadership/Zero-Carbon/2030-Zero-Carbon-Plan-Technical-Report.ashx.

121 Mayor Bass Highlights Steps Towards Building Greener Los Angeles During First Year in Office, City of L.A. (Dec. 4, 2023), https://mayor.lacity.gov/news/mayor-bass-highlights-steps-towards-building-greener-los-angeles-during-first-year-office (last accessed May 20, 2025).

122 Power Sources, SMUD, https://www.smud.org/Corporate/Environmental-Leadership/Power-Sources (last accessed May 20, 2025).

123 LA Aqueduct Power, LADWP Eastern Sierra, https://ladwpeasternsierra.com/power (last accessed May 20, 2025).

Both utilities also serve areas that are predominantly urban and liberal, with a plurality or majority of residents registered Democrats[124] and supportive of initiatives to combat climate change.[125] POUs operating in service territories where climate change is a lower priority among residents may set less ambitious climate targets.[126]

Distributed Generation Comparison: Incentives and Performance

In addition to utility-scale clean energy procurement, distributed generation like rooftop solar and behind-the-meter energy storage will be essential to meet California's climate targets. Around a third of solar capacity in California is on residential rooftops.[127] By far the most important policy support for distributed generation has been California's NEM policy. Traditional NEM compensates customers for their excess solar generation at retail rates. Data confirm that jurisdictions with high retail rates have high penetration of rooftop solar, and so unsurprisingly, California IOUs have some of the highest amounts of distributed generation in the nation.[128]

Despite their relatively high rates of distributed generation however, and in contrast to IOU incentives to build or procure utility-scale clean energy, IOUs lobby against NEM. NEM offers no capacity expansion benefit like utility-scale renewables, and in fact, in some instances it may reduce the need for grid investments. NEM also increases electric rates for non-participants, as discussed above, which challenges IOUs to raise rates further to fund capital projects.

Some POUs also offer NEM rates and solar incentives,[129] but rates of distributed generation remain (much) lower than at California IOUs. We are not aware of analysis examining specifically why POUs have lower rates of distributed generation than IOUs, however, this is likely due to a combination of lower retail rates in POUs, fixed charges, higher incidences of multifamily buildings in SMUD and LADWP territory, and reformed NEM tariffs. Smaller utilities with limited bureaucratic capacity may also struggle to develop and administer complex programs.

How Do Utility Ownership Model Characteristics Shape Clean Energy Adoption?

California is making substantial progress toward clean energy goals under both public and private utility models, with over 60% of electricity coming from non-fossil sources. While IOUs generally show higher rates of clean energy adoption than POUs this difference stems largely from factors unrelated (or indirectly related) to the IOU ownership model, including PG&E's nuclear plant, the influence of CCAs, and rooftop solar adoption. As we would expect based on POUs' local political accountability and capacity constraints, POUs demonstrate variable performance, while IOUs prioritize capital investments and operate under stricter regulatory oversight from the CPUC.

Ownership model characteristics impact decarbonization outcomes, but they are not determinative. The effectiveness of either structure for decarbonization depends more on implemen-

124 California Voter Records by County (Feb. 10, 2023), https://elections.cdn.sos.ca.gov/ror/ror-odd-year-2023/county.pdf.

125 *See, e.g.*, Sammy Roth, *Angelenos are Alarmed by Air Pollution and Extreme Heat. Poll Finds They Want Action*, L.A. Times (April 19, 2024), https://www.latimes.com/environment/story/2022-04-19/angelenos-alarmed-air-pollution-extreme-heat-poll-finds-want-action; Cynthia Hubert, *Climate Change Affecting Families, Sac State Poll Says*, Sacramento State News (Aug. 13, 2019), https://www.csus.edu/news/articles/2019/8/13/Climate-change-affecting-families,-Sac-State-poll-says-.shtml.

126 *See, e.g.*, City of Needles deficit and Lassen Municipal Utility District deficit. Compliance Period 3 POUs Verification Reports, Cal. Energy Comm'n, https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard-6. *See also* Political Districts within Counties for President (Nov. 3, 2020), Cal. Sec. of State, https://elections.cdn.sos.ca.gov/sov/2020-general/ssov/pres-by-political-districts.pdf; California Voter Records by County (Feb. 10, 2023), https://elections.cdn.sos.ca.gov/ror/ror-odd-year-2023/county.pdf.

127 U.S. Energy Info. Admin., California Residents are Increasingly Pairing Rooftop Solar with Battery Installations (July 18, 2024), https://www.eia.gov/todayinenergy/detail.php?id=62524#:~:text=Capacity%20installations%20increased%20initially%20after,in%20our%20detailed%20data%20files.

128 Lucas Davis, *Putting Solar in all the Wrong Places*, Energy Inst. Blog (Feb. 3, 2020), https://energyathaas.wordpress.com/2020/02/03/putting-solar-in-all-the-wrong-places/.

129 *See, e.g.*, Solar FAQ, Merced Irrigation District, https://mercedid.org/solar-frequently-asked-questions/ (last accessed May 23, 2025).

In communities prioritizing climate action, POUs' local accountability could accelerate clean energy adoption, depending on resources and capacity.

tation and supporting policies than on the ownership model itself. The structural differences between POUs and IOUs suggest several ways ownership might impact clean energy adoption:

- **Political Accountability and Susceptibility:** In communities prioritizing climate action, POUs' local accountability could accelerate clean energy adoption, depending on resources and capacity. But POUs may face greater pressure to balance climate goals with local affordability concerns, which can hinder large investments and distributed generation programs. Despite IOUs financial incentives, IOUs must comply with state-level mandates and legislative requirements, including for distributed generation.
- **Financing, Rate Setting, and Revenue Collection:** IOUs are motivated to access private capital for infrastructure investments, but they tend toward overbuilding and resist distributed energy solutions. Harnessing this incentive to build requires careful regulatory oversight.

3. Ownership Model Impacts on Safety and Reliability

To understand reliability performance, we examine public safety power shutoffs and major reliability metrics. We also touch on the crucial issue of how utilities are addressing wildfire mitigation and liability—an issue interwoven into all three topics, but which we discuss here. POUs outperform IOUs on certain reliability and wildfire metrics in California, but the larger size and higher risks inherent in IOU service territories make a direct comparison challenging.

A reliable grid requires three main features. First, there must be adequate electricity generated to meet electricity demand in real time. Second, the distribution and transmission lines that connect electricity generation to end users must function properly and bounce back quickly from outages. Finally, grid operators must ensure that the grid is balanced through flexible, real-time operations as well as short-, medium-, and long-term reliability planning processes.

California utilities face two main challenges in ensuring reliable service: interruptions to distribution lines and inadequate capacity. In recent years, the former has accounted for the bulk of

service interruptions nationally and in California.[130] In California, intentional shutoffs of transmission and distribution lines, called Public Safety Power Shutoffs, are increasingly used to mitigate the risk of wildfires in places and at times when the risk is particularly high. The use of Public Safety Power Shutoffs can be effective but places wildfire prevention in direct tension with reliability of service.

A minority of outages stem from loss of supply, pointing to failures of the bulk power system, which is under FERC's jurisdiction.[131] While inadequate generation has not been the primary source of service disruptions historically, concerns around adequate generation are rising. Multi-sector electrification is projected to increase electricity demand, which, until recently, had been flat for decades.

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Reliability Performance: POUs vs. IOUs

A 2018 Energy Information Administration analysis found that municipal utilities outperform IOUs on reliability nationwide.[132] In California too, the raw data suggests that POUs are more reliable than IOUs. In 2023, IOUs saw a greater average duration of outages per customer (SAIDI) and a greater number of interruptions per customer (SAIFI) than POUs across the state.[133]

However, obvious confounding factors for this varying performance include size and geography, as larger and more rural utilities can face a greater spectrum of weather events and operate more extensive distribution grids to reach difficult-to-serve customers. There may also be comparable risk factors for outages due to proximity or shared transmission lines; neighboring PG&E and SMUD both exhibited some of the highest (worst) scores among all utilities when including major event days, while SCE and LADWP exhibited middling scores.

Figure 4: Comparison of POU and IOU 2023 Reliability Metrics[134]

		SAIDI with Major Event Days	SAIFI with Major Event Days	SAIDI without Major Event Days	SAIFI without Major Event Days
IOU	San Diego Gas & Electric Co	70.6	0.6	70.6	0.6
	Southern California Edison Co	115.9	1.0	95.9	0.9
	Liberty Utilities	264.6	2.0	264.6	2.0
	Bear Valley Electric Service	271.6	3.3	114.5	1.9
	Pacific Gas & Electric Co.	711.7	2.2	255.9	1.6
	PacifiCorp	2381.1	3.9	177.2	1.6
POU	Alameda Municipal Power	6.7	0.0	6.7	0.0
	City of Moreno Valley	8.0	0.1	8.0	0.1
	City of Pasadena	18.1	0.2	18.1	0.2
	City of Anaheim	28.4	0.6	28.4	0.6
	City of Lodi	34.8	0.2	20.3	0.1
	City of Redding	35.3	0.5	35.3	0.5
	Modesto Irrigation District	60.1	0.6	38.6	0.5
	City of Riverside	67.4	0.5	60.6	0.5
	Turlock Irrigation District	80.0	0.7	61.0	0.6
	City of Shasta Lake	137.5	0.9	137.5	.
	City of Santa Clara	148.5	1.3	65.6	0.8
	Imperial Irrigation District	164.4	0.9	70.7	0.8
	City of Palo Alto	171.9	1.6	.	.
	Los Angeles Department of Water & Power	198.8	0.8	141.2	0.7
	Sacramento Municipal Utility District	318.2	1.4	75.6	1.0

130 Explained: Reliability of the Power Grid, Nat'l Renewable Energy Lab. (Jan. 2024), https://www.nrel.gov/docs/fy24osti/87297.pdf.

131 *Id.*; Fed. Energy Reg. Comm'n, Reliability Explainer, https://www.ferc.gov/reliability-explainer (last accessed May 25, 2025).

132 U.S. Energy Info. Admin., Average Frequency and Duration of Electric Distribution Outages Vary by States (April 5, 2018), https://www.eia.gov/todayinenergy/detail.php?id=35652.

133 IOUs saw an average SAIDI (including major event days) of 635.9 and SAIFI of 2.17, compared to 98.5 and 0.69 for POUs. Excluding major event days, IOUs saw a SAIDI of 163.1 and SAIFI of 1.41 versus POUs' 54.8 and 0.49. Based on the available data from the Energy Info. Admin. and SMUD. Annual Electric Power Industry Report, Energy Info. Admin. (Oct. 10, 2024), https://www.eia.gov/electricity/data/eia861/; Exhibit to Agenda Item #1, SMUD, https://www.smud.org/-/media/Documents/Corporate/About-Us/Board-Meetings-and-Agendas/2024/June/2024-06-12_Exhibit-to-Agenda-Item-1.ashx.

134 U.S. Energy Info. Admin., Form EIA-861 2023 final data files (Oct. 10, 2024), https://www.eia.gov/electricity/data/eia861/.

The Structural Impact of Service Territory on Reliability

The ownership structure's impact on reliability cannot be separated from the fundamental differences in service territory characteristics. While POUs have primarily served municipalities historically, IOU service areas are larger and relatively more remote; so, they are more susceptible to weather events and wildfires.

Reliability in more rural service territories has always been a challenge. Utilities often rely on mutual assistance to address service disruptions, particularly in more rural service-territories, whereby utilities share crews to restore service.[135] However, maintaining reliability is becoming increasingly difficult around the country, as extreme weather events become more frequent, leading rural utilities to experiment with creative service solutions.[136]

A 2019 CPUC analysis showed that California IOUs had fewer and shorter outages than the national average when major event days were excluded. California, however, has a lot of major event days.[137] No discussion of reliability in California can escape the specter of wildfires. While drought-prone California has always experienced fires, modern land use policies and longer dry seasons caused by climate change have worsened the problem dramatically. Wildfires over the past decade have killed hundreds (potentially thousands via air pollution), caused tens of billions in property damage, and forced power shutoffs.

Power lines have caused more than half of the most destructive fires in recent years, in part because electric infrastructure tends to be closer to where people live, thereby significantly damaging confidence in electric utilities. The state's large IOUs garnered significant criticism for these disasters, with the events drawing national attention to the topics of utility business models, negligence and infrastructure maintenance, and public safety.

Wildfire Liability

Per California's inverse condemnation laws, a utility foots the initial bill for any damage that its equipment causes. If the utility is not found negligent, it foots this bill through raising rates. If the utility is negligent, it pays for the damage. These liability rules apply equally to POUs and IOUs, but their different ownership structures may lead to different approaches to wildfire risk management. Importantly, per 2019 legislation, the three large IOUs can also seek reimbursement for damages from a shared, multi-billion dollar wildfire fund, jointly funded by shareholders and ratepayers[138]

For IOUs, the incentive to maximize capital investments (on which they earn a return) may lead to preferring capital-intensive solutions like undergrounding power lines. POUs, without shareholder return requirements, may be more likely to pursue a mix of approaches based primarily on cost-effectiveness rather than return potential. While this may reduce their incentive to make substantial capital investments, their access to public financing could also facilitate lower-cost capital investments. Both POUs and IOUs may face specific political pressure from at-risk communities to spend more, and other communities to spend less.

Planning to derisk the grid requires utilities to determine the best mix of capital investments—

135 Edison Electric Inst., Mutual Assistance: 5 Things to Know, https://www.eei.org/-/media/Project/EEI/Documents/Issues-and-Policy/Reliability-and-Emergency-Response/Mutual_Assistance_5_Things_to_Know.pdf; Amer. Pub. Power Ass'n., Mutual Aid and Emergency Response, https://www.publicpower.org/mutual-aid-and-emergency-response (last accessed May 26, 2025).

136 In Vermont, for example, the IOU Green Mountain Power has sought to reduce outages by investing in battery storage strategically placed with ratepayers. Ivan Penn, *Vermont Utility Plans to End Outages by Giving Customers Batteries*, NY Times (Oct. 9, 2023), https://www.nytimes.com/2023/10/09/business/energy-environment/green-mountain-home-batteries.html.

137 Cal. Pub. Util. Energy Division, Comm'n, Electric System Reliability, https://www.cpuc.ca.gov/-/media/cpuc-website/transparency/commissioner-committees/emerging-trends/2021/2021-02-17-electric-system-reliability-presentation---final.pdf.

138 California Wildfire Fund, https://www.cawildfirefund.com/ (accessed May 23, 2025); AB 1054 (Holden, 2019); AB 111 (Ting, 2019).

Geographic-dependent weather risks exacerbated by climate change play a major role in reliability and safety performance.

undergrounding, covered conductors, fast trip settings—and labor to obtain a wildfire resilient grid. A growing body of literature in California explores cost-efficient wildfire mitigation tools.[139] The need for this literature highlights another integral aspect of the IOU ownership model at work: information asymmetry between IOUs and their regulator. When faced with highly technical and high stakes questions around how IOUs should operate, the CPUC is challenged to sift through their work to evaluate which risks are true and which costs are inflations of actual need. This is especially true whenever a new utility spending need, such as wildfire mitigation, arises. Regulators can't rely on past benchmarks alone to judge utility spending to meet these novel ends.

How do utility ownership model characteristics affect safety and reliability?

Geographic-dependent weather risks exacerbated by climate change play a major role in reliability and safety performance. The fundamental challenges of serving high-risk, rural territories remain regardless utility ownership. Both POUs and IOUs may come under pressure from communities in high wildfire risk areas to spend more on mitigation, and from communities in low risk areas to spend less. However, there are a few key areas where utility ownership contributes differently to safety and reliability outcomes:

- **Financing, Rate Setting, and Revenue Collection**: IOUs' preferred wildfire mitigation measures may be shaped by their bias towards capital investments. Without this incentive, POUs might choose different mitigation strategies.
- **Regulatory Oversight:** Information asymmetry is particularly powerful in emerging issues, like determining the best wildfire mitigation interventions. This can give IOUs extra negotiating power.
- **Political Accountability and Susceptibility:** POUs may have different risk tolerances, influenced by local political pressures rather than shareholder interests.

139 *See e.g.*, Cody Warner, Duncan Callaway, and Meredith Fowlie, *Dynamic Grid Management Technologies Reduce Wildfire Adaptation Costs in the Electric Power Sector*, Energy Inst. at Haas WP-347R (revised March 2025), https://haas.berkeley.edu/wp-content/uploads/WP347.pdf.

IV. A Fork in the Road

California stands at a critical juncture in determining the future of its electric utility system. Policymakers face major choices about how to move forward, as the state grapples with high electricity rates, clean energy mandates, and reliability challenges.

Part II compared the two utility ownership models as ideal types and Part III discussed how ownership model characteristics contribute to performance. Here, we turn to interventions, and how such interventions adjust or overhaul the structural features of each ownership model. We survey what a public buyout entails legally, politically, and financially, and evaluate alternative options.

1. Flipping the Script: Public Buyouts

There are two key processes required to transition an IOU to a POU. A new public entity must be formed and that new public entity must buy infrastructure from an existing IOU.

There are two key processes required to transition an IOU to a POU. A new public entity must be formed and that new public entity must buy infrastructure from an existing IOU. Each of these processes would spark political battles and raise critical questions about governance structures.

The legal formation of a new public entity is relatively straightforward—the legal bases for POU formation were discussed above in Part II. Municipalities are constitutionally authorized to form POUs. Areas that include unincorporated territories can rely on the statutory-defined processes for the formation of a Municipal Utility District or a Public Utility District, through either petition or resolution. The California legislature has also explicitly contemplated a state buyout of PG&E in the Golden State Energy Act, which could be used as a model for IOU acquisition more generally.[140] The law established a statutory framework for PG&E's assets to be acquired by "Golden State Energy," a publicly owned, nonprofit benefit corporation.[141]

These relatively simple legal processes for POU formation present challenging policy questions about service territory scale and the impacts of new governance structures, especially when considered through a statewide lens. One example is whether existing IOU service territories would remain intact, be reorganized under new political entities (following the SMUD model), or be divided along existing municipal and county boundaries. If new POUs follow city or county lines, they could become more responsive to local politics than current IOUs. However, increased local responsiveness comes at a cost to state coordination, as local POUs are harder to regulate through central agencies and harder to direct through legislation. Transitioning IOUs to larger regional POUs or even a single statewide public utility would address these decentralization challenges but would diminish local political representation.

Legally, the buyout step presents greater challenges than the formation of the POU. The new POU typically must force the IOU to sell by initiating a commendation proceeding to acquire the infrastructure through eminent domain.[142] The new POU acquires a determination of the price—"just compensation"—and an approval of the sale through an administrative proceeding at the CPUC.[143] IOUs often litigate these efforts and the resulting legal costs can and

140 SB 350 (Hill, 2020).

141 Cal. Pub. Util. Code § 3401. The intent of the Act was to "ensure that if Pacific Gas and Electric Company fails to emerge from bankruptcy as a transformed utility, then Golden State Energy is duly empowered to serve in that critical role."

142 California municiaplities' eminent domain authority resides in the California Constitution. Cal. Const. Art. I, § 19. Municipal Utility Districts' and Public Utility Districts' eminent domain authority is explicitly provided by their enabling statutes. Cal. Pub. Util. Code §§ 12703 (for Municipal Utility Districts), 16404 (for Public Utility Districts); *see also*, *Sacramento Mun. Util. Dist. v. Pac. Gas & Elec. Co.*, *supra* note 20. Cal. Pub. Util. Code §§1401-1420 lays out the process for commendation proceedings on the CPUC and IOU side.

143 Cal. Pub. Util. Code §§ 1401-1420 (valuation); Cal. Pub. Util. Code § 851 (transfer of utility property). *See, e.g.*, City of San Francisco Petition for a Valuation of Certain PG&E Property Pursuant to Public Utilities Code Section 1401-1421 (July 27, 2021), https://www.sfcityattorney.org/wp-content/uploads/2021/07/CCSFs-CPUC-Valuation-Petition-7-27-21.pdf.

have stymied municipalization campaigns.[144] Due to these legal costs and the purchase cost ultimately established through the condemnation proceeding, buyout campaigns often begin with feasibility studies to determine whether the public will be able to bear the likely costs.[145]

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Case Study: The Formation of SMUD

The Sacramento Municipal Utility District (SMUD) exemplifies the challenges—and potential benefits—of public buyouts. In July 1923, Sacramento residents voted overwhelmingly (87% majority) to establish SMUD and replace PG&E's electric service.[146] Frustrated by high rates and poor service quality, voters chose public power under the 1921 Municipal Utility District Act.[147]

The transition proved lengthy and contentious:

- **Infrastructure Acquisition**: Unable to build a new distribution system, SMUD sought to purchase PG&E's infrastructure through condemnation.[148] After multiple failed ballot measures, voters finally approved a $12 million bond in 1934.[149]
- **Valuation Disputes**: PG&E demanded nearly double SMUD's valuation ($18.3 million versus $9.96 million). The California Railroad Commission (the CPUC's predecessor) approved a purchase price in 1942.[150]
- **Legal Battles**: PG&E challenged Sacramento's eminent domain claim in state and federal courts until the California Supreme Court refused to hear PG&E's petition for further review in 1946.[151] SMUD began serving customers 23 years after its democratic inception.
- **Operational Challenges**: The young utility inherited aging, poorly maintained infrastructure.[152] Worker recruitment proved difficult.[153] The troubled Rancho Seco nuclear reactor in the 1970s doubled customer rates before closure in 1989.[154]

Despite these early struggles, SMUD has recently earned a strong reputation for clean energy leadership, reliability, and rates significantly lower than PG&E's.

144 *See, e.g.*, Shelley Ross Saxer, *Eminent Domain, Municipalization, and the Dormant Commerce Clause*, 38 U.C. Davis L. Rev. 1505, 1511 (discussing the City of Corona's abandoned municipalization effort).

145 *See, e.g.*, S.F. Water Power Sewer, Preliminary Report on Electric Service Options (May 2019).

146 Union Linemen Remember the Early Days of SMUD, IBEW 1245, https://ibew1245.com/education/history-of-our-union/sacramento-municipal-utility-district/ (last accessed May 20, 2025).

147 SB 755 (Spence, 1921), Cal. Pub. Util. Code § 11501 *et seq*.

148 SMUD, Sacramental Municipal Utility District Headquarters Building and Site Rehabilitation Project: Final Initial Study and Mitigated Negative Declaration 11, https://www.cityofsacramento.gov/content/dam/portal/cdd/Planning/Environmental-Impact-Reports/DR15-177_Final_MND.pdf

149 Nicholas Iovino, *Public v. Private: How a State Takeover of PG&E Might Look in California*, Courthouse News Service (Nov. 12, 2019), https://www.courthousenews.com/public-v-private-how-a-state-takeover-of-pge-might-look-in-california/.

150 *San Francisco's Comments on Admin. Law Judge Ruling*, Cal. Pub. Util. Comm'n P.21-07-012 (May 13, 2024), https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M531/K700/531700898.PDF (quoting SMUD 44 CRC 467, 491 (1942)). The quoted citation is to a decision of the California Railroad Commission, the CPUC's predessor.

151 A California Court of Appeals ultimately sided with SMUD, agreeing that partial use of rights of way and electrical equipment are legitimate forms of eminent domain permitted by the State and Federal constitutions. *Sacramento Mun. Util. Dist. v. Pac. Gas & Elec. Co.*, *supra* note 20.

152 SMUD Headquarters Building and Site Rehabilitation Project, SMUD 12 (March 2015), https://www.cityofsacramento.gov/content/dam/portal/cdd/Planning/Environmental-Impact-Reports/DR15-177_Final_MND.pdf.

153 Union Linemen Remember the Early Days of SMUD, IBEW 1245, https://ibew1245.com/education/history-of-our-union/sacramento-municipal-utility-district/ (last accessed May 20, 2025).

154 Customers voted to shut down the plant in 1989, and SMUD finished paying off the nuclear plant costs in the mid 2000s. Our History, SMUD, https://www.smud.org/Corporate/About-us/Company-Information/Our-History#:~:text=In%201984%2C%20Folsom%20residents%20voted,output%20continued%20to%20be%20disappointing (last accessed May 20, 2025); Matthew L. Wald, *Voters, in a First, Shut Down Nuclear Reactor*, N.Y. Times (June 8, 1989), https://www.nytimes.com/1989/06/08/us/voters-in-a-first-shut-down-nuclear-reactor.html.

Besides costs and legal obstacles, a piecemeal public buyout process poses potential challenges for coordination around statewide goals, like the equitable distribution of electric system costs, emissions reductions, efficient operation of the electric system, and public participation in utility regulation.

The electric grid operates as an interdependent system where reliability, wholesale prices, greenhouse gas emissions, and pollution cross jurisdictional boundaries.

Coordination Challenges

The electric grid operates as an interdependent system where reliability, wholesale prices, greenhouse gas emissions, and pollution cross jurisdictional boundaries. The CPUC currently coordinates planning across IOUs and CCAs through centralized proceedings. Converting California's IOUs to numerous independent POUs would require new coordination processes in order to effectively address these cross-jurisdictional issues.

These coordination challenges wouldn't only apply to state policymakers. Advocates would have to contend with the logistical challenge of conducting advocacy at multiple fora across the state with divergent procedural requirements. Forcing fossil fuel interests to fight on multiple fronts may seem advantageous, but climate and consumer advocates would face the same fragmentation, almost certainly requiring more resources. New governance structures—such as staff analysis at local board meetings—would replace the CPUC's formal rulemaking process governed by administrative law and CPUC Rules of Practice and Procedure.

Public Participation Trade-offs

New POU processes could improve accessibility for individual residents but might sacrifice the robust comment and record development the CPUC currently provides. The CPUC compensates eligible stakeholders, primarily advocacy groups, for participating in proceedings.[155] Intervention is streamlined through large applications and multi-utility rulemakings.

While the CPUC facilitates public comment through hearings (though turnout varies),[156] recreating these mechanisms across many small utilities would face resource challenges. The CPUC process empowers organized groups, whereas the POU process favors local residents with resources, ability, and motivation for local utility politics. A new utility landscape with more local POUs would require creative thinking about how to facilitate meaningful public engagement across multiple POUs for statewide issues. One option could be to empower the CEC to conduct more robust oversight and enforcement of POU resource planning, with centralized stakeholder participation.

Equity Concerns

A public buyout process would have to address how fixed and sunk costs are allocated across customer classes within original IOU territories.[157] California's IOUs serve more geographically diverse territories than POUs, which typically center around municipalities. Breaking up larger utility territories could create equity issues by limiting cost socialization. Dense, wealthy areas with smaller distributions grids like San Francisco (median household income of $141,446)

155 Intervenor Compensation Program, Cal. Pub. Util. Comm'n, https://www.cpuc.ca.gov/proceedings-and-rulemaking/intervenor-compensation (last accessed May 20, 2025).

156 CPUC Public Participation Hearings, Cal. Pub. Util. Comm'n, https://www.cpuc.ca.gov/proceedings-and-rulemaking/cpuc-public-participation-hearings (last accessed May 20, 2025).

157 "Social ratemaking" has long been a key aspect of ratemaking. *See, e.g.* William Boyd, *Decommodifying Electricity*, 97 S. Cal. L. Rev. 937 (2024). POUs and IOU regulators apply consider multiple rate design principles to decide how costs should be spread, including both cost causation and equity, two core rate design principles considered by the CPUC. Robert Levin, *Basics of Rate Design*, Cal. Pub. Util. Comm'n (June 7, 2018), https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/r/6442457672-ratedesign101-for-evs-june-7-2018-june-6-final.pdf.

would no longer share costs with rural territories that have larger grids to maintain and smaller customer bases like much of Fresno County (median income of $71,434).[158] For example, tree trimming expenses would vary significantly among smaller utilities but could only be socialized within each new territory, potentially limiting rate redistribution given California's urban-rural income disparities and similar disparities between California municipalities that currently share a utility provider.[159] These distributional concerns are likely to only become more important as California contends with the significant costs of grid decarbonization and wildfire mitigation. Smaller utilities would divide costs among fewer ratepayers.

A statewide public ownership initiative or POU campaigns to take over existing IOU service territories, in contrast to piecemeal municipalizations, could address these distributive concerns. Larger-scale buyouts, however, would require substantial political effort and organization. Historical precedent suggests that IOUs will vigorously resist. Sacramento's transition from PG&E to SMUD involved two decades of legal battles. South San Joaquin Irrigation District has pursued PG&E replacement since 2004 and remains in legal battles over asset condemnation.[160] In 2010, PG&E spent $46.1 million on an unsuccessful ballot proposition to restrict municipal utility expansion.[161]

Public buyout campaigns should consider both how the characteristics of the POU model will impact utility performance down the road and these important questions about the buyout process and the scale and structure of the new POU.

2. Revising the Script: Reimagining and Reforming the IOU Model

Short of buying out California IOUs, a range of campaigns seek to "put the public back in public utilities" and improve IOU performance.

Short of buying out California IOUs, a range of campaigns seek to "put the public back in public utilities" and improve IOU performance. A few such options include: 1) ramping up public ownership of transmission infrastructure and generation resources, while leaving IOUs' distribution monopolies in place; 2) strengthening legislation and regulatory oversight; and 3) implementing performance-based regulation.

These reforms don't swap out the IOU model altogether. Instead, several seek to rebalance power in the IOU model , either from the IOU to the public or from the IOU to the CPUC. Others don't touch the IOU model directly and instead build greater public power alongside it. These interventions can complement each other and need not be pursued in isolation.

a. Public Ownership of Transmission and Generation

California can increase public ownership of the electric power system through targeted approaches. Since IOUs primarily manage distribution and transmission, and generation comes from various entities, the state and local governments could selectively increase public ownership of generation resources or of the transmission system, while leaving distribution under IOU control.

158 San Francisco, CA, Data USA, https://datausa.io/profile/geo/san-francisco-ca (last accessed May 19, 2025); Fresno County, Data USA, https://datausa.io/profile/geo/fresno-county-ca (last accessed May 19, 2025).

159 Hans Johnson and Marisol Cuellar Mejia, Rural California Fact Sheet, Pub. Policy Inst. of Cal. (March 2024), https://www.ppic.org/publication/rural-california/.

160 History of SSJID, South San Joaquin Irrigation District, https://www.ssjid.gov/about-us/history-of-ssjid/ (last accessed May 20, 2025).

161 Cal. Proposition 16 (2010); Cosmo Garvin, *PG&E's Power Trip*, Sacramento News and Review (July 23, 2009), https://www.newsreview.com/sacramento/content/pges-power-trip/1040018/.

Public Ownership of Transmission

Public ownership of transmission infrastructure could save customers money by eliminating the need to pay private owners a return on equity. The state could borrow at lower interest rates to construct transmission lines, passing these savings to consumers.

These savings are particularly relevant given the expected transmission expansion costs. The CAISO announced a $6 billion budget for its 2023-24 transmission planning cycle, with 20-year projections estimating investments between $45 and $63 billion.[162] While near-term impacts on residential rates would be modest, longer term savings could be much greater.[163] Reimagining California's electric sector is a long-term project.

Potential long-term savings depend on whether publicly owned transmission projects can match private sector construction costs. Private entities currently receive returns because they bear project overrun risks, incentivizing cost control. As long as total project costs remain comparable, public ownership would save money through lower state borrowing costs. Additional savings would come from tax exemptions on public transmission projects. One analysis found that public ownership could halve customer costs over a transmission asset's lifetime—with 40% of savings from tax exemptions and the remainder from lower borrowing costs.[164] As a result, long-term savings from public ownership of new transmission could reach tens of billions of dollars over the next two decades.

Increasing public ownership of transmission is responsive to the higher costs paid by IOU customers. Rather than change the IOU model directly, this approach would carve out a greater portion of infrastructure that is not subject to IOUs' ownership and by extension, rate of return, theoretically while avoiding the political battle that a full buyout would entail.

Public Ownership of Generation

Unlike transmission, which requires statewide or regional coordination, generation assets could be owned either by a single state entity or individual POUs. Currently, private generation owners typically build assets where most efficient—solar farms in sunny locations, for instance—then contract with utilities or other load-serving entities.

CAISO's wholesale market dispatch ensures lower-cost renewables are utilized first, while inefficient fossil generators operate last. Public generation could compete in these markets, adding new renewable capacity.

A central public entity could efficiently plan statewide resources—exhausting cheap solar potential before developing expensive offshore wind, for example. This approach might enable better environmental stewardship during clean energy buildout and better ensure additional clean energy buildout.

However, centralized planning could sacrifice market efficiencies that account for changing renewable prices and private innovation. Utility-scale generation arguably benefits most from market competition among all utility system components. Competitive bidding has steadily

162 Cal. Indep. Sys. Operator, 2023–24 Transmission Plan 3 (May 23, 2024) https://www.caiso.com/documents/iso-board-approved-2023-2024-transmission-plan.pdf. Cal. Indep. Sys. Operator, 2024 20-Year Transmission Outlook 2 (July 31, 2024), https://www.caiso.com/documents/2024-20-year-transmission-outlook-jul-31-2024.pdf.

163 Mohit Chhabra, *supra* note 2, at 18 (less than $0.001 per kWh by 2030). Immediate reductions would be limited because only a fraction of future transmission lines will be built before 2030, and existing infrastructure retains contractual obligations with private owners. Ken Alex, Grayson Peters, and Ethan Elkind, *Improving Transmission Financing in California*, Berkeley Law Center for Law, Energy, & the Env't 8 (Oct. 2024), https://www.law.berkeley.edu/wp-content/uploads/2024/10/Improving-Transmission-Financing-in-California-CLEE.pdf. In contrast and for longer term benefits, *see* Clean Air Task Force and Net-Zero California, Wired for Savings (Oct. 31, 2024), https://www.catf.us/resource/wired-for-savings/ (modeling ratepayer savings of $3 billion per year based on CAISO's 20-year outlook).

164 Sam Uden and Neil Matouka, *supra* note 44.

decreased clean energy contract prices.[165] The steep decline in renewable contract prices might not have occurred under exclusively public generation. If individual POUs owned more generation assets, coordination would be essential to ensure efficient statewide resource development. Expensive, long-lead resources like offshore wind would require close collaboration among multiple POUs.

As with transmission, generation ownership would require state borrowing, forgone tax revenue, and liability for new assets.

Like increased public ownership of transmission, increasing public ownership of generation is responsive to the higher costs imposed by IOUs and the desire for greater public control. Rather than displace IOUs' distribution monopolies, this approach builds publicly owned generation alongside them. This new generation could be owned by a POU or by another public entity.

b. Strengthening IOU Accountability Through Legislation and Oversight

California can improve IOU performance through enhanced rules and enforcement within the existing regulatory framework. The legislature can establish explicit performance requirements, modify targets and penalties, and strengthen oversight mechanisms.

Legislative Tools

State law has established California's clean energy targets, Renewable Portfolio Standard, and reliability planning requirements. Legislators are now evaluating options to mandate affordability improvements. One 2025 bill proposes capping IOU rate increases to inflation, requiring utilities to operate within a budget.[166] Another 2025 bill proposes a softer version of

165 Cal. Pub. Utility Comm'n, 2024 Padilla Report 12 (May 2024), https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/energy/rps/2024/2024-padilla-reportvfinal.pdf.

166 SB 332 (Wahab, 2025).

the inflation constraint tied to IOU spending proposals.[167] Another approach is to target inappropriate spending; Maine recently banned IOUs from using ratepayer funds for lobbying and advertising,[168] though such expenses represent a small fraction of utility spending.

Enhanced Oversight

Beyond new legislative requirements, California can strengthen enforcement through increased transparency and oversight at the CPUC. As discussed in Part II, effective regulation is a core part of the IOU model. The CPUC must make significant determinations about whether IOU spending requests meet legal standards of prudence, usefulness, and efficiency. However, information and resource imbalances disadvantage the regulator, forcing heavy reliance on consumer advocates and nonprofit intervenors. The CPUC rarely addresses issues not analyzed by third parties, often approving billions in utility spending without detailed review.

Several improvements could strengthen oversight, targeting the information and resource asymmetry at play:

- Requiring utilities to present clear cost-effectiveness metrics with spending requests;
- Adopting consistent standards for approving projects based on measurable outcomes (already established for wildfire mitigation but inconsistently applied);
- More aggressively reviewing memorandum and balancing account spending, which has become a primary source of rate increases;
- Ensuring that the IOU's rate of return accurately reflects their cost of capital. When an IOU's ROE is higher than it should be, then the IOU has incentives to over-invest in capital infrastructure.

For example, PG&E overspent its 2020-2022 wildfire mitigation authorization by nearly $7 billion—150% of its general rate case authorization—[169]and the CPUC has approved most related requests to date.[170] The sheer magnitude of this overspending highlights the need for oversight and review of cost-effectiveness to identify which spending is essential.

Unlike the other proposed interventions, this approach does not attempt to change the core characteristics of the IOU model. Instead, it suggests that the model is not working as intended, because CPUC resources and tenacity are out of balance with those of the IOUs they regulate. It proposes reforms to CPUC operations to help it better match IOUs.

167 SB 254 (Becker, 2025).

168 Stephen Singer, *Maine Utilities will be Banned From Spending Ratepayer Money on Lobbying, Advertising*, Portland Press Herald (Sept. 5, 2024), https://www.pressherald.com/2024/09/05/maine-utilities-will-be-banned-from-spending-ratepayer-money-on-lobbying-advertising/.

169 *Testimony of Thomas Long and Sylvie Ashford of The Utility Reform Network, Addressing PG&E's Request to Add to Rates Costs Booked to Wildfire Mitigation Plan and Fire Risk Mitigation Memorandum Accounts*, Cal. Pub. Util. Comm'n A.23-06-008 (Aug, 1, 2024), https://docs.cpuc.ca.gov/PublishedDocs/SupDoc/A2306008/7733/540720190.pdf#page=16.

170 *See, e.g., Decision 24-03-006 Granting Interim Rate Recovery*, Cal. Pub. Util. Comm'n A.23-06-008 (March 12, 2024) https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M527/K052/527052071.PDF (in which PG&E was granted interim recovery of 75% of its $2.49 billion additional cost request for 2020-2022 general wildfire mitigations, such as inspections, repairs and replacement work); *Decision 24-12-075 Approving Partial Recovery of PG&E's Costs*, Cal. Pub. Util. Comm'n A.21-09-009 (Dec. 27, 2024), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M551/K722/551722326.PDF (in which PG&E was granted $428 million for overspending on vegetation management in 2020, constituting 72% of its total overspending request. This was on top of the 20 percent contingency allowance ($110 million) PG&E was already allowed to spend over its forecast).

c. Implementing Performance-Based Regulation to Improve IOU Performance

Traditional rate-of-return regulation incentivizes utilities to maximize capital investments since they earn returns on capital. This can lead to overinvestments, such as undergrounding power lines where cheaper alternatives exist, benefiting shareholders without commensurate public benefit. Performance-based regulation attempts to align utility incentives with customer interests and policy goals. Rather than replacing traditional rate of return regulation, performance-based regulation provides complementary building blocks. The CPUC already implements two core elements of performance-based regulation: decoupling (separating sales from revenue) and multiyear rate plans.

Performance-based regulation addresses these issues through formulaic approaches to predetermine utility earnings based on performance benchmarks. This generally involves price cap regulation with adjustment mechanisms and performance incentives (used in Hawaii and the UK). Under performance-based regulation, formulas based on utility-specific and external benchmarks like inflation predetermine appropriate spending levels. Utilities profit by spending below caps but don't recover full expenses above them. Flexible caps account for unforeseen events, while performance incentives encourage specific outcomes like improved customer service or energy efficiency.

Implementation Challenges

Performance-based regulation success depends on robust metrics, benchmarks, and formulas. Quality service isn't easily quantified, and rules of thumb like inflation adjustments remain imprecise. Real-world events like wildfires can dramatically alter spending needs.

Additional challenges include utilities negotiating for easily achievable metrics; the political challenges that come with maintaining earnings formulas despite potential windfall profits or losses; performance incentives creating unintended consequences or encouraging gaming;[171] and the impossibility of using incentives and fines for every utility function comprehensively.

California's Existing Elements of Performance-Based Regulation

California's current rate-of-return regulation incorporates performance-based regulation -like features such as decoupling with multi-year rate plans which caps total utility revenue collection. Accordingly, actual returns differ from authorized ROE (PG&E's 2021 actual ROE was 4% below authorized).[172] The CPUC also levies compliance fines, for missing resource adequacy or RPS targets, for example, which incentivize performance. These existing elements accomplish many performance-based regulation objectives without comprehensive overhaul. Notably, however, while public ownership of transmission would remove some of the CPUC's regulatory burden, performance-based regulation has the potential to be more technical and resource intensive.

Performance-based regulation works best as a complement to traditional regulation, not a replacement.[173] While the CPUC has integrated key performance-based regulation elements, pursuing comprehensive performance-based regulation like Hawaii or the UK would require

171 *Decision 08-09-038 Regarding Performance Based Ratemaking (PBR), Finding Violations of PBR Standards, Ordering Refunds, and Imposing Fine, Cal. Pub. Util. Comm'n* (Sept. 18, 2008), https://docs.cpuc.ca.gov/published/FINAL_DECISION/91249.htm.

172 Return of Equity, Cal. Pub. Util. Comm'n (Oct. 2024), https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/historical-electric-cost-data/return-of-equity.

173 Paul L. Joskow, *The Expansion of Incentive (Performance-Based) Regulation of Electricity Distribution and Transmission in the United States*, MIT Center for Energy and Env't Policy Res. (Jan. 2024), https://ceepr.mit.edu/wp-content/uploads/2024/01/MIT-CEEPR-WP-2024-01.pdf.

significant resources that may not justify potential improvements. The regulatory framework should focus on selectively incorporating performance-based regulation tools that address specific challenges while maintaining the strengths of current regulation.

V. Conclusion and Insights

Ownership of electric utilities impacts utility performance in ways that extend beyond the presence or absence of a profit motive. Each model carries inherent trade-offs shaped more by structural characteristics than ownership alone. Utility internal governance structures; regulatory obligations; financing, rate setting, and revenue collection; geography and density of utility service territories; and political accountability and susceptibility all tend to take different forms and reflect different dynamics for IOUs and POUs. Analyzing the ways these differences impact utility outcomes can help us understand the challenges we face and the solutions that will best target those challenges.

This paper offers a first step towards understanding the interconnected characteristics that shape performance for utility ownership models. Comparing performance is challenging, in part because the ownership models themselves impact the availability of information. We have far more consolidated and accessible information about IOUs than about POUs, precisely because they are centrally regulated at the CPUC. POU data is less accessible but would be necessary to understand the performance metrics we consider more deeply as well as other important dimensions of performance, like customer experience (including rates of shutoffs and public participation) and workforce differences.

Ultimately, the measure of success is not whether utilities are publicly or privately owned, but whether Californians receive safe, reliable, affordable, and clean electricity. In navigating this fork in the road, California should chart a course that maximizes public benefit focusing relentlessly on the outcomes that matter most to its residents and its climate future.

Key Insights:

1. **Neither ownership model guarantees success or failure**. Each requires competent governance, adequate resources, sustained political will, and informed public engagement. While POUs generally achieve lower rates through their not-for-profit structure, much lower financing costs, and smaller service territories, IOUs are motivated to build and have greater access to capital for clean energy infrastructure investments.

2. **Some of the main challenges facing California transcend ownership**. Whether public or private, utilities must maintain sprawling grids across high-risk territories, fund an equitable clean energy transition, and balance massive infrastructure investments with affordability. Wildfire mitigation costs, aging infrastructure, and climate adaptation needs persist regardless of who owns the assets.

3. **Political accountability is essential for both models.** An effective regulator is the core of the IOU model. While it is easier to pass legislation affecting IOUs, IOUs exert substantial influence at the legislature and in regulatory proceedings. POUs offer greater local accountability but still face susceptibility to capture by well-resourced interests, with fewer resources to counterbalance these interests. Like any democratic institution,

unlocking the value of a POU requires a motivated, engaged, and informed public. A fragmented landscape of small POUs would impose significant costs on statewide coordination, while a consolidated POU would sacrifice local responsiveness.

4. **Transition costs are significant**. Public buyouts can consume decades and enormous resources in legal battles. Modern efforts could expect IOUs to mount vigorous resistance through litigation and political campaigns and would need to be well-resourced, motivated, and organized. Resources spent navigating these challenges could otherwise address immediate grid challenges.

5. **Hybrid and incremental approaches are promising**. Targeted interventions, like selective public ownership of generation or transmission infrastructure, strengthened regulatory oversight, rightsized utility profits, and performance-based incentives, could deliver improved outcomes without wholesale transformation. Some of the approaches could also shift power away from IOUs more gradually by building publicly-owned infrastructure and participation pathways.

6. **Context matters**. Utility performance depends as much on the geographic characteristics of service territory, regulatory frameworks (and the regulators themselves), and local and state politics as on ownership structure. Dense urban areas with strong climate commitments may benefit from local POUs, while rural territories might require the capital access and economies of scale that IOUs currently provide.

In the near term, Californians and California's decisionmakers should focus on pragmatic interventions that directly address challenges facing the electricity system:

- Investigate selective public ownership to determine where clear benefits exist due to lower borrowing costs and alignment of utility incentives with public good.
- Implement aggressive regulatory reforms to better align IOU incentives with public interest, including rightsizing returns on equity and strengthening oversight mechanisms
- Continue to apply the benefits of market competition for generation procurement as California's utilities and CCAs seek to contract with new resources to achieve the state's clean energy goals.
- Further explore the potential of a larger scale or statewide POU that could sidestep distributive and coordination concerns with small service territories.
- Conduct more extensive research into POU performance and analyze comparative performance along additional axes like customer experience and workforce.

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