Impact of State Policies on IOU Residential Electric Bills

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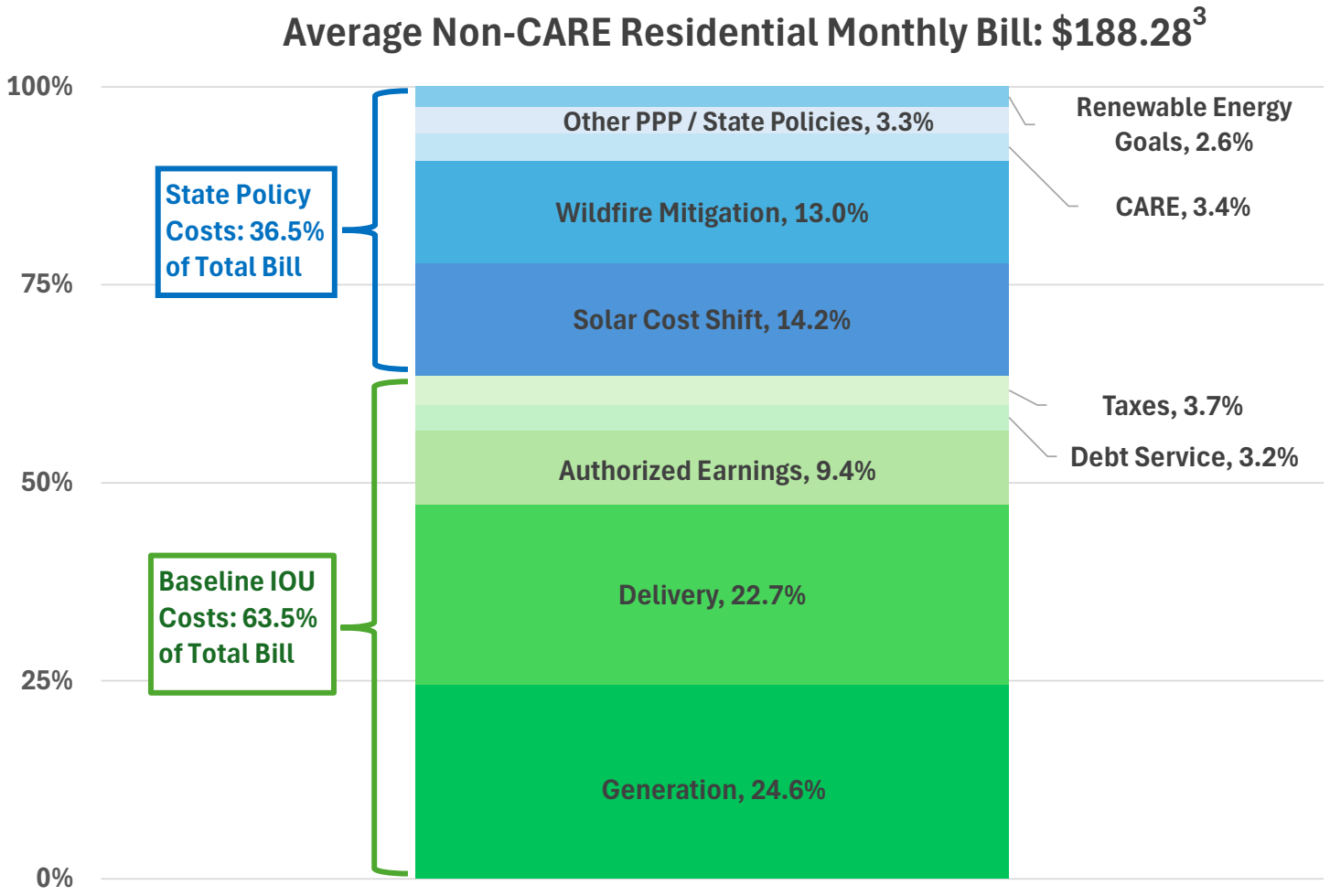
Executive Summary

- This report presents estimates of the impacts of state policies on residential electricity bills for California's three major investor-owned utilities (IOUs): PG&E, SCE, and SDG&E.
- Estimates are based on an analysis of IOU revenue requirements[1] approved for 2025 and independent analyses of the impact of net energy metering (NEM) policies on electric rates.
- Key findings –
  - Nearly 37% of the typical household's monthly electric bill[2] is attributable to state policies related to state-mandated public purpose programs (PPP), renewable energy requirements, wildfire prevention, and the cost shift from rooftop solar customers to non-solar customers (the solar cost shift).
  - Many of the state laws or regulations that result in the largest cost impacts for IOU customers either do not apply to the state's publicly owned utilities (POUs) or generate smaller bill impacts on POU customers due to differences in POU service areas, program design, and customer demographics.

Report Overview

1. Bill stack summary showing the costs of both state policies and baseline IOU electricity procurement and delivery as a share of the typical residential electricity bill
2. Discussion of the state policy cost impacts:
    - State renewable energy goals
    - Public Purpose Programs and other state policies
    - Wildfire prevention and cost recovery
    - The solar cost shift
3. Comparison of state policy impacts for IOUs vs. POUs

State Requirements Account for Nearly 37% of the Typical Residential Customer's Electric Bill



Public Purpose Programs (PPP) and Other State Policies Account for 7% of the Typical Residential Bill

- About 3.4% of the average non-CARE residential electric bill is attributable to the California Alternate Rates for Energy (CARE) program for low-income customers:
  - CARE eligibility is limited to households with incomes below 200% of the federal poverty line. Roughly 30% of residential customers participate in CARE and receive discounts of 30-35%.[4]
- Other PPPs and state policies (see table below) comprise an additional 3.3% of the average bill:

Other PPPs / State Policies[5]	Description
Family Electric Rate Assistance Program (FERA)	Offers bill discounts to families with incomes above CARE program limits but below 250% of the federal poverty line.
Diablo Canyon	Covers costs of extending the operation of the Diablo Canyon nuclear power plant until 2030.
Transportation Electrification Programs	Pay for Electric Vehicle (EV) infrastructure such as charging stations and offer incentives for the adoption of EVs.
Demand Response & Energy Efficiency Programs	Offers incentives to IOU customers to reduce electricity consumption during periods of high demand and funds programs that assist qualifying customers in reducing energy consumption (e.g., energy audits, weatherization, energy-efficient appliances).
Competition Transition Charge	Fees assessed to pay for IOU costs attributable to deregulation (investments in plants and energy contracts that, following deregulation, have lost value in the more competitive market).

State Renewable Energy Goals Account for 2.6% of the Typical Residential Bill

- Under the state's Renewable Portfolio Standard (RPS) program, an escalating percentage of electric retail sales must be generated by renewable resources.
  - On average, renewable energy prices exceed the price of non-renewable energy.[6] These "above-market" costs of meeting the RPS target account for roughly 8% of the typical customer bill.
- The state's cap-and-trade system imposes costs on IOUs and also generates proceeds for residential customers, partially offsetting the costs of the RPS program.
  - IOUs must purchase greenhouse gas (GHG) allowances for the carbon emitted by their own plants, and these costs are embedded in the price of energy purchased from other providers.
  - In addition, a portion of the proceeds generated by auctions of allowances are paid to IOU customers as "climate credits," which reduce customer bills.[7]
- On net, the combined impact of these two programs accounts for 2.6% of the typical customer bill.

Wildfire Mitigation and Cost Recovery Account for 13% of the Typical Residential Bill

- Increasing wildfire severity, along with new state laws requiring that IOUs establish mitigation plans, has led to rapid increases in IOU expenditures on:
  - Wildfire mitigation measures, such as tree trimming and undergrounding
  - Post-wildfire rebuilding costs
- Because IOU service areas cover nearly all the areas most prone to wildfires,[8] IOU customers bear a disproportionate share of wildfire mitigation and recovery costs.

The Cost Shift From Rooftop Solar Customers Accounts for 14% of the Typical Residential Bill

- The "solar cost shift"[9] reflects the increase in costs imposed on customers without rooftop solar due to the state's net energy metering (NEM) policies and is composed of both a "solar export" and "on-site consumption" cost shift.
- *Solar Export Cost Shift* - Rooftop solar exports are compensated significantly higher than their value.
  - Most energy exported to the grid from rooftop solar is credited at or near the same rate that customers pay for energy imported from the grid (i.e., the full retail rate).
  - The retail rate exceeds the avoided cost (per kWh) that IOUs would otherwise incur procuring and delivering this energy, including generation and grid capacity that would otherwise need to be built.[10]
- *On-site Consumption Cost Shift* - Rooftop solar shifts IOU fixed costs needed to serve all customers to non-solar customers.
  - Most IOU costs to serve customers are fixed (e.g., distribution/transmission lines), but these costs are recouped from customers primarily based on the amount of electricity they consume.
  - Because rooftop solar customers import less energy, they contribute less toward the payment of these fixed costs, thus shifting a greater share of these costs onto non-solar customers.
- Both components of the solar cost shift lead to non-solar customers paying a greater share of costs to procure and deliver power.[11]

Residential Customers of IOUs Incur Higher Costs from State Policies than Customers of POUs

State policies typically impose greater costs on IOU customers than on POU customers,[12] though this difference varies across POUs and across types of customers.

State Policy	Difference between POU and IOU Cost Impacts
Wildfire Mitigation	On average, POU service areas are more urbanized than IOU service areas, with far less wildfire exposure. Therefore, IOUs incur greater costs for wildfire mitigation efforts than POUs.[13]
Solar Cost Shift	Though many POUs implemented net energy metering policies like those offered by IOUs, the solar cost shift is more significant for IOU customers because a smaller share of POU customers have installed rooftop solar and POUs are able to assess fixed charges to recoup fixed costs.[14]
PPP & Other State Policies	The CARE Program offered by IOUs is typically more generous than equivalent programs offered by POUs, leading to higher electricity rates for non-CARE customers.[15] IOUs additionally offer the FERA Program for customers who are not eligible for CARE but earn less than 250% of the federal poverty line.
RPS / Cap-and-Trade	Both IOUs and POUs are subject to RPS standards, and both utility types must purchase allowances for plant emissions. However, POU customers do not receive climate credits.

Endnotes

1. This report examines state policy impacts on residential customers who do not qualify for participation in the California Alternate Rates for Energy (CARE) program for lower-income customers and who do not have rooftop solar panels.

   Each component of the CY 2025 revenue requirement for each IOU was classified as belonging to state policy impact category (wildfire prevention, the Renewable Portfolio Standard, the Climate Credit, Public Purpose Programs, or Other State Policies) or as belonging to a "baseline" IOU expense category (Delivery and Generation), depending on the nature of the work or expenditures creating the revenue requirement. The baseline categories correspond to all revenue requirements not categorized as a state policy-related category. The Delivery category covers (i) distribution-related revenue requirements authorized by CPUC; and (ii) FERC-approved revenue requirements related to IOUs' maintenance of transmission lines. Delivery costs related to wildfire prevention are excluded from the Delivery category. The Generation category includes the costs of operating IOU-owned generation facilities, investments in new facilities, and procuring energy from third parties.

   Revenue requirements related to authorized earnings, debt service, and taxes associated with baseline category costs are shown separately in the baseline cost section of the bill stack summary visual. Where state policies resulted in additional earnings, debt service, or tax-related revenue requirements, these amounts are included in the bill share for the relevant state policy category.

2. Based on IOU rates in effect as of 2025, the estimated weighted average monthly electric bill for the IOUs' non-CARE residential customers is $188.28. The PG&E average bill is an estimated $213.54 per month, based on 500 kWh of monthly consumption at an average rate of $0.427 per kWh. The average SCE bill is an estimated $168.91, based on 500 kWh of monthly consumption at an average rate of $0.338 per kWh. For SDG&E, the average bill estimate is $160.51, based on 400 kWh of monthly consumption at an average rate of $0.401 per kWh. Each IOU's share of the weighted average is proportional to its share of residential customers (both bundled and unbundled) in CY 2023, as published by the U.S. Energy Information Administration (EIA) (https://www.eia.gov/electricity/sales_revenue_price/).

3. Generally, each state policy or baseline category's share of the customer bill (i.e., the percentages shown in the summary visual) is proportional to the sum of the revenue requirements assigned to that category relative to the IOU's total revenue requirement. However, a category's bill share will differ from its revenue requirement share to the extent different revenue requirements are recouped at different rates across different customer cohorts. For example, IOUs do not recoup generation-related revenue requirements from their "non-bundled" customers who belong to Community Choice Aggregators (CCAs), since CCAs procure energy separately. The bill shares for each category reflect the distribution of revenue requirements collected from bundled non-CARE residential customers.

4. CPUC, "California Alternate Rates for Energy (CARE)," accessed June 2025 (https://www.cpuc.ca.gov/consumer-support/financial-assistance-savings-and-discounts/california-alternate-rates-for-energy).

5. In addition to the programs shown in the table, PPP and other state policies include recovery of unpaid customer balances ("Arrearages"), debt forgiveness programs, and Nuclear Decommissioning costs related to the wind-down and clean-up of nuclear plants that are no longer operational.

6. CPUC, "Renewable Portfolio Standard (RPS) Program," accessed June 2025 (https://www.cpuc.ca.gov/rps/).

Endnotes

7. For an overview of allowance auctions relevant to IOUs, see California Air Resources Board, "Allowance Allocation," accessed June 2025 (https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/allowance-allocation). For an overview of the climate credit, see CPUC, "California Climate Credit," accessed June 2025 (https://www.cpuc.ca.gov/climatecredit). Climate credits are set at a fixed per household amount (i.e., do not vary with energy consumption).

8. Meredith Fowlie, "Not All of California's Electricity Prices Are High," Energy Institute at Haas (July 10, 2023) (https://energyathaas.wordpress.com/2023/07/10/not-all-of-californias-electricity-prices-are-high/). According to this analysis, even after adjusting for utilities' total revenue, PG&E and SCE "have significantly more miles of transmission and distribution lines running through High Fire Threat District (HFTD) areas as compared to the other power providers," such as the two largest POUs, the Sacramento Municipal Utility District (SMUD) and the Los Angeles Department of Water and Power (LADWP).

9. Total solar cost shifts for each IOU (i.e., total revenues shifted across all residential customers) are based on IOU estimates made as of year-end 2024. These total cost shift estimates were converted by the IOUs into per-bill impacts, and these estimates were submitted to the CPUC for its upcoming SB 695 report (July 2025).

   Cost shift estimates are based on several parameters, including the amount of rooftop solar energy exported to the grid; the amount used by rooftop solar customers for self-generation; the average rates that rooftop solar customers avoid by self-generating; and the costs that IOUs are able to avoid due to the availability of rooftop solar. Collectively, the IOUs' estimate a total residential cost shift of roughly $5.6 billion, which aligns with independent estimates of the total residential shift. For example, the CPUC's Public Advocate's Office (PAO) estimated a total residential solar cost shift across the three IOUs of $6.7 billion in 2024. *See* PAO, "Rooftop Solar Incentive to Cost Customers Without Solar an Estimated $8.5 Billion by the End of 2024," accessed June 2025 (https://www.publicadvocates.cpuc.ca.gov/press-room/reports-and-analyses/nem-cost-shift-methodology-fact-sheet-2024). Severin Borenstein of the University of California, Berkeley estimated a total residential cost shift of roughly $4 billion. *See* Severin Borenstein, "Guess What Didn't Kill Rooftop Solar," Energy Institute at Haas (January 27, 2025) (https://energyathaas.wordpress.com/2025/01/27/guess-what-didnt-kill-rooftop-solar/). Many environmental advocacy organizations have also highlighted the solar cost shift in recent years. *See* Natural Resources Defense Council, "A Four Point Guide to California's Net Metering Update," November 18, 2021 (https://www.nrdc.org/bio/mohit-chhabra/four-point-guide-californias-net-metering-update); Sierra Club, "Updating rooftop solar policy to achieve climate goals and benefit Californians of all income levels," November 1, 2021 (https://www.sierraclub.org/articles/2021/11/updating-rooftop-solar-policy-achieve-climate-goals-and-benefit-californians-all).

10. For NEM 1.0 customers, exports are credited at the full retail rate. For NEM 2.0 customers, exports receive the full retail rate less certain non-bypassable charges (NBCs), which are worth roughly 2 – 3 cents per kWh. According to the PAO's study (see Note 9), IOUs' avoided cost per kWh of exported energy as of April 2024 was roughly 5.7 cents, but NEM customers were paid 30 – 40 cents per kWh for these exports. All customers who installed rooftop solar after April 2023 are credited for exports according to the Net Billing Tariff (NBT). Because NBT customers are paid based on the CPUC's estimate of the avoided costs associated with their exports, the NBT customer cost shift is less than the cost shift for NEM customers, however, it still remains significant.

Endnotes

11. Because the solar cost shift is embedded within various components of the electricity rates customers pay, integrating the solar cost shift into the bill stack as a separate category requires reducing other categories' bill share estimates to exclude amounts attributable to the solar cost shift. This adjustment process requires determining, for each bill stack category, how it relates to solar avoided costs and NEM compensation.
12. Legislative Analyst's Office (LAO), "Assessing California's Climate Policies—Residential Electricity Rates in California," January 2025 (https://lao.ca.gov/reports/2025/4950/Residential-Electricity-Rates-010725.pdf).
13. See Note 8.
14. Data published by the EIA shows that, as of 2023, residential customers of IOUs had installed 93.1 kW of NEM capacity for every GWh of electricity sold by the IOU to its customers. By contrast, for SMUD and LADWP, these ratios were 35.2 and 29.26, respectively. See EIA, "Form EIA-861" (2023 data files), accessed June 2025 (https://www.eia.gov/electricity/data/eia861).
15. See LAO (Note 12). This report notes that "POU [programs] often do not provide as large of a subsidy as CARE. For example, LADWP administers a program that provides a roughly 20 percent reduction in rates for eligible lower-income customers." SMUD's program, EARP, similarly offers lower discounts than CARE; for households with income between 150% and 200% of FPL, the maximum monthly discount is just $10.

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Matthew Newman is a joint founder of the Blue Sky Consulting Group. Mr. Newman has led numerous consulting engagements since cofounding the firm, including development of complex quantitative analyses and forecasting models for the State of California, Los Angeles County, and the Cities of Oakland, Los Angeles and San Francisco. Previously, Mr. Newman was the Executive Director of the California Institute for County Government, a nonpartisan public policy research institute dedicated to improving decision making at the local level through research and analysis. He also worked for LECG, an international economics and public policy consulting firm and California's Legislative Analyst's Office. Mr. Newman is a Phi Beta Kappa, magna cum laude graduate of the College Honors program at the University of California at Los Angeles and holds a Master of Public Policy degree from Harvard University's Kennedy School of Government.

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