

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Advance
Demand Flexibility Through Electric Rates

Rulemaking 22-07-005

Prepared Rebuttal Testimony of Richard McCann on Behalf of the California Energy Storage Alliance

1 1. Introduction

2 I, Richard McCann, am a Partner at the consulting firm MCubed. My business address
3 is: 426 12th Street, Davis, California 95616. My resume accompanies this testimony as
4 Attachment A.

6 a. CESA’s Interest in R.22-07-005 and the Income-Graduated Fixed Charge Proposals

7 The California Energy Storage Alliance (“CESA”) is a 501c(6) membership-based
8 organization that advocates for the expected and advanced utilization of distributed energy
9 resources (“DERs”), particularly from stationary and mobile energy storage resources, to support
10 customer needs and provide grid services. In CESA’s view, customer-sited DERs, including in
11 the residential market, represent essential assets for the state to achieve its multiple policy goals,
12 including building decarbonization, increased transportation electrification, and safeguarding
13 system reliability.

14 As CESA noted in its comments on the Order Instituting Rulemaking (“OIR”), CESA’s
15 interest in participating in this proceeding is primarily focused on “enabling dynamic retail rates”

1 to offer “an important and additional way for customers to respond to more dynamic and
2 granular price signals.”¹ In particular CESA’s aims to leverage well-crafted and dynamic rates to
3 advance the role of customer-sited DERs in California’s energy future based on Commission-
4 adopted rate design principles.² Among the significant concerns related to the income-graduated
5 fixed charge (IGFC) proposals are their potential to undermine ongoing initiatives aimed at
6 promoting electrification, decarbonizing the grid, and expanding DERs and the grid service
7 programs built upon them.

8 **b. Overview of Fixed Charge Proposals for Residential Customers.**

9 The Commission opened this phase of Rulemaking 22-07-005 to accommodate the
10 directive from the State Legislature in Assembly Bill 205 (2022)³ to approve and implement
11 income-based fixed charges by July 1, 2014. The legislative language has some ambiguity to be
12 interpreted, and as a late amendment to a state budget “trailer bill” it was not closely reviewed by
13 the many stakeholders involved. CESA provides its viewpoint on how to proceed.

14 AB 205 sets out several conflicting objectives and means. The statute desires to ensure
15 that any approved charges “(n)ot unreasonably impair incentives for conservation, energy
16 efficiency, and beneficial electrification and greenhouse gas emissions reduction.”⁴ The statute
17 also requires that “a low-income ratepayer in each baseline territory would realize a lower
18 average monthly bill without making any changes in usage.”⁵ This is unclear about whether this

¹ R.22-07-005 *Comments of the California Energy Storage Alliance on the Order Instituting Rulemaking to Advance Demand Flexibility through Electric Rates* at p. 2 (filed Aug. 15, 2022).

² See Commission Decision 23-04-040.

³ Public Utilities Code Section 739.9.

⁴ PUC Section 739.9(d)(2).

⁵ PUC Section 739.9(e)(1).

1 applies to a mythical “average” low-income ratepayers or whether a broader universe is to be
2 included in assessing the rate design. Specific to distributed energy resources (DER), the
3 legislation is silent on how the Commission should proceed in a manner that continues to
4 incentivize development of these resources consistent with state policy. And while it requires
5 fixed charges be included in the “default” tariff, it leaves the possibility of optional schedules
6 that may differ and allow higher income households to move to those instead. As discussed
7 below, these objectives may not be achieved without developing a much more complete record
8 on the potential consequences from such a change.

9 Pacific Gas & Electric (“PG&E”), San Diego Gas & Electric (“SDG&E”), and Southern
10 California Edison (“SCE”) (collectively, the “Joint IOUs”) put forward a proposal for
11 establishing fixed charges on all residential customers through an IGFC framework. Currently,
12 residential rates are entirely volumetric for PG&E and SDG&E, who do not have a default
13 residential fixed charge. SCE’s default residential service features a nominal fixed charge of less
14 than a dollar per month. Otherwise, the utilities have used volumetric rates alone to collect
15 revenues from residential customers for at least the last several decades. The Commission has
16 relied on these rates to signal to consumers incentives for energy efficiency and other load
17 management programs, and consumers have made investments based on continued use of those
18 rate structures.

19 The Joint IOUs want to move a substantial amount of the customer’s bill toward a fixed
20 charge of up to \$128 per month (for SDG&E) and lower the volumetric charge by an amount that
21 preserves the class revenue requirement. Details of the income-graduated fixed charge proposed
22 by each of the three investor-owned utilities (IOUs) are shown below from their joint filing. For

1 example, PG&E proposes a fixed charge of \$53 if it was levied equally on all customers, and the
 2 volumetric charge would be dropped from 34 cents per kWh to 22 cents per kWh.

Table I-1
Illustrative Proposed IGFCs

Income Bracket	Criteria	PG&E IGFC (\$/month)	SDG&E IGFC (\$/month)	SCE IGFC (\$/month)
Average Fixed Charge		\$53	\$74	\$49
1	CARE (<= 100% FPL)	\$15	\$24	\$15
2	All Other CARE/FERA	\$30	\$34	\$20
3	Non-CARE/FERA <= 650% FPL	\$51	\$73	\$51
4	Non-CARE/FERA >650% FPL	\$92	\$128	\$85

3
 4 For a household of four, 650% of the federal poverty level (FPL) is \$195,000 per year
 5 (based on 2023 guidelines). The California Alternative Rates for Energy (CARE) income
 6 threshold is \$55,500 for a household of the same size; \$69,375 for a Family Electric Rate
 7 Assistance (FERA) eligible household.⁶

8 The Joint IOUs’ IGFC proposal introduces residential fixed charges that are five to seven
 9 times the national average IOU fixed charge on all middle-class customers and between eight to
 10 eleven times the national average for some middle-class households that earn over 650% of the
 11 federal poverty line.⁷ The Joint IOU proposals are inconsistent with a national consensus on how

⁶PG&E, “Get discounts on your PG&E bill,” https://www.pge.com/en_US/residential/save-energy-money/help-paying-your-bill/longer-term-assistance/care/care.page, retrieved May, 2023.

⁷EQ Research LLC, “Residential Fixed Charges – Comparisons of California IOU Proposals,” <https://eq-research.com/wp-content/uploads/2023/04/20230411-Residential-Fixed-Charges.pdf>, April 11, 2023.

1 revenue for electric service is collected from a majority of California households. This radical
2 departure could induce adverse consequences as discussed below and the Commission has not
3 yet established a sufficient record to proceed into these uncharted waters.

4 **2. High Fixed Charge Proposals Thwart the Deployment of Customer-Sited, Flexible**
5 **DERs and Run Counter to the State’s Policy Goals**

6 Fixed charges, by definition, are not appropriate tools for achieving a flexible rate design,
7 which is this rulemaking’s core focus. The more revenue collected through flat, fixed charges
8 each month, the less revenue is collected through volumetric rates. Thus, the strength of the price
9 signal that can be influential to augmenting customer behavior and choice via a flexible rate
10 design is dampened when paired with a high fixed charge, which cannot be avoided by the
11 customer, and thus does not communicate anything to a customer about how their behavior could
12 benefit the grid or themselves through bill savings or adoption of new energy technologies.
13 Lowering volumetric rates across the board—i.e., without any differentiation for energy
14 reductions to amplify differences in costs and greenhouse gas intensity at different times of day—
15 is a missed opportunity at best and at worst a reckless gamble that could threaten reliability
16 during critical periods and block the state’s achievement of greenhouse gas goals.

17 High fixed charges will thwart other ongoing regulatory efforts aimed at encouraging and
18 leveraging storage as a flexible, customer-side resource in a manner consistent with meeting the
19 state’s environmental goals while maintaining reasonable rates. Those efforts, both at the
20 Commission and other regulatory agencies, include the Commission’s rulemakings in a High
21 Distributed Energy Resources Future, and Net Billing Tariff, Emergency Load Reduction
22 Program, and the Energy Action Plan loading order, and significant investment in demand side
23 resource deployment to support summer reliability by the legislature in creating the Demand

1 Side Grid Support program, Distributed Energy Backup Assets program, Clean Energy
2 Reliability Investment plan and demand flexibility goal.

3 The proposed high fixed charges will put more weight on state incentives to achieve
4 reliability and climate change goals, and as proposed variable rates will not support the same
5 level of customer investment. Storage incentive programs, as they exist today and may be
6 expanded, are insufficient to bear the added weight of significant customer fixed charges.
7 Incentive budgets for these programs may be vulnerable due to budget shortfalls for fiscal year
8 2023-2024. Future funding for the Self Generation Incentive Program is uncertain with budget
9 proposals that include no more funding for new general market residential projects, and uncertain
10 money proposed is for equity residential customers. Moreover, demand for these incentives far
11 outweigh the state’s ability to continue funding them. Comprehensive funding mechanisms
12 through advanced rate design can and do incent customers to modify behavior and adopt
13 technologies that support the reliability of the electric grid while enabling customer control over
14 rising electric bills.

15 **3. High Fixed Charges Will Not Enable Electrification**

16 **a. No empirical evidence has been presented that high fixed charges will increase**
17 **customer investment in electrification measures.**

18 The utilities assert that customers will respond to the lower variable energy charge and
19 start buying heat pumps and electric vehicles. This is a central justification for the magnitude of
20 the high fixed charges they propose. The reality is that most customers respond to the total bill.⁸

⁸ Koichiro Ito, “Do Consumers Respond to Marginal or Average Price? Evidence from Nonlinear Electricity Pricing,” *American Economic Review*, 104:2, February 2014, pp 537-563.

1 As I have heard one economist put it, “they don’t even know what a kWh is, let alone the price
2 of a kWh (the energy price).” Furthermore, even if they knew the energy rate, in any given year,
3 only 7% to 10% of the customers are in the market for a new heating, ventilation or air
4 conditioner (HVAC) system or a new car each year. There is no empirical support to create a
5 direct link between this rate design change and incentives to change to electric appliances and
6 vehicles. In fact, for the other 90% (i.e., those not currently contemplating an electrification
7 investment), the simple truth is that consuming more energy becomes cheaper.

8 Instead, this “solution”—ignoring the deterrence effect it will have on customer adoption
9 of behind-the-meter distributed energy resources that would help make customer loads more
10 flexible and responsive to system needs communicated by time-of-use signals—is likely to
11 exacerbate the summer peak reliability crises we have experienced the last few years by creating
12 greater overall demand. The state is unlikely to make any real gains on either decarbonization or
13 improved reliability from this change. The Commission will have to consider more targeted
14 strategies than just imposing a broad decrease in variable rates to enable electrification and
15 dynamic response to make the grid more reliable and resilient.

16 **b. One-time reductions to volumetric rates via high fixed charges masks the deeper**
17 **“revenue requirement” problem.**

18 The IGFC proponents believe if the rates can be restructured so that bills vary less with
19 change in usage, that customers will be less sensitive to increasing rates. But presumably the new
20 fixed charges will escalate at about the same rate as the other rate components, so a customer’s
21 overall bill will still rise with the utility’s costs. Customers respond to their overall bill as a proxy
22 of their average rates; a more complicated rate structure just causes many of them to shrink away
23 from trying to perceive the “marginal” price. Any reprieve from the nation’s highest volumetric

1 rates, traded off for the nation’s highest fixed charges in the country, will be short lived as both
2 total bills and the individual components will continue to ramp upward as utility investments in
3 the grid continue to escalate. The rising bills will stifle electrification and increase pressure on
4 low-income households.

5 The Commission and Legislature has acknowledged the state has an affordability
6 problem, producing reports and initiating a rulemaking. The desire to explore the IGFC reflects
7 an understanding that electrification may require new distribution investment that will be passed
8 through rates. Yet implementing fixed charges will dramatically reduce price communication
9 from ratepayers to the IOUs. This likely will reinforce ongoing tendencies to overinvest. As with
10 decoupling, the utilities have discovered that if they untie their investment decisions from direct
11 revenue volatility, they can continually add to ratebase which in turn increases shareholder
12 income. A more volatile revenue environment creates more risk for investors who are then more
13 cautious about adding capital investments. Decoupling has already unleashed overinvestment in
14 California's utility grid by reducing the link of profits to sales. Fixed charges will only enhance
15 this effect.

16 **4. High Fixed Charges Could Increase Peak Demand While Discouraging Customer-Sited**
17 **DERs that Are Proven to Mitigate System Peaks**

18 Lowering the volumetric on and off peak price for *all* electricity use in such a dramatic,
19 untargeted way is likely to induce significant increased peak consumption of air conditioning,
20 lighting and other appliances, exacerbating an already tight reliability situation,⁹ and to consume
21 more of the clean generation that we are trying to devote to new electrical uses such as EVs.

⁹ See R.20-11-003.

1 Instead, new incremental electrification through heat pumps, EVs and electric ovens should be
2 priced at marginal costs while existing uses are priced at the current volumetric rate.¹⁰ This
3 approach avoids creating winners and losers among current uses while incentivizing the smart
4 electric investments now increasingly available and online.

5 Instead, if as the utilities suggest that customers are price sensitive to the variable price
6 alone and the energy charge drops from, for example for PG&E, an average of 34 cents per kWh
7 to 22 cents (or 35%), with a typical short-term elasticity of -0.3,¹¹ California Independent System
8 Operator peak demand could rise as much as 10% or over 5,000 megawatts. Almost none of this
9 increase would be for switching from fossil fuels to electricity because that is a long-term
10 response not captured in the short-term elasticity estimate.

11 Either the switch to a large fixed charge will induce substantial increases in near-term
12 electricity use and exacerbate an already brewing reliability crisis, or customers will not notice
13 the change because their bill will be largely unchanged so they will not change their demand nor
14 will they invest in electrification due to the change in price signals. Either way, the state will fail
15 to achieve its goal of reducing GHG emissions through revising electricity rate structures.

16 **5. The Joint IOUs' High Fixed Charge Proposals and the Threat of Grid Defection**

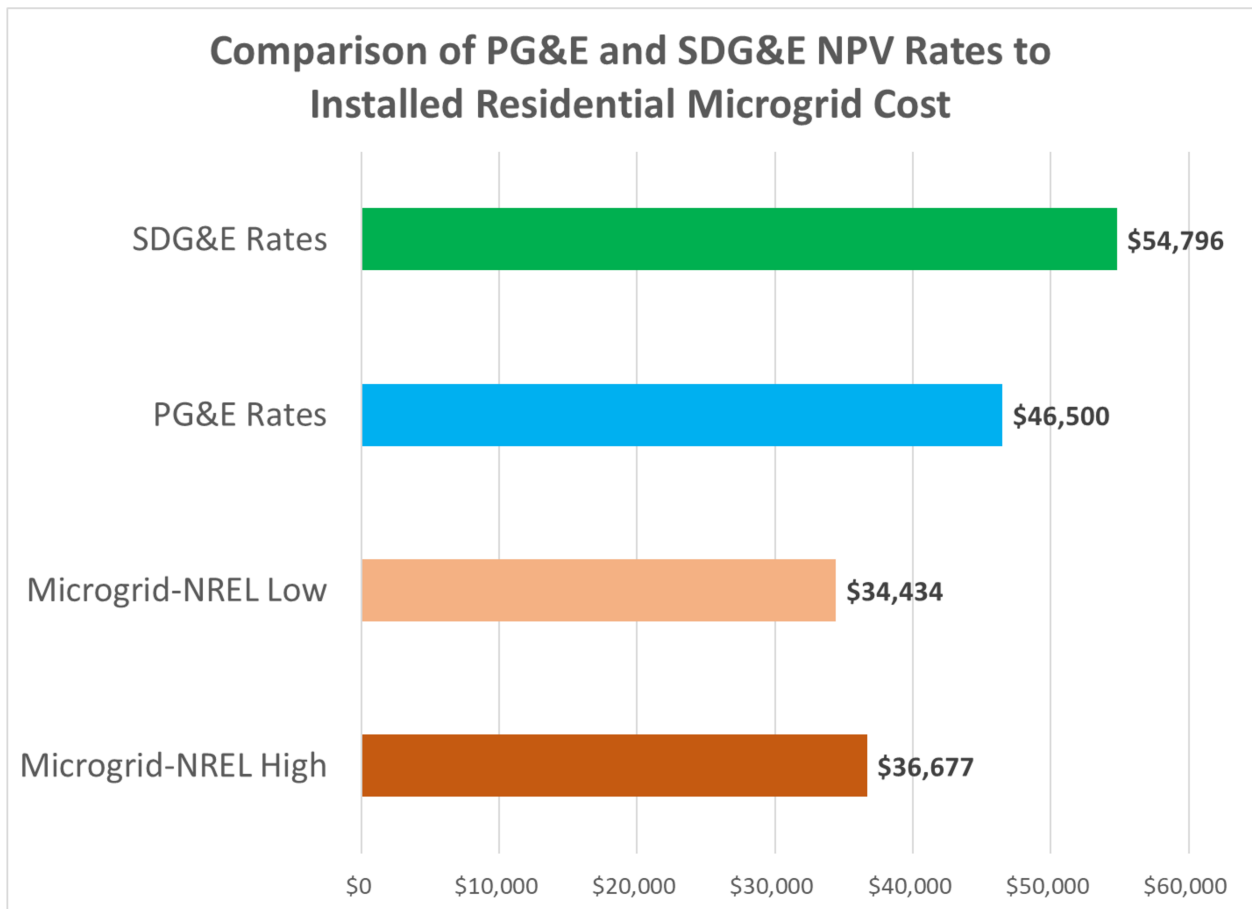
17 With recent technological advances as revealed with the wide adoption of rooftop solar
18 and increasing adoption of coupled energy storage, customers now have a choice as to whether to
19 continue buying from the utility. The financial situation has changed to make grid defection an

¹⁰ Steven Moss, “The Local Government Sustainable Energy Coalition’s Proposal to Pilot a Decarbonization Rate,” R. 20-08-022, April 15, 2022.

¹¹ Washington State Department of Commerce, “Carbon Tax Assessment Model,” CTAM Price Elasticity 2015 (xlsx), <http://www.commerce.wa.gov/wp-content/uploads/2016/05/Energy-CTAM-Price-Elasticity-2015.xlsx>, retrieved March 2023.

1 attractive choice, especially as monthly use increases. Figure CESA-1 compares the net present
2 value of retail residential rates for PG&E and SDG&E over 25 years escalating at 5.6% annually
3 using a current home mortgage rate of 7.2% to upfront costs for an individual customer's
4 solar+storage facility that is completely islanded from the utility.

5 **Figure CESA-1**



6
7 A National Renewable Energy Laboratory (NREL) study estimates that a standalone
8 residential solar+storage facility with 7 kilowatts of solar paired with a 5 kilowatt / 20 kilowatt-

1 hour battery would cost between \$35,000 and \$40,000.¹² These estimates are also shown in CESA-
2 1.

3 Ratepayers are already grappling with perceived grid reliability risks, as evidenced by the
4 explosion in purchases of backup generators over the past several years.¹³ Given the unpleasant
5 choice of participating in an income-verified IOU rate, customers' may choose to take the risks of
6 unplugging from the grid, which has the added benefit of divorcing them from Public Safety Power
7 Shutoffs; distribution grid outages are about three times more likely than system or regional
8 outages. A second NREL study conducted in Maryland demonstrated that such solar+storage
9 facilities could run for a week with reliability in excess of 99% and for two weeks in excess of
10 96%.¹⁴ A Lawrence Berkeley National Laboratory (LBNL) study found that a properly sized solar
11 plus storage system in San Diego County can serve a residential customer reliably for days during
12 an outage, and perhaps indefinitely,¹⁵ suggesting that under SDG&E's current rate proposal it
13 could be cost effective for households to become entirely self-reliant.

¹² Vignesh Ramasamy, et al, *U.S. Solar Photovoltaic System and Energy Storage Cost Benchmarks: Q1 2021*, National Renewable Energy Laboratory, Technical Report NREL/TP-7A40-80694, <https://www.nrel.gov/docs/fy22osti/80694.pdf>, November 2021; and Vignesh Ramasamy, et al, *U.S. Solar Photovoltaic System and Energy Storage Cost Benchmarks: Q1 2020*, National Renewable Energy Laboratory, Technical Report NREL/TP- 6A20-77324, <https://www.nrel.gov/docs/fy21osti/77324.pdf>, January 2021.

¹³ M.Cubed, "Diesel Back-Up Generator Population Grows Rapidly in the Bay Area and Southern California," San Francisco, California, 2021.

¹⁴ Jeffery Marquise, et al, "Resilience and economics of microgrids with PV, battery storage, and networked diesel generators," *Advances in Applied Energy*, 3 (2021), <https://www.nrel.gov/docs/fy21osti/78837.pdf>.

¹⁵ Will Gorman, et al, "Evaluating the Capabilities of Behind the Meter Solar plus Storage for Providing Backup Power during Long Duration Power Interruptions," Lawrence Berkeley National Laboratory, September 2022.

1 The savings from avoiding SDG&E rates could justify spending nearly \$55,000 on a
2 solar+storage facility; a customer could save \$20,000 by defecting from the grid.¹⁶ Even if NREL
3 has underpriced and undersized this example system, there is a substantial margin for uncertainty.
4 Defectors would achieve largely stable energy costs, similar to owning rather than renting a house,
5 as well as long-term savings.

6 Unlike in the 1990s when restructuring was implemented, the potential for widespread grid
7 exiting is not limited to just a few large customers with choice thermal demands and electricity
8 needs—a large swath of each utility’s residential and commercial customers is at stake. This
9 population consists of customers who are most affluent or capitalized, and ironically exactly those
10 necessary to make an income-based fixed charge financially viable. If many of these customers
11 start to exit the system, the utility could face a death spiral that encourages even more customers
12 to leave as costs are spread over an ever-shrinking load, forcing rates up further. Those left behind
13 will demand relief, but customers able to fully sever their ties to the grid will not be available to
14 bail out the company, as they will be beyond the reach of Commission regulation.

15 Instead, the Commission should be considering tariffs that encourage these customers to
16 adopt and integrate their energy storage resources with the utility’s grid to mitigate expanding the
17 local grid with electrification and enhancing the viability of using renewables. The technology to
18 enable a transactive and inclusive grid through advanced grid services and virtual power plants
19 (VPP) is available today but requires robust resources and participation amongst all stakeholder
20 (utilities and customers alike) to achieve the benefits these smart DERs and technologies can
21 provide. The IGFC will not only not accomplish this, it will effectively remove the option of

¹⁶ At a 5% home mortgage rate for financing such a project, the potential savings rise to nearly \$37,000.

1 adopting a flexible DER (e.g., solar+storage participating in the net billing tariff) from the low-
2 and moderate-income customers by making adoption wholly uneconomic.

3 **6. The Commission Should Adopt a Fixed Charge that Covers Only the Utility Service**
4 **Components that Are Customer-Specific Fixed Costs—the Service Connection**

5 AB 205 specifies that these fixed charges are intended “fixed charges for the purpose of
6 collecting a reasonable portion of the fixed costs of providing electrical service to residential
7 customers.”¹⁷ As noted by the Solar Energy Industries Association (SEIA), the Commission has
8 repeatedly rejected efforts by the utilities to expand the universe of apparent “fixed costs” and no
9 new evidence has been submitted in this proceeding to further inform the current precedent.

10 The only portion of a utility system that has fixed costs tied to a specific customer is the
11 service connection from the local circuit to the customer’s meter, otherwise known as the final
12 load transformer, services and meter (TSM). The rest of the grid is sized to meet varying
13 demands of combinations of customers. No customer “owns” a share of the extended distribution
14 and transmission grid, any more than they own a lane of a road. They contend with other
15 customers for a share of that grid, and California utilities use prices to allocate those shares
16 among customers.

17 The utilities each have detailed estimates of the costs for their TSM for different
18 customer types, and the residential TSM costs have been litigated extensively in setting the
19 mobilehome park master-meter discount. Both PG&E and SCE have gone so far as to distinguish
20 between costs to serve multifamily and single-family residential customers. This information

¹⁷ PUC Section 739.9(d).

1 should be applied more broadly to establish the appropriate fixed charges that comply with
2 Assembly Bill 205.

3 The Commission should adopt fixed charges based on the TSM costs approved by the
4 Commission for setting the master-meter discount rate in each of the general rate cases as
5 proposed by SEIA. These fixed charges should be separated by multifamily and single-family
6 service. Each fixed charge should then be discounted by the appropriate CARE and FERA
7 discounts for each utility. This rate structure will create six different fixed charges that correlate
8 both with current income steps and with the cost of service calculated by each utility.