Date of Hearing: April 2, 2025

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY
Cottie Petrie-Norris, Chair
AB 1117 (Schultz) – As Amended March 11, 2025

SUBJECT: Electricity: rates: optional dynamic rate tariffs

SUMMARY: Creates optional, dynamic electricity rates for large investor-owned utility (IOU) customers. These rates would change based on real-time conditions of the electricity grid and market prices. Participation in these dynamic pricing plans would be voluntary. The bill also aims to ensure that adopting these new rates doesn't unfairly shift costs between different customer groups. Specifically, **this bill**:

1) Requires the California Public Utilities Commission (CPUC) to develop optional dynamic tariffs for each large IOU – Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric – by July 1, 2028, for commercial and industrial customers; and by July 1, 2030 for all other customer classes.

2) Requires each dynamic rate tariff to include a dynamic transmission rate, a dynamic distribution rate, a dynamic generation rate, and specified nonbypassable charges.

3) Seeks to prevent cost shifts between bundled and unbundled customers by requiring the CPUC to ensure the IOUs make the same rates available to both bundled and unbundled customers located in the same region; to set each load-serving entity as the responsible party for setting generation rates; and to ensure any over- or undercollection are either returned or borne by the same customers.

EXISTING LAW:

1) Requires that all rates for any service or product charged by an electrical corporation be just and reasonable. (Public Utilities Code § 451)

2) Requires each customer with distributed energy resources (DERs), as specified, to participate in real-time metering and pricing programs; and requires the CPUC to adopt a real-time pricing tariff by December 31, 2001, to serve these customers. (Public Utilities Code § 353.3)

3) Requires the CPUC to ensure that rates are sufficient to enable IOUs to recover a just and reasonable amount of revenue from residential customers as a class, while observing the principle that electricity and gas services are necessities, for which a low affordable rate is desirable and while observing the principle that conservation is desirable in order to maintain an affordable bill. (Public Utilities Code § 739)

4) Requires the CPUC to establish rates using cost allocation principles that fairly and reasonably assign to different customer classes the costs of providing service to those customer classes, consistent with the policies of affordability and conservation. (Public Utilities Code § 739.6)

5) Requires IOUs to offer default rates to residential customers with at least two usage tiers. (Public Utilities Code § 739.9)

6) Permits IOUs, with approval of the CPUC, to offer residential customers the option of receiving electric service pursuant to "time-variant pricing," which includes time-of-use rates (TOU), critical peak-pricing, and real-time pricing. Beginning in 2018, an IOU can employ default TOU pricing as long as the customer is provided with a rate comparison for one year of all billing options (commonly referred to as shadow-billing) and associated customer education. Subsequently, the customer must be guaranteed for one year that the total amount paid for electric service will not exceed the amount that would have been due under the customer's previous rate schedule (commonly referred to as bill protection). (Public Utilities Code § 745)

BACKGROUND:

A Decade of Residential Rate Re-Design – In 2012, the CPUC initiated a rulemaking to examine possible residential electric rate designs to be implemented if and when statutory restrictions were lifted. The rulemaking examined the existing tier structure (also known as volumetric pricing), time variant and dynamic pricing, and potential pathways from tiers to time variant and dynamic pricing. The CPUC also developed ten rate design principles to guide its efforts:

1) Low-income and medical baseline customers should have access to enough electricity to ensure basic needs (such as health and comfort) are met at an affordable cost;
2) Rates should be based on marginal cost;
3) Rates should be based on cost-causation principles;
4) Rates should encourage conservation and energy efficiency;
5) Rates should encourage reduction of both coincident and non-coincident peak demand;
6) Rates should be stable and understandable and provide customer choice;
7) Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals;
8) Incentives should be explicit and transparent;
9) Rates should encourage economically efficient decision-making;
10) Transitions to new rate structures should emphasize customer education and outreach that enhances customer understanding and acceptance of new rates, and minimizes and appropriately considers the bill impacts associated with such transitions.[1]

Subsequently, after more than a decade of statutory restrictions on residential rates including a rate freeze, the Legislature repealed those limits in 2013 and largely returned ratemaking authority to the CPUC.[2] The CPUC quickly responded and released proposals for residential rate reform.[3] The adoption of Time-of-Use (TOU) rates was the first major step in response to these efforts.

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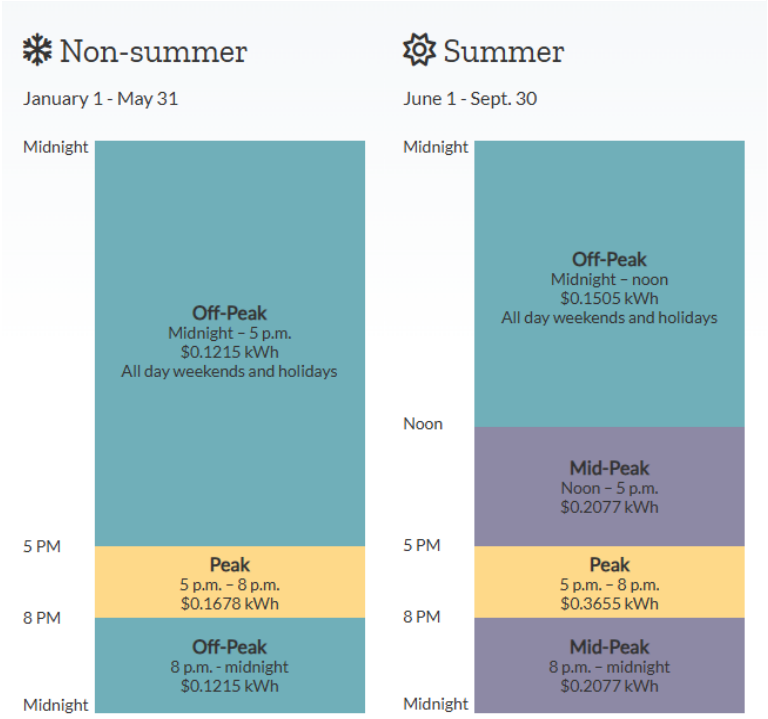
[1] R.12-01-013
[2] AB 327 (Perea, Chapter 611, Statutes of 2013)
[3] Staff Proposal for Residential Rate Reform in Compliance with R.12-06-013 and Assembly Bill 327, Energy Division, California Public Utilities Commission, January 3, 2014, at http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M084/K817/84817577.PDF

Time-of-Use Rates – Because the cost of delivered energy differs by time of day, TOU rates were developed to reflect time-differentiated costs by providing time-differentiated price signals to customers. With TOU rates, utilities charge different prices based on the time of day electricity is used. The different charges should reflect the ups and downs of wholesale power prices due to supply and demand. TOU rates have been mandatory for certain customer classes for several decades. In 2012, TOU rates became mandatory for non-residential customers; residential customers followed over the next few years.[4] With time-based pricing, customers are charged higher rates during the hours of peak demand but lower rates at other times. This creates financial incentives for consumers to shift energy use to the less expensive off-peak hours, which relieves the strain on the grid. However, there are limitations to this shift potential: customers in hot climates, for instance, cannot shift air conditioning use to another time of the day like they can their laundry.

Figure 1: Non-summer and Summer TOU prices for Sacramento Municipal Utility District (SMUD), showing 2 daily prices in the non-summer months and 3 daily prices in the summer months. In both seasons, the highest prices are those associated with the "peak" (yellow) from 5pm-8pm.



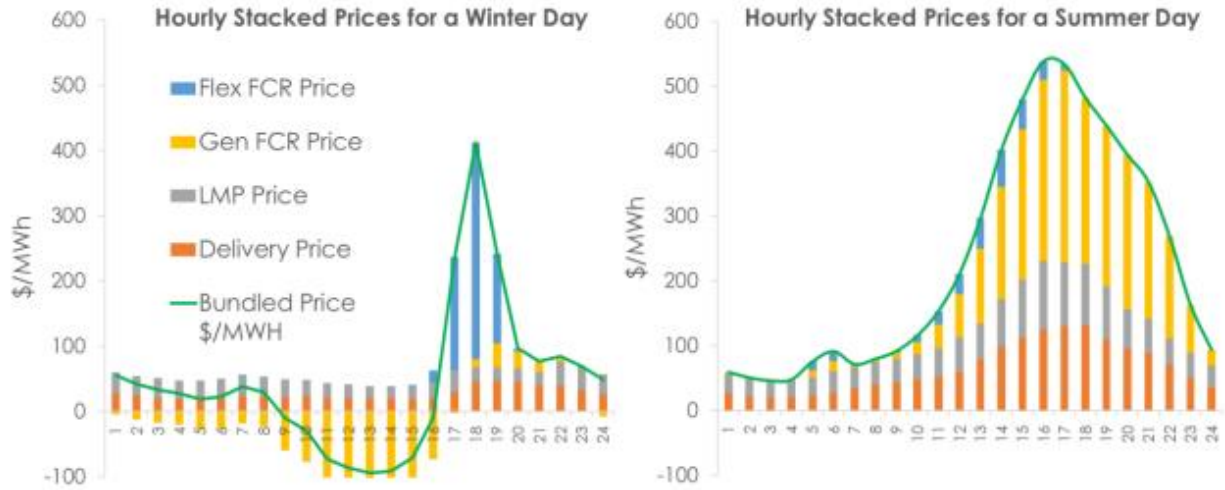
The CPUC directed each IOU to conduct both an opt-in and a default pilot of TOU rate plans for residential customers. San Diego Gas and Electric (SDG&E) was the first IOU transitioning its residents to TOU plans in 2019. Pacific Gas and Electric (PG&E) and Southern California Edison (SCE) began defaulting customers to TOU in October 2020, though these efforts were slowed by the global COVID-19 pandemic. All eligible residential customers of SDG&E, PG&E, and SCE had been transitioned to TOU by June 2022.[5] Figure 1 demonstrates the TOU levels for summer and winter in SMUD;[6] where the price signals seek to motivate customers to shift usage to cheaper, off-peak times of day (in teal).

The Next Steps: Dynamic Pricing and Demand Flexibility. Dynamic pricing occurs when product prices continuously adjust – sometimes hourly, sometimes in minutes – in response to real-time supply and demand. This is a common business practice, experienced by anyone who has faced surge pricing in an Uber or booked airline tickets during the summer travel season. For electricity pricing, this can occur by taking

[4] D. 15-07-001
[5] Energy Upgrade California website; "Time Matters – FAQs;" accessed 03.25.2025; https://energyupgradeca.org/time-of-use-faqs#:~:text=When%20did%20Time%20Of%20Use,to%20TOU%20by%20June%202022.
[6] https://www.smud.org/Rate-Information/Residential-rates/Time-of-Day-5-8pm-Rate/Rate-details

the TOU rates, shrinking the time-interval and tying the price directly to both the marginal costs of providing the electricity alongside the fixed costs reflecting grid conditions, as illustrated in Figure 2. The customer would employ demand flexibility – or load shift; a practice of adjusting load to match the supply of electricity – in order to respond to the dynamic price signals. The total customer cost would be their usage under the integral, shown as a green line in Figure 2.

Figure 2: Illustration of Composite Hourly Pricing based on hourly energy (LMP) and capacity (flex fixed cost, generation fixed cost, and distribution/delivery capacity) prices for winter (left) and summer (right) days.[7]



On July 14, 2022, the CPUC opened a rulemaking,[8] largely motivated by summer reliability following the system outages in 2020, to establish demand flexibility policies. The CPUC sought modifications to electric rates to advance the following objectives: (a) enhance the reliability of California's electric system; (b) make electric bills more affordable and equitable; (c) reduce the curtailment of renewable energy and greenhouse gas emissions associated with meeting the state's future system load; (d) enable widespread electrification of buildings and transportation to meet the state's climate goals; (e) reduce long-term system costs through more efficient pricing of electricity; and (f) enable participation in demand flexibility by both bundled and unbundled customers.[9]

The rulemaking followed the release of a CPUC Energy Division staff white paper on the California Flexible Unified Signal for Energy (CalFUSE), a proposal that includes integrating real-time price signals in customer rates with better DER management.[10] Recent studies that have analyzed the costs and benefits of DERs and other flexible resources show that a co-optimized

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[7] Pg. 57, Figure 4-6. Madduir, A., et al., *Advanced Strategies for Demand Flexibility Management and Customer DER Compensation;* CPUC; June 22, 2022; https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/demand-response/demand-response-workshops/advanced-der---demand-flexibility-management/ed-white-paper---advanced-strategies-for-demand-flexibility-management.pdf
[8] R. 22-07-005
[9] Pg. 6, D. 24-01-032
[10] Madduir, A., et al., *Advanced Strategies for Demand Flexibility Management and Customer DER Compensation;* CPUC; June 22, 2022; https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/demand-response/demand-response-workshops/advanced-der---demand-flexibility-management/ed-white-paper---advanced-strategies-for-demand-flexibility-management.pdf

system – i.e., a system that optimizes both the planning and dispatch of DERs with real-time price signals – can achieve significant long-term cost savings and partially mitigate the curtailment of renewable resources.[11]

This rulemaking is ongoing. Recent activity has established pilot programs for SDG&E,[12] PG&E,[13] and SCE[14] to examine various customer behavior, system modifications, and customer needs before seeking to apply these activities statewide.

FISCAL EFFECT: Unknown. This bill is keyed fiscal, and will be referred to the Assembly Committee on Appropriations for its review.

CONSUMER COST IMPACTS: Unknown. This bill mandates an optional tariff. For customers that do not participate, they will likely be unaffected. For customers that do, there is potential for cost savings given the greater load management envisioned with the tariffs. However, these potential savings assume smooth deployment. The IOUs have voiced concern that the bill would require "significant investments of time and money" to resolve challenges with modernizing IOU data management systems;[15] if such challenges materialize, they may increase costs to all customers.

COMMENTS:

1) *Author's Statement.* According to the author, "Dynamic pricing allows customers the option to pay electricity rates that reflect the real-time market cost of electricity service to take advantage of time periods when wholesale market costs are low. California has the second highest electricity rate in the country. At the same time, peak demand continues to grow, straining the electric grid during high usage and further increasing costs. Both problems – affordability and grid resiliency – could be addressed through dynamic pricing. By sending a price signal to encourage consumers to consume electricity during low-priced periods when renewable and carbon-free energy is low cost and abundant, dynamic pricing reduces costs for customers who can be flexible with their demand and decreases stress on the electric grid. Furthermore, AB 1117 increases the number of rate options offered while preventing penalties on customers who wish to remain on their current plan. The bill also ensures that any new dynamic rate designs do not result in cost shifts between bundled and unbundled customers."

2) *Purpose of Bill.* AB 1117 seeks to increase the rate options for customers of large IOUs, providing them with the opportunity to voluntarily subscribe to dynamic rates, and thereby increasing their demand flexibility. Renewables produce varying amounts of power in California based on when the sun is shining or the wind is blowing. Demand flexibility, or "load management," helps people adjust their energy use to better match the availability of clean electricity. For both residential and business consumers, load management has the potential to provide electricity bill savings when consumers opt-in to

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[11] Reeve, Hayden, et. al., "Distribution System Operator with Transactive (DSO+T) Study Volume 1: Main Report," Pacific Northwest National Laboratory (PNNL), 2022. https://doi.org/10.2172/1842485.
[12] D. 21-07-010
[13] D. 21-12-015, D. 24-01-032
[14] D. 21-12-015, D. 22-10-022
[15] Pg. 3, SDG&E AB 1117 Opposition letter, March 25, 2025.

using automated load-shifting devices such as smart thermostats, electric vehicle chargers, and appliances. Home and business owners, as well as renters, can save on their bills by using these programmable load-shifting devices to automatically schedule appliance operations based on electricity cost. Smart technology automation already exists and may be installed in your home or business. However, the implementation of dynamic prices to harness these technologies is still in the pilot phase. This bill would require the CPUC to develop dynamic pricing tariffs soon: by July 1, 2028, for commercial and industrial customers; and by July 1, 2030 for all other customer classes.

3) *DER Winners.* Demand flexibility and customer response to dynamic pricing requires technology, like smart meters and other devices, that can automatically monitor and shift customer usage when electricity is cheaper and clean, and use less energy when the grid is stressed. Electricity customers can sign up for demand flexibility programs that communicate grid signals to these devices. Grid signals include prices and emissions, and automation devices include smart thermostats, advanced pool pump controls, smart electric vehicle chargers, home batteries, and advanced water heater controls.

   The state's early investment in smart meter deployment in IOU territories highlights an important step toward customer readiness. The smart meter provides customers with detailed information throughout the day. In the 2000s, the CPUC authorized PG&E to install approximately 5 million electric smart meters, SCE to install approximately 5.3 million, and SDG&E to install 1.4 million.[16] As the author notes, these major utility metering investments have been made; so it compels policymakers to harness their potential for customer benefits.

   The customers likeliest to benefit are solar and storage customers with on-site equipment that tracks dynamic grid conditions and price signals. These customers would likely have the greatest technological ability to maximize savings from dynamic pricing. Dynamic rates will likely encourage greater adoption and optimization of these resources. However, the bill is careful to address potential pitfalls that may be borne from these "optional" rates, namely potential cost shifts between participating or nonparticipating bundled and unbundled customers.

4) *Customer Protections.* Despite the author's effort to address potential customer impacts, any change to customer rate design, even an optional one, may create unintended consequences. Vulnerable customers – i.e., elderly, low-income, or those with medical needs – may have limited access or understanding of the technology needed to optimize for cost savings under the new rate design. Moreover, they may have limited flexibility in adapting to grid needs, such as being unable to reduce air conditioning usage during a heat wave. SDG&E, writing in opposition to this measure, raised its experience with customer response during TOU adoption in its territory, writing:

   "…during the July 2018 heat wave, customers on TOU and CPP [critical-peak-pricing] plans experienced extreme bill volatility, resulting in record customer

[16] CPUC. (2025). "The Benefits of Smart Meters." *CPUC. https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/the-benefits-of-smart-meters*

complaints.[17] We learned from customer feedback that many customers, particularly residential and small business customers, struggle to respond effectively to TOU and CPP based dynamic price signals as they are unable to make operational changes to significantly modify their energy use."[18]

It will be difficult to appropriately balance the customer and grid benefits afforded by dynamic pricing against the potential negative consequences to those customers who may struggle to adapt. *As such, the committee recommends amendments directing the CPUC to periodically evaluate and mitigate any cost shifting from the dynamic rate tariffs, as well as consider rules or conditions on participation by vulnerable customers to ensure adequate protections.*

5) *A Matter of Timing.* The three large IOUs, writing in opposition to this measure, cite the requirement that the dynamic rate tariff should reflect "real-time" grid conditions as undermining the extensive work they have undertaken during the piloting of their dynamic rates, mentioned above. SCE interprets the "real-time" pricing in the measure as equivalent to the 5-minute pricing done by the California Independent System Operator (CAISO). All three IOUs note lack of adequate data management systems to be able to provide customers with such "real-time" data. However, the 5-minute CAISO interval is not the author's intent. Rather, the author desires the dynamic rates to be "time-varying" but does not seek to prescribe the appropriate time interval. *In recognition of this desire, the committee recommends striking any mention of "real-time" in the bill, and replacing it with "dynamic" or "time-varying."*

6) *Additional Amendments. The bill requires additional clean-up or clarification, such as an acknowledgement that the transmission rates must be consistent with Federal Energy Regulatory Commission rules; a removal of any limitations on the nonbypassable charges; and minor edits in the findings and declarations. The committee recommends accepting all of these changes.*

7) *Related Legislation.*

SB 541 (Becker, 2025) requires the CEC, as part of each integrated energy policy report, to identify incremental load shifting targets to meet the statewide load-shifting goal, including biennial adjustments to the goal. Additionally requires all retail suppliers, as defined, to provide rate information to the CEC's Market-Informed Demand Automation Server in order to provide third-party devices with access to real-time rate information; and requires the CPUC, on or before January 1, 2028, to require all load-serving entities to offer optional dynamic pricing tariffs, as specified, and the governing boards of each POU to consider offering dynamic pricing tariffs, as specified. Status: In Senate Committee on Rules.

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[17] SDG&E Petition for Modification of D. 12-12-004; https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M285/K881/285881559.PDF
[18] Pg. 3 SDG&E AB 1117 Opposition letter, March 25, 2025.

8) *Prior Legislation.*

SB 846 (Dodd) among its many provisions, required the CEC to adopt a load shifting goal to reduce net peak electrical demand. Status: Chapter 239, Statutes of 2022.

AB 3001 (Bonta, 2018), among its provisions, requires the CPUC to offer optional residential and commercial rates that encourages the deployment of flexible electric loads. Status: Died – Assembly Committee on Natural Resources.

AB 327 (Perea), among its many provisions, restructures the rate design for residential electric customers. Status: Chapter 611, Statutes of 2013.

REGISTERED SUPPORT / OPPOSITION:

Support

Alliance for Retail Energy Markets
California Large Energy Consumers Association
NRG Energy
Sierra Club

Support If Amended

California Solar & Storage Association

Oppose

Edison International and Affiliates, Including Southern California Edison
Pacific Gas and Electric Company and Its Affiliated Entities
San Diego Gas and Electric Company

Analysis Prepared by: Laura Shybut / U. & E. / (916) 319-2083