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California Public Utilities Commission
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SUBJECT:

**350 Bay Area comments on CPUC White Paper:
'Utility Costs and Affordability of the Grid of the Future'**

350 Bay Area appreciates the opportunity to submit these comments on the draft report titled Utility Costs and Affordability of the Grid of the Future ("White Paper"), developed by the California Public Utilities Commission (CPUC) and released February 16, 2021. We congratulate the CPUC for this strategic approach to forecasting electric rates over the next decade in order to understand the impact of different programs and components of the rate base on affordability, equity, and the climate crisis.

The White Paper is particularly valuable and informative because it looks at affordability in the context of TOTAL household energy costs each month, including electricity, methane gas, and gasoline. Analyses which focus solely on California's high (and increasing) electricity rates are deficient because they do not include the substantial potential **benefits** of electrification for low-income households in decreasing the proportion of income which must go to paying for total energy costs each month, a highly regressive burden. As the White Paper notes, managed transportation and building electrification could save a household with above average energy use in a hot climate zone over one hundred dollars a month in total energy costs. (Utility Costs and Affordability of the Grid of the Future: An Evaluation of Electric Costs, Rates, And Equity Issues Pursuant to PU Code Section 913 .1 (subsequently referenced as WP) Figure 38 p 77) Additionally, electric rates are forecast to increase roughly half as much as fossil fuels over the next decade.¹ That modelling result suggests that priority policy solutions should focus on lowering the barriers to participation in managed transportation and building electrification to allow lower and middle income households and communities to realize these savings.

Energy Division staff and their colleagues are also to be strongly congratulated for their analysis (and the detailed information provided) on the dramatic increase in transmission spending and

¹ Gasoline is shown to increase 70%; PG&E Natural Gas ("NG") rises 78%, but electric rates rise only 37%; SDG&E NG rises 84%, but electric rises only 47%; SoCalGas rises 81%, but SCE electric rises only 35% (see Figures ES-4, ES-5 & ES-6)

the utility rate base over the past five years among California's three Investor Owned Utilities. For example between 2016 and 2021, PG&E's transmission rate base increased 45.0% from \$5.846 billion to \$ 8.476 billion. (WP Table 7 p36)

The analysis also provides specific areas where oversight and attention by the CPUC and others is warranted to control transmission's accelerating contribution to increased electric system costs--

- 1) "Self-approved" projects, i.e. those with no state or Federal review of need or costs. For example, annual capital additions for self-approved projects projected for 2020 and 2021 across all three IOUs are \$3.18 billion. (WP p 39)
- 2) FERC incentive .5% above usual profit rate designed to encourage participation in the CA ISO. California law already requires that the IOU's participate in CAISO; this extra incentive costs California ratepayers over \$70 million annually (WP p 38).

We strongly recommend that the Commission add to these a consideration of the impact of transmission cost allocation and the failure to incorporate ratepayer transmission cost impacts in procurement practices. Transmission Access Charges (TAC) levied on ratepayers are proportional to total transmission system capacity and increase with the cost of utility operation and maintenance, plus authorized returns on investments. Unfortunately IOU customers are allocated transmission fees based on their metered electric consumption regardless of what proportion of their energy is sourced through transmission. CAISO has looked into and proposed reforms to better align cost allocation with cost causation, however interagency coordination may be required and no action has been taken. These charges are rapidly increasing and are projected to equal or exceed the average ratepayer cost of new long term solar and wind procurement contracts, i.e. new transmission will exceed the cost of new energy going forward. DER serve loads through local resources, often behind the customer's own meter, and are not delivered through the transmission system. This frees up existing transmission capacity and mitigates the need for new transmission infrastructure, however these ratepayer savings are largely absent from consideration in procurement processes. Optimization of the combined net total costs of both generation and delivery of energy is essential for rationale planning and procurement, and for effective containment of electric rates.²

The transmission cost savings from In front of the Meter DER's are also not appropriately incorporated in CPUC's Integrated Resource Planning Proceedings. The model used to optimize resources for the Reference System Portfolio does not differentiate between generation/storage resources that require use of the transmission grid and those In Front of the Meter on the distribution grid.

Given the central role of distribution system and transmission system costs in increasing the utility rate base and hence the revenue requirement (the primary determinant of ratepayer bills and affordability) the White Paper should reference recent studies showing grid cost impact of accelerating the availability of DER's -- Energy Efficiency, Demand Management, Distributed

² For additional information on reform of Transmission Access Charge allocation and procurement practices, see: <https://clean-coalition.org/policy/transmission-access-charges/>

Generation and Storage (both Front of Meter and Behind the Meter, typically rooftop photovoltaics (“PV”)). Two separate studies (from Princeton University³ and Vibrant Clean Energy⁴) have shown that increased interconnection on the distribution grid of clean DER’s can result in enormous cost savings. The Vibrant Clean Energy modelling, which optimized DER for least cost, also showed a decrease in electricity rates over time. Distribution planning co-optimization results in US national cumulative system-wide savings of \$301 billion by 2050 (“BAU” vs “BAU-DER”), which rises to \$473 billion when considering a clean energy standard (“CE” vs “CE-DER”). If a clean electricity mandate was implemented by 2035, rather than the modeled 2050 (and the US could deploy enough generation), the DERs would bring forward the cost savings observed by 2050 to 2035, since they enable more clean utility-scale variable generation to be deployed efficiently.

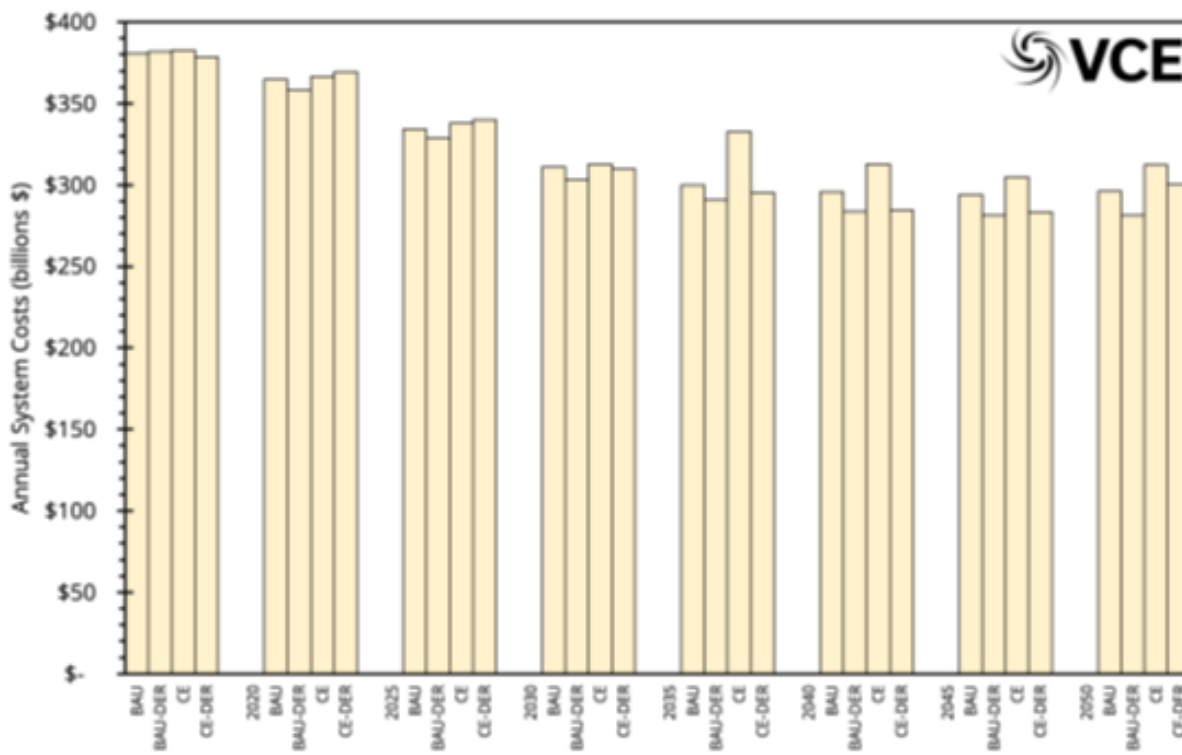
“Even though the electricity system is undergoing substantial change in the modeling scenarios, the total system costs are subdued and fall across all scenarios through 2050. This is because low-cost renewables and natural gas help reduce wholesale electricity costs. There are costs to upgrade the distribution infrastructure, but there are also cost savings from deferment of upgrades to the transmission-distribution interface (or connection points) as well as removing unnecessary utility-scale capacity reserved for peaking needs. Since the modeling reduces utility-observed system peaks by around 16% by 2050 (due to the DER coordination) compared with “Business as Usual BAU”, a significant fraction of utility-scale peaking and capacity is avoided.”

Figure ES-10: The total system costs (top) and average electricity retail rates (below) 4 options-- BAU with and without DER’s and Clean Energy with and without DER’s modelled for 2018-2050, shown in 5 year intervals

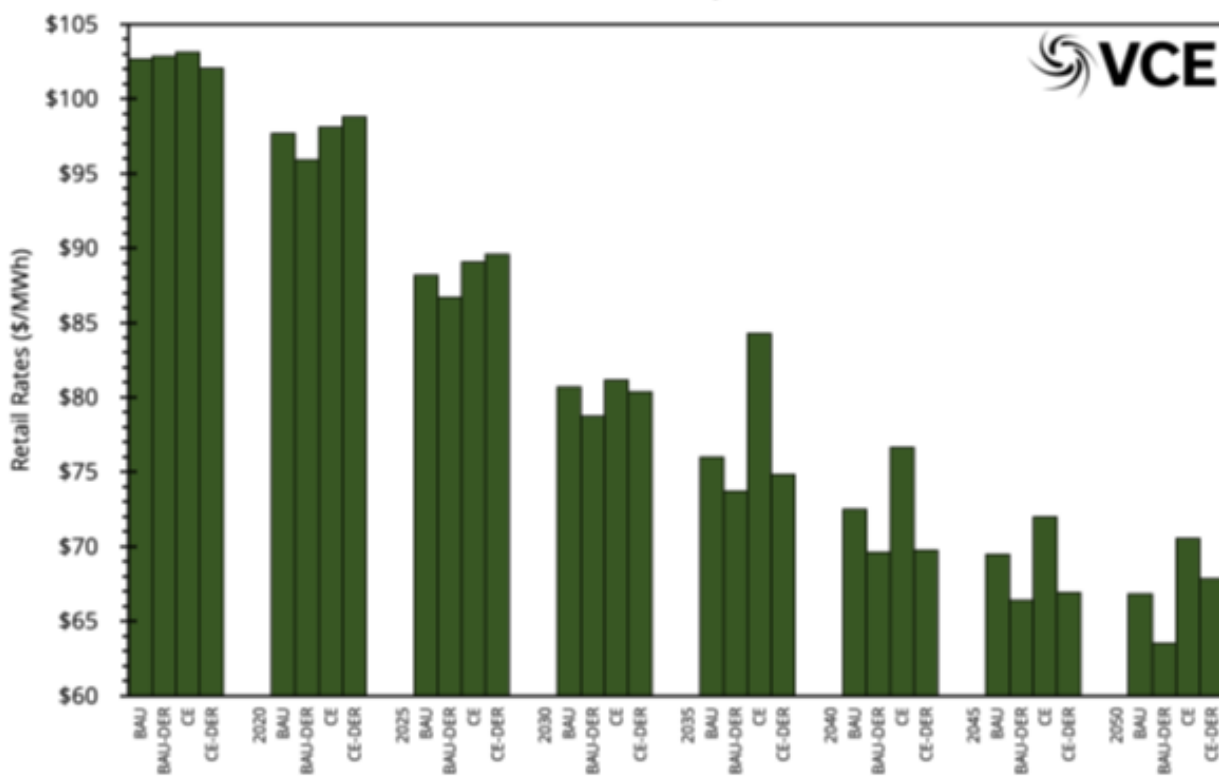
³ Net-Zero America: Potential Pathways, Infrastructure, and Impacts, interim report, Princeton University, Princeton, NJ, December 15, 2020. Available at: https://environmenthalfcentury.princeton.edu/sites/g/files/toruqf331/files/2020-12/Princeton_NZA_Interim_Report_15_Dec_2020_FINAL.pdf

⁴ Why Local Solar For All Costs Less: A New Road Map For The Lowest Cost Grid; Christopher Clack et al, 1 December, 2020. Available at: https://www.vibrantcleanenergy.com/wp-content/uploads/2020/12/WhyDERs_ES_Final.pdf

WIS:dom®-P CONUS Annual Electricity System Costs



WIS:dom®-P CONUS Electricity Retail Rates



DER have a proven record of eliminating the need for new transmission infrastructure investment, as both the California Public Utilities Commission (CPUC) and CAISO have recognized. While the Vibrant Clean Energy model addresses the entire United States, California found that increased growth in energy efficiency and rooftop solar above what had been forecast led to the cancellation of numerous unneeded transmission projects in 2017-18 alone,⁵ saving ratepayers not just the \$2.6 Billion in capital costs, but over \$10 Billion in future operations, maintenance, and return on equity costs. DER offer a clear opportunity to slow the dramatic acceleration in transmission cost experienced by California ratepayers.

Implementation of California's forward thinking and progressive energy efficiency standards has successfully kept average household energy use flat over the past four decades while nationally average household energy use has doubled over the same period. This has not only resulted in ratepayer savings from lower energy consumption, but has greatly reduced statewide electric utility infrastructure capacity requirements, and realized associated emissions reductions. Peak load mitigation and on site generation can likewise reduce the utility infrastructure capacity requirements associated with increased electrification of our building and transportation sectors. Finally, it cannot be emphasized enough that electrification will spread fixed costs across a larger billable electric consumption base, which will both drive lower electric rates and reduce total customer energy bills, and does so while reducing emissions and their impacts on the most affected communities. In this light, efficiency and local generation including growth in NEM eligible facilities should be recognized as integral to reducing costs for all ratepayers, while additions to actual utility expenditures and income will burden customer rates. These highlights deserve greater emphasis in the White Paper summary and key findings.

Recommendations for page specific edits to the White Paper

Executive summary "key findings" section p7

While the White Paper does an excellent job of illustrating the cost components of each IOU's rates and forecasts for this decade in Figures ES-4, ES-5 & ES-6, there is a notable lack of discussion and analysis of the disparity in energy (generation) costs between utilities. As renewable resources have matured and scaled the costs of renewable energy have steadily fallen and are expected to continue to do so. As renewables are already available at lower cost than conventional generation and are making up a rapidly increasing share of total generation, this should put a downward influence on generation costs. All three IOUs operate in an open wholesale energy market but show strikingly different generation costs. SCE's costs are shown to be roughly flat at 10¢/kWh over the next ten years, SDG&E is lower today but steadily rising,

⁵ CAISO 2017-18 Transmission Planning Process:

www.caiso.com/Documents/BoardApproved-2017-2018_Transmission_Plan.pdf

Summary available at:

http://www.caiso.com/Documents/BoardApproves2017-18TransmissionPlan_CRRRuleChanges.pdf

and PG&E is already shown at 12¢/kWh today, increasing to 15¢ by 2030. This discrepancy deserves explanation, and SCE's substantially lower future generation costs may present replicable opportunities to help mitigate electric rate pressures.

On p 86 the White Paper states

“it was found that building and vehicle electrification technologies represent an opportunity for customers to dramatically reduce their overall energy costs.”

This critically important conclusion provides a **solution** for equity/affordability. The current text of the Executive Summary undercuts the importance of this result by emphasizing a potential “cost shift” **problem**, rather than encouraging consideration of a range of proactive policy solutions addressing all three objectives of equity, affordability, and climate.

current draft:

“a well-managed effort to move customers to all electric homes and electric vehicles could result in over a \$100 a month reduction in overall energy bills. This means that, in order to avoid large increases in energy bills, customers will need to adopt technologies that require large up-front investments. *In the absence of subsidies and low-cost financing options, this could create equity concerns for low- to moderate-income households and exacerbate existing disparities in electricity affordability.*” (emphasis added) (WP p 8)

350 Bay Area recommends presenting this as a policy opportunity rather than a problem. Cost savings is not a problem, and a cost shift will only occur if the Commission fails to support *equitable access to the savings* -- the potential for realizing this equity benefit should be a priority for CPUC and state policies to increase access of low and middle-income households and disadvantaged communities to well-managed transportation electrification and retrofitting water and space heating systems, which have the potential to benefit affordability of the entire electrical system (see savings with DER's shown above). Just as energy efficiency standards have realized real savings for all customers over the past four decades despite marginal increases in initial costs, electrification can yield similar benefits. Customer equipment is replaced at end-of-life, and replacement with preferred resource technologies will benefit customers. Early retirement of less efficient and higher emission equipment will realize those benefits earlier. Appropriate financing options will allow customers to spread the new equipment costs out over time and realize net savings from the first day.

Problem statement P 7

includes the following statement (emphasis added) “As California continues transitioning to a more robust distributed energy resources marketplace with greater deployment of electric vehicles, it will be essential to employ aggressive actions to minimize growth in utility rate base and to protect lower-income ratepayers **from cost shifts and bill impacts.**”

350 Bay Area strongly agrees that a central problem for the CPUC is avoiding unnecessary growth in utility rate base; the White Paper demonstrates that the CPUC should focus

particularly on IOU transmission and distribution system costs which are rapidly increasing and represent such a substantial portion of current bills.

Based on Commission regulations and open Proceedings, it is premature for the White Paper to state that protecting lower-income ratepayers from cost shifts will require “aggressive actions”. (The preceding paragraph defines this as “Revenue shifts to lower-income non-participants from Net Energy Metering (NEM) and other DER incentives”). While 350 Bay Area strongly encourages and supports actions *as needed* to protect lower-income ratepayers from negative impacts of any existing or proposed policies and programs, and remedial action to address historic inequities, the recently released NEM Lookback Study has not been vetted and conclusions regarding net impacts cannot yet be asserted. The NEM 3 proceedings is in its early stages and the Lookback study which asserts a cost shift in NEM 2 has already been identified by several parties as a topic requiring evidentiary hearings to provide transparency on the changes made between the draft version of the report and the final report. In the draft report dated August 14, 2020 for party comment, the TRC, the primary cost-effectiveness test mandated by the CPUC in D16-01-044, showed **Cost Savings from the NEM** program (TRC values for residential customers for each IOU =1.23-1.37)⁶ In the final version, this had changed to a value of less than 1--ie savings are less than costs (TRC values for residential customers for each IOU = .69-.80, (WP p28)). In addition, the Lookback study did NOT include quantitative documented benefits of rooftop solar to California ratepayers such as resiliency and health benefits, so the Lookback cost effectiveness analysis under-estimates the benefits of rooftop solar. For both these reasons, the Lookback study cannot be considered conclusive.

While it is impossible to determine at this time whether NEM represents cost savings or a cost shift, this contested data and conclusion should NOT be predetermined as the “Problem Statement”--rather it is an hypothesis whose potential impact on **all** objectives (equity, environment, affordability) should be considered and compared to other policy alternatives.

Additionally, it bears repeating that a cost shift to lower income non-participants will only occur if the Commission fails to support *equitable participation* in NEM and energy efficiency programs and access to the savings -- equitable access should be a priority for CPUC. To the extent that CARE customers realize a lower return on investment in efficiency or NEM, it must be recognized that this is due in part to the savings already realized by CARE customers and this creates an inherent disincentive for participation in these programs. This is a structural feature of existing rate design that should be addressed, but that does not indicate that energy efficiency or self generation programs are in of themselves inequitably shifting costs. Improved standards for existing rental properties and for owner occupied homes at time of sale should be considered to universally distribute benefits.

⁶NET ENERGY METERING 2.0 LOOKBACK STUDY Draft Report August 14, 2020 Executive Summary p 1-5

White Paper P11 declining IOU sales revenue implications

“...have also led to declines in electricity sales due to energy efficiency, energy conservation, and customer generation of electricity. Declines in electricity sales have had the *effect of raising electric rates* as fixed costs are spread over a smaller usage base.” (emphasis added)

- 1) Projections in the White Paper show increased electricity sales in the near future from accelerated transportation and building electrification; as noted, the High Electrification scenario is likely to result in decreased electricity rates (WP p 85)
- 2) California energy policy supporting energy efficiency, energy conservation, and customer generation of electricity inherently decreases IOU sales of electricity. The primary outcome of these policies has been limiting the rate of increase in electricity bills for California ratepayers despite high electricity rates (as the White Paper notes) as well as providing about 9 gigawatts of clean energy capacity -- about 11% of California's total electricity production. The need to consider allocation of fixed costs in the face of policy success is an intrinsic responsibility of the CPUC, not worthy of calling out as a causative factor for rate increases.

We therefore suggest adding important context to the sentence “Declines in electricity sales...usage base.” to note that electrification of the building and transportation sectors will increase total electric sales and result in both lower electric rates and lower total energy costs for consumers.

P27-28 NEM 2.0 Costs and Benefits Study

350 Bay Area notes the puzzling differential approach to NEM costs compared to other costs presented in the White Paper. Specifically, as evident in the Table of Contents reproduced here, only the section on NEM includes benefits as well as costs.

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Again in Table 12 p41, the costs of multiple legislative programs are listed, without any consideration of benefits.

In addition to the anomalous treatment of the NEM program, a claim that the benefits are presented is problematic because (as we note above in commenting on the “problem statement”) quantitative documented benefits of rooftop solar to California ratepayers such as resiliency and health benefits are NOT included in the NEM assessments available to date, so the cost effectiveness analysis under-estimates the benefits of rooftop solar.

Furthermore, the White Paper on p27 presents analyses based on the Ratepayer Impact Measure (RIM) test and uses these analyses to assert that “All residential non-NEM or non-participating customers, including California Alternate Rates for Energy (CARE) customers, shoulder an additional rate burden as a result of the cost shift from NEM customers”. (WP p28)

In the RIM, revenue the IOU’s would have received is considered a “cost” of NEM, despite the fact that customer generation of clean energy is what the program is designed to do. This foregone revenue largely drives the “cost shift” emphasized in this section. This “cost shift” framing blames ratepayers who adopted California policies encouraging rooftop PV which reduces their load on utility supply. This is comparable to blaming customers practicing conservation or employing energy efficiency for shifting costs. A first principle in rate design is to align cost allocation with cost causation in order to offer appropriate price signals to contain costs, and reducing use of grid resources does not create costs. Having first determined the actual source of costs, a second core principle is equitable distribution in order to support equitable access to benefits. As an analogy to highlight the inappropriate emphasis on pitting one customer group against another, urban residents inherently subsidize the grid costs for rural residents-- is the CPUC also going to assert a “cost shift” from rural to urban residents? No, the common good is served by creating equal access to the same rates and programs.

For these and other reasons, the CPUC in D16-01-044 determined that the TRC is the appropriate cost-effectiveness test for Distributed Energy Resources, not the RIM.

350 Bay Area suggests that this section should be deleted, or NEM should be given comparable treatment to other components of rates. At a minimum, the White Paper should clarify that the RIM is NOT the CPUC endorsed approach to balancing costs and benefits for DER’s. One could also argue that in crediting IOU’s for energy they don’t get to sell, the RIM in essence preferences IOU shareholders over California ratepayers.

350 Bay Area appreciates the opportunity to submit these comments and looks forward to continuing to work with the CPUC and stakeholders on these critical cost and affordability issues.

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