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Leuwam Tesfai

Executive Director, California Public Utilities Commission

Email: txfinancing@cpuc.ca.gov

Subject: Peninsula Clean Energy comment on "Working Concepts in Transmission Financing and Ownership."

Dear Executive Director Tesfai,

Peninsula Clean Energy is grateful for the opportunity to provide input on methods to control the cost to ratepayers of expanding the state's electrical transmission grid. Peninsula Clean Energy is a Community Choice Aggregator and provides electric generation service to a population of about 800,000 in San Mateo County and the City of Los Banos in Merced County. Peninsula Clean Energy is a not-for-profit public agency that primarily contracts for utility-scale electricity supplies to serve retail customers. Although Peninsula Clean Energy does not contract, own, develop, or operate any transmission assets, our customers pay for the cost of transmission on their PG&E bills. As a public agency governed by a board elected by our constituents, we are our customers' primary advocates for helping to keep the costs of transmission low.

Peninsula Clean Energy urges the Commission to be keenly mindful that the investor-owned utilities ("IOUs") are strongly incentivized to increase transmission investment to the greatest degree possible, since the profits they have a legal duty to maximize are determined by the investment they are able to induce regulators to authorize. Thus, our customers, and by the same token, the Commission, cannot rely on IOUs to make decisions or engage in practices in the interest of ratepayers, since doing so would be a violation of their corporate duty.

Peninsula Clean Energy recommends that the Commission:

- Develop a comprehensive strategy to avoid the need for transmission spending in the first place;
- Ensure that what transmission is built is robust to uncertainty in how California's power mix and future load will develop;
- Develop a robust analysis of the cost savings from public financing and ownership of transmission assets; and
- Develop processes and approaches to ensure that planned transmission is built cost effectively and quickly.

1. Transmission costs should be reduced through public financing and ownership and appropriate financial risk mitigation.

Once a reduced and least-regrets set of transmission projects is determined by first avoiding upgrades and then establishing a future-proofed transmission plan, California needs the most cost effective and expeditious approach to financing transmission spending. As highlighted in the concept paper, this almost certainly requires public financing and probably ownership. There are two major benefits of public ownership: access to lower financing costs and incentives that are aligned with the public's interests.

Public Ownership

Public ownership would allow access to tax-exempt debt financing through issuance of bonds, allowing borrowing rates between 3% to 4%. Private ownership typically results in borrowing rates between 7% and 8%, as referenced in the Concept Paper. Over a 30-year financing term, 8% borrowing rates would result in a total payment of 2.6 times the project cost. (For example, a $100M project financed at 8% over a 30-year term would cost $260M.) The same project at a 3% borrowing rate would result in a total payment of 1.5x the project cost (a $100M project financed at 3% over 30 years would cost $150M). Five percentage points lower financing rate would save more than the original project cost in savings. Financing cost dominates long-term costs in these types of projects, which is why financing structure matters so

much in transmission, and why public ownership (and access to significantly better financing terms) should play a bigger role in California's transmission system.

Furthermore, public ownership is also better aligned with the public's interests in building and maintaining a reliable, low-cost system. While public entities have a mission and incentive to maintain low costs for the public, private ownership, such as by IOUs or other private developers, requires the public pay not only higher financing costs but also increased charges to generate profits from capital investments to guarantee a return on equity (ROE). Thus, the IOUs are heavily incentivized to build as much transmission as possible, whether or not it is needed, and also to make sure that those transmission assets have the highest possible cost basis on which to charge a return. In contrast, public ownership would eliminate these perverse incentives.

Reduce Financing Costs

In addition to securing lower financing costs through public financing and ownership, public costs should be reduced by not over-mitigating financial risks associated with California transmission projects. The concept paper recommends evaluating a hypothetical 50/50 split between debt and equity financing, but this ratio may not be optimal for ratepayers if greater savings could be achieved with higher levels of debt financing. Transmission revenue in California is not as high risk as in other areas, since cost revenue recovery for approved projects is stable and well-established in a robust economy that is the world's fifth largest and one of the world's richest on a per capita basis. The concept paper inappropriately suggests that increasing the debt-to-equity ratio would increase revenue risk and would require a higher return on equity. However, if the actual revenue risk is low, there would be little need to over-mitigate risk in California transmission development such as by allowing a higher ROE when the proportion of debt is higher than 50%, or by adding a bill surcharge to "secure debt revenue". Those mitigations would increase cost to consumers without substantively decreasing risk and likely would be unwarranted.

Peninsula Clean Energy strongly urges the Commission to be bold in its thinking on ways to protect the public interest, despite pressure and advocacy for other, more expensive approaches. Although some of these elements are outside of CPUC jurisdiction, the Commission

could nonetheless advocate at FERC or other appropriate fora for cost effective methodologies on behalf of the people of California.

2. Potential Options for Achieving Transmission Savings

Reduce transmission spending by first avoiding the need for transmission.

The cheapest transmission infrastructure is transmission that never needs to be built. Thus, the first approach to bringing down transmission and distribution costs is to meet California's energy needs without building new transmission.

The need for transmission is driven primarily by a spatial disconnect between load and supply. Transmission expansion will be needed in the coming decades for two main reasons: (1) to support increasing electric load due to electrification and economic growth (including data centers to support artificial intelligence, and; (2) to support the retirement of fossil fuel based power plants to meet the zero-carbon goals of Senate Bill 100 (de Leon 2018). Transmission needs are typically driven by peak conditions of very high load and constrained supply. Thus, transmission expansion needs can be reduced by lowering peak load and siting supply as close as possible to load.

Reduce peak load through Load Management

The wide array of approaches to reduce peak demand by shifting load to other times of day must constitute California's bedrock approach to reducing future transmission spending. As California electrifies, a host of new loads from electric vehicles, building electrification, and data centers will dramatically increase transmission and distribution spending if left unchecked. If customer loads drive higher peak demands, this will drive greater distribution and transmission spending to accommodate those greater aggregate flows. Fortunately, these same technologies open the prospect for extensive load management.

Right-sizing distribution connections provides a range of strategies for meeting customer needs with existing distribution and transmission infrastructure. By designing building and transportation electrification infrastructure to operate within the constraints of existing panel sizes and service lines, right-sizing places a natural cap on the strain building and transportation electrification can place on existing distribution and transmission infrastructure. Right-sizing

involves both reducing peak usage and spreading electricity demand across all hours. Actively managing household loads, especially EV charging, not to exceed the existing panel and service capacities inherently limit the maximum peak flows. A similar approach can be employed at the load aggregation point or substation level if loads from different properties are managed collectively to avoid increasing the peak need for transmission services. Automated device coordination at the service account level through Distribution Energy Resources Management Systems (DERMS) can allow all needs to be met, for example, by sequentially charging vehicles across the night-time hours to ensure that the distribution feeder does not exceed service limits. If deployed at a wide scale, the increased electricity demand does not need to drive increased peak demand and thus, increased transmission spending.

Real-Time Pricing has been also suggested as an approach. However, although some trials with real-time pricing have had some modest success, the likelihood of driving sufficient load management without the hardware limits and automation of physical devices is low. Numerous studies have indicated that for real-time pricing to be successful, customers must face low barriers to entry and maintenance, which essentially requires automation. Thus, widespread and rapid adoption of automation is likely necessary no matter what strategy is adopted.

Critically, coordination of loads and load shifting cannot be entrusted to entities whose core mission is to ensure that coordination fails to reduce transmission spending. As mentioned above, IOUs have a fiduciary duty to investors to ensure increased transmission and distribution spending. Thus, to avoid distribution and transmission spending successfully, California must ensure that DERMS operators and Distribution System Operators are entirely independent of IOU control and their financial disincentives. The Commission could also sincerely explore robust mechanisms to compensate whatever entity is performing a coordination function to be compensated appropriately for containing distribution and transmission impacts. Thus, to tap this potential, the Commission should move expeditiously to create and support independent DERMS managers and Distribution System Operators and to create robust mechanisms for load management and Distributed Resources to avoid distribution investments.

Site generation near load.

Generation sited near or at load has strong potential to avoid increased transmission spending. As a first step the Commission should evaluate how much transmission spending can

be reduced as a function of the degree of both behind-the-meter and in-front-of-the-meter generation and storage deployment. CAISO has demonstrated in its transmission process that distributed generation can result in billions of dollars of rate payer savings in avoided transmission spending.[1] Peninsula Clean Energy has recommended that the Commission coordinate with CAISO to evaluate the needed levels of new transmission under differing assumptions of DER deployment to evaluate the sensitivity of transmission spending to DER deployment. With the relationship between DER deployment and transmission spending characterized, the Commission would then be able to evaluate an approximately optimal level of DER deployment and then take affirmative steps to ensure that level of distributed resources gets deployed. No analysis of strategies to control transmission spending can be regarded as complete without a robust analysis of how much transmission spending could be avoided with increased deployment of DER and at what cost.

Distribution-connected (in front of the meter) and behind the meter generation also has fundamental implications for environmental justice in California. Currently, one of the most significant instances of environmental racism in the state is the strong association between highly polluting peaker plants in local reliability areas and disadvantaged communities across the state. Although distributed generation seems a likely solution to this festering problem, very little progress has been made to date either to plan to replace these polluting plants with clean resources or to create the market conditions to make it feasible for developers to replace them.

A range of strategies exist for facilitating the deployment of cost-effective DER. Once a robust relationship between DER deployment and transmission spending is established, qualifying DER for a fraction of the avoided transmission spending. In addition, current Resource Adequacy (RA) accreditation methodologies are not financially feasible for distribution-connected generation, which tend to be smaller and thus unable to economically absorb the large, fixed costs of deliverability studies currently involved in being eligible as RA

[1] Utility Dive, "Efficiency, DERs saving $2.6B in avoided transmission costs, CAISO says," https://www.utilitydive.com/news/efficiency-ders-saving-26b-in-avoided-transmission-costs-caiso-says/519935/

capacity. Thus, creating an economically viable alternative mechanism for small scale distributed generation to receive credit for providing resource adequacy would also foster potentially significant deployment of transmission-avoiding DER. To the extent that certain DER can avoid transmission spending, any comprehensive strategy to avoid transmission spending must include a robust program of policies to support the correct levels of DER deployment. Again, this program cannot be entrusted to entities with a strong interest in ensuring that DER do not avoid transmission spending.

*Plan the transmission system to account for a wide range of potential outcomes under a least-regrets rubric***.**

Transmission planning should be conducted to accommodate the full range of likely generation needs on a least-regrets, rather than planning to a single "optimal" portfolio that may or may not come to pass. Approving transmission upgrades to best serve future loads with future supplies has cascading effects on future costs, so the costs of error can be significant. Fortunately, more advanced methodologies now exist to account for planning uncertainty.

CAISO's current transmission project selection uses deterministic modeling to select transmission projects "needed" for the future based on one or two "optimal" portfolios or sensitivities. However, these portfolios can be very sensitive to changes in costs or major planning events (*e.g.,* changes in federal policies regarding offshore wind). Until recently, the practical limitations of computational power of modeling software have constrained the ability to account for uncertainty more rigorously. However, recent advances in modeling theory and the continual improvement of processing speeds have given birth to the next generation of modeling called Decision Making Under Uncertainty (DMUU).

DMUU modeling, unlike deterministic modeling, can assess hundreds or thousands of future scenarios and select a portfolio that will perform the best over all the modeled scenarios. Case studies that have applied DMUU to California transmission planning have shown that DMUU can reduce future transmission costs by billions of dollars per year, just by choosing the "right"

transmission projects to build, and avoiding stranded transmission assets that have to be replaced or modified in the future.[2]

Sonoma Clean Power and Peninsula Clean Energy have co-sponsored some of this research and are also co-sponsoring draft legislation currently under consideration in the California State Assembly, AB 2111 (Papan), directing CAISO to use DMUU in Transmission Planning, in compliance with FERC Order 1920-A. Independent of AB 2111, we encourage CPUC to adopt DMUU techniques in the Integrated Resources Planning process to support CAISO's adoption of DMUU techniques in the TPP.

3. Considerations for Implementation: Eliminate perverse incentives that increase costs and cause delay.

Transmission spending can also be reduced by improving procurement and construction practices and requiring expeditious deployment of new projects. A range of strategies could achieve significant improvements in construction costs and timelines.

Reduce cost to build projects by increasing the number of competitively bid projects

The Commission should strongly recommend an expansion of competitive bidding for projects that serve the public. The Concept Paper references potential cost savings from competitive transmission development, but most transmission investments in California are not subject to competitive solicitation due to their classification as upgrades or modifications of incumbent-owned facilities. If financing or ownership reforms were applied only to projects eligible for competitive development, this would limit the impact of those reforms. In order to enact cost reductions on a wider scale, the scope of projects eligible for competition should be widened. This widening would likely require changes to the criteria for whether a transmission is designated as a competitively built project in CAISO's FERC-approved tariff. However, if California is to restrain transmission spending, this may be a necessary reform.

Such a reform would expand the scope of competitively bid projects into both new categories as well as through dividing projects between competitively bid and non-competitive components.

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[2]See, *e.g.,* Mantegna, G, E. Dimanchev, F. Pecci, N. Patankar, and J. Jenkins, *Uncertainty-Aware Grid Planning in the Real World: A Method Enabling Large-Scale, Two-Stage Adaptive Robust Optimization for Capacity Expansion Planning, preprint available at*: https://arxiv.org/pdf/2603.00394v1.

Currently in CAISO, in general, new transmission projects (new right of way, new functions, etc.) above a certain size are put up for competitive bid. Projects that are expansions or modifications of existing assets are assigned to the incumbent IOUs. While there may be legitimate reasons why work on utility-owned assets should be managed by the utility itself, this need not mean that all aspects of such projects must remain non-competitive.

Although transmission may be owned by private entities, since the public is paying for the upgrades and the return of equity on those upgrades, the public has every right to demand that the work be done as cost-effectively as possible. Upgrades to utility owned assets could be divided into work that can be competitively bid (such as EPC work) and work that may need to be retained by the incumbent (project specifications and design, operations and maintenance planning, outage coordination, eventual ownership, etc).

In addition, transparent accounting and review must be employed to create cost discipline for work that must be done by the incumbent utilities. Many of the benefits of competitively built projects could be achieved through daylighting non-competitive offers by IOUs or developers through open book accounting and data transparency. If incumbent-assigned projects disclose unit costs, labor assumptions, outage assumptions, change orders, etc, and those data are benchmarked against contractors and peer utilities, the public can have more oversight in ensuring that incumbent-assigned projects are being built in a cost-competitive manner. The public could then assist the Commission in imposing cost discipline and rigor on the private transmission owners.

A necessary component of this approach is the development of a public database of as-realized costs for comparable transmission projects. The lack of publicly available cost data is itself a barrier to evaluating transmission cost reduction strategies, to the benefit of private developers who can avoid scrutiny of their costs. Only with publicly available data can the public effectively oversee utilities, which are profiting from unprecedentedly high electricity rates. If the Commission were to daylight the cost data, public and public sector advocates would be in a better position to scrutinize expenditures to assist the Commission in its core function of constraining ratepayer costs.

To develop such public databases, the CPUC should require developers and IOUs to report costs for non-competitive projects at a granular level. These data should be provided in public

cost databases, especially once projects are online. This process may take time to develop, given the lack of public data available by which to judge the appropriateness of claimed costs. Thus, the Commission may need to also require this similar data from developers of competitive projects to establish peer cost comparisons. Although this is not competition in the narrow sense, it can mimic some of the discipline that comes with competition and at least ensure that non-competitive projects are not wildly out of step with the analogous costs of competitive projects.

Eliminate perverse incentives for higher costs and delays

The Commission must strongly recommend the elimination or significant overhaul of the Allowance for Funds Used During Construction (AFUDC) mechanism which effectively pays developers to delay projects. Such delays directly hinder California's efforts to bring much needed generation resources online for reliability, affordability, and decarbonization. The current system does not incentivize projects to stay on schedule because the AFUDC effectively allows developers to be paid for schedule delays. This is a clearly untenable approach to ensuring that transmission and interconnection projects are completed in a timely fashion.

In Peninsula Clean Energy's experience, timelines for transmission interconnection projects, for example, have more than doubled in recent years, yet there seems to be no mechanism for accountability or incentivizing timely completion of transmission work. If IOUs are to have the benefit of returns guaranteed by the public, then IOUs must also be held accountable for their role in transmission project delays and delays to network upgrades that delay generator interconnection. The current system does not penalize or otherwise incentivize IOUs to stay on schedule in doing this work. Implementing penalties or performance-based reductions in ROEs imposed for timeline delays or cost overruns also shows potential promise in motivating private IOUs to prioritize timely development of necessary transmission projects.

The Concept Paper briefly mentions labor shortages as another reason for cost overruns and schedule delays. If project delays are increasing costs to ratepayers, then to reduce cost the CPUC should seek ways to alleviate those delays. Alternative approaches could entail authorizing project developers to perform interconnection work or authorizing the use of non-union labor to address the shortage of union labor for the construction work if unions are unable to address such shortfalls through accelerated training and apprenticeship efforts.

4. Selected response to Discussion Questions:

Although the two-week comment period has not allowed more extensive research into the academic literature, Peninsula Clean Energy will continue to investigate this question and forward any promising studies as they become available. The challenges Commission staff, CCA staff, and the academic community have in finding readily available public data on costs of transmission projects highlights the critical importance of establishing a public cost data process to allow informed decision making going forward.

1. Are there publicly available studies that provide insights on overall cost savings for ratepayers attributable to the various ownership models?
    a. The Wired for Savings report authored by the Clean Air Task Force and Net-Zero California shows the potential for up to $3 billion per year under certain scenarios when using a public-private partnership.[3]
    b. Several academic studies suggest that public ownership may overall be better at delivering value for end-use customers, despite some apparent cost efficiencies by privately owned utilities.[4]
2. Are there public sources that provide evidence of savings related to competitively bid projects versus projects that default to incumbent investor-owned utilities?
    a. Brattle Group: Cost Savings Offered by Competition in Electric Transmission study found that over 2013-2017, only 3% of transmission investments were subject to competitive solicitation, highlighting the limited role of competition to date in the transmission industry. However, these competitive processes led to

[3] Clean Air Task Force and Net-Zero California, Wired for Savings, https://cdn.catf.us/wp-content/uploads/2024/10/31145139/wired-for-savings.pdf

[4] See, *e.g.,* J.Kwoka (2005) The Comparative Advantage of Public Ownership: Evidence from U.S. Electric Utilities, 38 Can.J. Econ. 622-640, available at: https://www.jstor.org/stable/3696050; S. Herling, F. Koza and P. McGlynn, "The Sponsorship Model: Competitive Construction of Transmission Facilities in PJM Interconnection," in *IEEE Power and Energy Magazine*, vol. 14, no. 4, pp. 65-71, July-Aug. 2016, doi: 10.1109/MPE.2016.2547298.; Monteduro, F. Public–private versus public ownership and economic performance: evidence from Italian local utilities. *J Manag Gov* 18, 29–49 (2014). https://doi.org/10.1007/s10997-012-9235-4.

innovations in proposed solutions that offered cost savings of 20% to 30% on average. [5]

3. Are there publicly available case studies of a government entity financing and building electric infrastructure at lower cost compared to a private entity? Are there publicly available data about the scope of the project and its costs?
    a. We are not aware of any such case studies, but we note that due to the significant role of financing terms on the total cost of the project, a government entity's ability to access significantly lower costs of borrowing can reduce total project costs on the order of magnitude of the cost of the project itself.
4. Are there publicly available case studies of a government entity financing an infrastructure project with the participation of private equity or other private sector financing, with public data about how the project financing costs were reduced because of the public-private partnership?
    a. See response to 1.

Thank you for the opportunity to provide input on this important topic in the ongoing effort to address the affordability crisis and reduce the cost of electricity in California. Please do not hesitate to reach out if we can provide any additional information or clarification on these topics.

Respectfully submitted,
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