Submit comment on Draft 20-Year Transmission Outlook

20-Year transmission outlook

1. Please provide your organization's overall comments on the Draft 20-Year Transmission Outlook Feb 7, 2022 stakeholder call discussion: *

CESA strongly supports the CAISO's development and publication of the Draft 20-Year Transmission Outlook, which will provide greater insight and direction on not only the costs and magnitude of the opportunities and challenges ahead, but also inform how the CAISO, along with the California Public Utilities Commission (CPUC) and California Energy Commission (CEC), need to reform their processes, frameworks, and tools to meet long-term decarbonization goals. In sum, our comments highlight areas of potential follow-on effort and clarifications to the assumptions and details of the outlook study, as well as seeking ways to make the Draft 20-Year Transmission Outlook more actionable in the future rather than merely conceptual.

2. Comment on chapter 1 Introduction: *

CESA appreciates the CAISO's analysis of transmission needs to support a longer-term timeframe (20 years), beyond what is typically examined in the Transmission Planning Process (TPP). As the CAISO explains, the analysis focuses on potential project approvals that are overlooked in the tariff-based project approval process.[1] However, in recognizing this, CESA recommends that the CAISO consider how the 20-year transmission outlook results could be something more than a "directional" study and be implemented in practice with actual project approvals and transmission buildout. This may come in the form of modified tariff authority to approve projects on a longer-term forward-looking timeframe, or it could fall within the current tariff authority and come in the form of more aggressive near-term (*i.e.*, 10-year) outlook and resource portfolios from the California Public Utilities Commission (CPUC) Integrated Resource Planning (IRP) process.

On this latter option, in other words, a more aggressive 2030 (or other 10-year in future years) portfolio could be submitted by the CPUC in order to identify and build policy-driven needs to reflect the transmission infrastructure needed to accommodate longer-term resource portfolio needs. Even though the larger portfolios are not needed until after the 10-year timeframe, the CAISO can avoid rapid transmission buildout needs and identify the need to approve and build larger transmission upgrades that will likely have long lead times and more readily accommodate future generation and energy storage in the 2032-2045 time period. Otherwise, the current TPP framework will focus on smaller transmission upgrades and/or put the state in a difficult situation of ramping up resource and transmission buildout on an incremental and year-by-year basis,[2] which may be sub-optimal in the long term. CESA understands that some of this coordination and alignment between procurement and planning processes will be considered in Phase 2 of the Interconnection Process Enhancements

[1] Draft 20-Year Transmission Outlook at 5.
[2] *Ibid* at 6.

(IPE) Initiative, such as in terms of how generator and energy storage interconnection can leverage the transmission upgrades built to support these policy-driven needs.

Furthermore, CESA observes that the 20-Year Transmission Outlook focused on the high-voltage bulk transmission, with future consideration of local transmission needs as well.[3] CESA wholly agrees and underscores the importance of closing this gap in the IRP and longer-term Senate Bill (SB) 100 portfolio modeling processes, which focus on system-level needs and currently overlook local resource needs. By falling short in this regard, CESA is concerned that total resource costs are not minimized or optimized to procure identify, map, and allocate resources in a way that can support system and local reliability needs from the same resource. Without such co-optimization, system-level transmission needs may be inflated beyond what is necessary while procurement for new-build generation and energy storage resources could be duplicative through siloed procurement from system needs separate from local needs. While the CAISO can only study what the CPUC submits to them in the form of resource portfolios, CESA also notes that natural gas retirements may also not be optimized without the selection and optimal allocation of generation, battery storage, and long-duration energy storage (LDES) resources.

3. Comment on chapter 2 Coordination with State Agencies: *

CESA supports the continued collaboration across the state agencies, which will play a critical role in ensuring that forecasting, resource procurement, and transmission infrastructure buildout are coordinated and aligned in ways to realize what is needed to meet the state's SB 100 goals and objectives. Many of our comments and recommendations related to cross-agency coordination is addressed in our response to Question 2.

4. Comment on chapter 3 Process and Inputs: *

Given the lack of granularity of the system-level outputs of the CPUC's IRP and Joint SB 100 study process, the CAISO discussed how load forecasts and resource additions were allocated to support an assessment of transmission investments needed to meet 20-year forward needs. Overall, while appreciative of the CAISO's methodological overview and recognizing the challenges in this process, CESA believes that improved and more granular inputs from the CEC and CPUC are needed to better guide the CAISO and to facilitate a transition for this 20-Year Transmission Outlook from a conceptual plan to one that is actionable with project approvals and buildout. Most likely, this issue would fall outside of the CAISO's process alone, so we support continued follow-on effort through the Joint Agencies' SB 100 study process.

First, on the allocation of the high electrification load projection in 2040, the CAISO describes an "across-the-board" scaling of the load consistently across all busbars.[4] Using what was available to the CAISO, CESA understands that a more granular consideration to better reflect likely outcomes of end-use electrification by location or zone, but this is a clear area of improved coordination with the CEC and the distribution utilities – the latter who currently use the CEC's IEPR forecast to disaggregate system forecasts for distribution planning purposes.[5] A feedback loop of sorts for approaches to disaggregate system forecasts for both load and behind-the-meter generation and storage should be fed back to the system level for the purposes of transmission modeling.

---

[3] *Ibid* at 3.
[4] *Ibid* at 16.
[5] *See* R.14-08-013 where disaggregation methodologies were adopted.

Second, for the mapping of battery energy storage resources, the CAISO started with the allocation already applied for the 2021-2022 TPP base case and then allocated the remaining unallocated battery energy storage (representing the incremental additions in the 2030-2040 period) that "expands upon the approach from the 2021-2022 TPP base case."[6] Clarification is needed on the battery energy storage mapping method, where it is unclear if the CPUC's storage busbar mapping methodology (updated as of July 26, 2021) apply to these incremental unallocated resources, or if the sub-bulleted method applies where storage is co-located in transmission zones where renewable resources are concentrated and storage is otherwise allocated based on system needs identified in the study.[7] In other words, CESA is currently unclear on whether the 20-Year Transmission Outlook mapped the remaining unallocated 2030-2040 battery energy storage resources by extrapolating the CPUC's most recent busbar methodology, which prioritized available transmission headroom and commercial interest, and then allocated storage resources on a rank order of substations in Local Capacity requirement (LCR) areas, disadvantaged communities (DACs), non-attainment status areas, and high-curtailment areas. By contrast, the sub-bullets list co-location with renewables in transmission zones or allocation based on system needs, where it is unclear whether this is incremental to the CPUC existing methodology or in place of the CPUC methodology. CESA requests that the 20-Year Transmission Outlook detail the allocation methodology rather than merely citing or having to cross-reference a method from a separate planning process.

Regardless, given that energy storage represents a location-flexible asset class on the most part, CESA raises a number of questions regarding the methodology that warrants further review, such as around the following:

- **Commercial interest:** If this criterion applies, it is unclear whether, how, or the degree to which the current interconnection queue is reflective of optimal needs on a 20-year outlook basis since it is likely responsive to mid-term and potentially 10-year resource procurement needs. Commercial interest may be an appropriate criterion for a 10-year outlook, but it is worthwhile exploring whether different priority criterion should apply on a 20-year basis. As evidenced from the discussion in the IPE Initiative, the current Queue Cluster (QC) 14 supercluster appears to have generated a significant pileup of applications that may not necessarily be tied to existing or available transmission headroom, suggesting that there is some level of "strategic" coordination of resource interconnection and transmission planning that needs to be worked out or better signaled through more transparent or helpful transmission planning data.
- **Co-location with renewables:** CESA does not dispute the economic incentives in place through the Federal Investment Tax Credit (ITC), the cost savings of sharing facility costs and deliverability, and the system benefits of reducing congestion, but it is unclear on whether and how this approach[8] co-optimizes for LCR need, and/or whether this criterion is duplicative of the commercial interest criterion. In addition, follow-on efforts should be responsive to the potential adoption of a standalone energy storage ITC, which, if adopted, should be reflected in future revisions to the 20-Year Transmission Outlook.
- **Duration:** CESA understands that battery energy storage resources selected through RESOLVE in the IRP and SB 100 study processes have their duration optimized via the capacity expansion modeling. This means that battery storage resources can have differing durations across study years. For the purposes of mapping for long-term transmission needs, it may be helpful to understand how the duration of these battery energy storage resources selected in the IRP and SB 100 studies factor into the transmission mapping

[6] *Ibid* at 21.
[7] It is unclear if the "study" is referring to the 20-Year Transmission Outlook or some other study, and what "system need" entails.
[8] Draft 20-Year Transmission Outlook at 36.

process, if at all. This may inform the characteristics of resources in particular locations that could impact resource retirements and optimize transmission buildout investments.

Third, similar to the specifications requested for battery energy storage resources, CESA requests more detail and specification around the mapping methodology for LDES resources, such as whether and the degree to which the battery energy storage mapping methodology applies. In addition, one of the challenges of the LDES selection in the IRP and SB 100 study processes is that pumped hydroelectric storage (PHS) is used as a proxy for LDES, which has locational constraints and is detailed in the 20-Year Transmission Outlook as accounting for "geologic and technological factors" in addition to system needs.[9] However, the use of PHS as a proxy should not be used to assume LDES is locationally constrained, particularly for the "unconstrained LDES" that is currently unassigned for the purposes of this outlook report. Rather, the allocation criteria should focus on system and local need. CESA also seeks clarification on whether mapping could also be guided by projects currently in the CAISO interconnection queue, which is cited as 2,400 MW PHS, but to our knowledge, there should be additional non-PHS LDES projects in the current queue as well that warrants attention and mapping in the 20-Year Transmission Outlook.

5. Comment on chapter 4 Integration of Resources: *

CESA has no comment at this time on Chapter 4 related to the mapping of solar, wind, and geothermal resources.

6. Comment on chapter 5 High-Level Assessment: *

The high-level assessment in the 20-Year Transmission Outlook details how the resource deliverability study methodology – *i.e.*, high system need (HSN), secondary system need (SSN), and off-peak – would apply to identify the transmission buildout required to support future generation needs.[10] CESA strongly supports this high-level assessment, which captures how energy storage would rationally operate, charging during the SSN and off-peak periods and discharging during the HSN period. Notably, as CESA understands it, the assumptions for the HSN and SSN cases have been modified as it relates to energy storage operations, which is no longer assumed to be discharging during the SSN periods and only studied for discharge and on-peak deliverability during the HSN periods. Given these improvements and better alignment with expected and rational storage operations, we request the CAISO to incorporate similar assumptions for energy storage operations in the upcoming 2022-2023 TPP cycle to inform policy-driven assessments.

As a further refinement in future revisions of this outlook, CESA also notes that the CAISO has adopted an off-peak deliverability status (OPDS) assessment methodology; when combined with the CPUC's consideration of slice-of-day (SOD) reform, it opens up the possibility of studying and identifying long-term transmission needs of renewable generation with OPDS and energy storage resources that are more flexibly located without necessarily hybridizing or co-locating energy storage behind the same point of interconnection (POI). There may be efficiencies gained in some circumstances.

[9] *Ibid* at 21.
[10] *Ibid* at 35.