



## **COMMENTS OF THE PUBLIC ADVOCATES OFFICE ON THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR'S 2023 TRANSMISSION CAPABILITY ESTIMATES FOR USE IN THE CALIFORNIA PUBLIC UTILITY COMMISSION'S RESOURCE PLANNING PROCESS**

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) is the state-appointed independent consumer advocate at the California Public Utilities Commission (CPUC). Our goal is to ensure that all Californians have affordable, safe, and reliable utility services while advancing the state's environmental goals.<sup>1</sup>

Cal Advocates appreciates the opportunity to comment on the California Independent System Operator's (CAISO) 2023 *Transmission Capability Estimates for use in the CPUC's Integrated Resource Planning [IRP] Process* White Paper (2023 White Paper).<sup>2</sup> CAISO's transmission capability estimates will be used to determine optimal resources and needed transmission to meet the State's clean energy goals. To ensure that the 2023 White Paper supports the determination of the lowest cost and best fit transmission solutions, Cal Advocates recommends that CAISO take these additional three steps:

1. Provide transmission upgrade information that would support the upcoming preferred system resource portfolio;
2. Include all the previously approved projects in the transmission capacity estimates; and
3. Provide a guide for the "generic transmission upgrades" in IRP modeling.

### **BACKGROUND**

The 2023 White Paper's transmission capability estimates and upgrade information<sup>3</sup> are based on the current interconnection queue requests, which includes significantly more generation requests than past queues. The 2023 White Paper's transmission capability estimates also do not represent the transmission capacity increases expected with the recent CAISO approved Transmission Planning Process (TPP) projects. CAISO stated that, due to the timing of the Cluster 14 Phase 1 studies, its modeling to determine the 2023 transmission capability estimates did not include the transmission

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<sup>1</sup> Pub. Util. Code, § 309.5.

<sup>2</sup> *Transmission Capability Estimates for use in the CPUC's Resource Planning Process, White Paper, Version 2023-R1*, June 28, 2023 (2023 White Paper).

<sup>3</sup> The CAISO refers to transmission upgrades as Area Delivery Network Upgrades (ADNU). According to the Integration of Transmission Planning and Generator Interconnection (TPP-GIP Integration) Final Proposal, Stakeholder conference call, March 16, 2012 at 8: "ADNUs are upgrades to provide deliverability for generation in large geographic or electric areas to the CAISO load."

projects that were approved in 2021-2022 and 2022-2023 TPP cycles.<sup>4</sup> Instead, CAISO listed only some approved TPP projects as possible upgrades.

The IRP modeling process will use the 2023 White Paper's transmission capability information to select certain transmission upgrades if the model determines that existing transmission capacity is insufficient to accommodate new generation resources necessary to meet IRP goals.

For this reason, CAISO should update its transmission capability estimates to ensure there is an appropriate build out of the State's transmission grid.

## RECOMMENDATIONS

### **1. Provide information on possible transmission upgrades that would support the upcoming preferred system resource portfolio.**

The transmission upgrade information in the 2023 White Paper is required and valuable for the generation interconnection study process. For the CPUC's IRP proceeding, however, Cal Advocates recommends that CAISO provide tailored transmission upgrade information. Specifically, CAISO should provide transmission upgrade options in increments of approximately 1,000 to 3,000 megawatts (MW) in lieu of the proposed upgrades that are sized at approximately 4,000 MW or larger. Cal Advocates makes this request because CAISO explained that the 2023 White Paper's transmission upgrade information is not intended to support the specific deliverability needs of the CPUC's adopted preferred system plan or any other CPUC-adopted portfolio for the TPP. Instead, the upgrade information is intended to support the generation interconnection requests received in April 2021.<sup>5</sup> These requests are collectively referred to as Cluster 14.

Cluster 14 has three times the average annual requests received in prior years.<sup>6</sup> When the Cluster 14 window closed, Cluster 14's 150,000 MW of new generation resources brought CAISO's total interconnection queue to 246,000 MW.<sup>7</sup> This level of potential new generation resources is well over what is needed to support the State's clean energy goals. For comparison, the CPUC's most recently adopted TPP base case resource portfolio proposes 86,000 MW of new resources by 2035, with 54,000 MW of renewable resources.<sup>8</sup> This amount is roughly commensurate with the level of potential future capacity in the prior year's generation interconnection requests, Cluster 13, which included 44,000 MW of renewables and 47,000 MW of storage on top of additional capacity from prior clusters.<sup>9</sup> Thus,

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<sup>4</sup> *CAISO Transmission Capability Estimates for use in the CPUC's Resource Planning Process White Paper Version 2023-RI*, CAISO, June 28, 2023 (2023 Transmission Capacity Paper) at p. 4.

<sup>5</sup> 2023 Transmission Capacity Paper at p. 4.

<sup>6</sup> *Decision on Cluster 14 Interconnection Procedures*, CAISO, July 15, 2021 at p. 3.

<sup>7</sup> *Supercluster Interconnecting Procedures, Issue Paper and Draft Final Proposal*, CAISO, June 14, 2021 at p. 10.

<sup>8</sup> *Fact Sheet: Decision 23-02-040 Ordering Supplemental Mid-Term Reliability Procurement (2026-2027) and Transmitting Electric Resource Portfolios to the California Independent System Operator for the 2023-2024 Transmission Planning Process*, CPUC, March 14, 2023 at p. 2.

<sup>9</sup> *Resolving interconnection queue logjams lessons from CAISO from the US and Abroad*, Grid Strategies, October 2021 at 12.

selecting transmission upgrades to support Cluster 14 could result in modeling or even building new transmission capacity that exceeds the amount needed to support the State's clean energy goals.

The result of basing the transmission upgrades on the capacity needed to deliver the entirety of Cluster 14, rather than the capacity needed to deliver the CPUC's IRP portfolios, is that CAISO is providing the CPUC with upgrades that are significantly larger than any upgrades previously considered in the CPUC's IRP. The 2023 White Paper includes many upgrades that not only exceed 5,000 MW – an extreme volume for a single upgrade in the IRP – but range *as large as 16,891 MW of incremental deliverability capacity*.<sup>10</sup> For example, for the Vaca Dixon-Tesla 500 kilovolt (kV) line constraint, the 2023 White Paper includes the 500 kV Delevan upgrade project<sup>11</sup> as an incremental transmission upgrade. The 500 kV Delevan upgrade project would provide 8,654 MW of additional transmission capacity at a cost close to \$3 billion.<sup>12</sup> Given the capacity provided by this upgrade and its price tag, this project is more than an incremental upgrade. Cal Advocates recommends that CAISO provide alternatives to massive projects such as the 500 kV Delevan upgrade. Alternative projects that provide smaller incremental transmission capacity increases (e.g., increments of approximately 1,000 to 3,000 MW) would support the consideration of least-cost best-fit transmission solutions in the IRP proceeding.

CAISO also lists 16 new transmission lines as possible upgrades. Since permitting and constructing new transmission lines can be more challenging than line upgrades, CAISO should provide information on alternative transmission upgrades. For example, to resolve the Q2008 Gates 500 kV line and Mustang-Henrietta 230 kV line constraints, CAISO proposes a new Diablo-Midway 500 kV transmission line at an estimated cost of \$830 million. This proposed new line would provide an increase in transmission capacity of approximately 6,604 MW.<sup>13</sup> Presenting potential transmission upgrades that provide increased capacity in smaller increments of 1,000 to 3,000 MW would be more useful for the IRP proceeding. Providing a range of upgrade options would assist with determining lower cost transmission solutions to support the State's clean energy goals.

## **2. Include the increased transmission capacity associated with approved transmission projects in the 2023 transmission capability estimate.**

Cal Advocates is concerned that, by not including approved TPP projects in the 2023 transmission capability estimates, CAISO and CPUC could select transmission upgrades that provide transmission capacity that exceeds the amount needed to support the State's clean energy goals. For example, for the Serrano-Alberhill-Valley Constraint (Constraint), CAISO lists five possible transmission upgrades that would provide an additional 6,000 MW of capacity at the Constraint. CAISO estimates the total

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<sup>10</sup> Transmission Capacity Estimates for use in the CPUC's IRP process, CAISO, June 28, 2023 at Row 86, Column E.

<sup>11</sup> The 500 kV Delevan upgrade is a project that was identified in the interconnection studies and involves a line loop and a substation upgrade.

<sup>12</sup> Transmission Capacity Estimates for use in the CPUC's IRP process, CAISO, June 28, 2023 at Row 53, Columns E through G.

<sup>13</sup> Transmission Capacity Estimates for use in the CPUC's IRP process, CAISO, June 28, 2023 at Rows 113 and 114, columns E through G.

cost for all five upgrades at \$1.2 billion.<sup>14</sup> CAISO does not provide cost information for each distinct upgrade or explain if certain upgrades must be grouped together or can be selected alone to increase the transmission capacity. Four of the five upgrades were approved in the CAISO 2022-2023 TPP and have an estimated cost of \$126 million.<sup>15,16</sup> The fifth upgrade, the proposed New Devers-Mira Loma 500 kV transmission line, appears to be a new project identified in the Cluster 14 studies.

To tailor the 2023 estimated transmission capability for use in the IRP proceeding, CAISO should provide clear and sufficient information to determine if additional upgrades are needed beyond those already approved in previous TPP cycles. Cal Advocates recommends that CAISO update the 2023 transmission capability estimates to include the increased transmission capacity that will be available with all approved projects from the prior TPP cycles. This would avoid the consideration of projects that would provide transmission capacity in excess of the amount needed. CAISO should also include the cost for each suggested transmission upgrade and the transmission capacity increase associated with each suggested transmission upgrade.

**3. The 2023 White Paper should explain how the CPUC should derive transmission cost estimates for the “Generic Transmission Upgrades” as well as the Cape Mendocino and Del Norte Offshore Wind areas in RESOLVE.<sup>17</sup>**

The CPUC’ states, in its draft Inputs & Assumptions (I&A) document for the 2022-2023 IRP, that the CPUC plans to include eight “Generic Transmission Upgrades” for all candidate resources in RESOLVE.<sup>18</sup> The purpose is for the IRP’s capacity expansion model, RESOLVE, to consider additional resources and transmission development “beyond the available upgrades provided by CAISO data.”<sup>19</sup> The CPUC’s draft I&A document states that the Draft 2022-2023 CAISO Transmission Plan provided the basis for assumed costs of these generic transmission upgrades.<sup>20</sup> At the same time, the CPUC cited the 2021 CAISO Transmission Capability White Paper as the source for the “Incremental Deliverability Cost (2022 \$/kw-yr)” values in Table 53 of the draft I&A document, which includes eight generic transmission upgrade zones as well as the transmission costs for Cape Mendocino and Del Norte Offshore Wind transmission costs.<sup>21</sup> None of the transmission cost estimates associated with these regions are clearly available in either source. In addition, the CPUC’s

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<sup>14</sup> Transmission Capacity Estimates for use in the CPUC’s IRP process, CAISO, June 28, 2023, Row 31, Column E through G. The five projects are: New Devers-Mira Loma 500 kV line, Mira Loma-Mesa 500kV Underground Cable Addition, Upgrade San Bernardino-Vista 220 kV line, Upgrade Etiwanda-Vista 220 kV line, and Upgrade Mira Loma-Vista No. 2 220kV line.

<sup>15</sup> 2022-2023 Transmission Plan, CAISO, May 10, 2023 at 168.

<sup>16</sup> The upgrades listed are at a 220 kV but are likely at 230 kV. The Mira Loma-Mesa 500 kV Underground Third Cable project was approved in the 2022-2023 TPP cycle. The CAISO transmission capability estimates table refers to a Mira Loma\_Mesa 500 kV Underground cable addition. These are likely the same projects.

<sup>17</sup> Draft Inputs & Assumptions for 222-2023 Integrated Resource Planning (IRP), June 2023 at 88.

<sup>18</sup> Draft Inputs & Assumptions for 222-2023 Integrated Resource Planning (IRP), June 2023 at 88.

<sup>19</sup> Draft Inputs & Assumptions for 222-2023 Integrated Resource Planning (IRP), June 2023 at 88.

<sup>20</sup> Draft Inputs & Assumptions for 2022-2023 Integrated Resource Planning (IRP), June 2023 at 88 footnote 100.

<sup>21</sup> Draft Inputs & Assumptions for 222-2023 Integrated Resource Planning (IRP), June 2023, Table 53, at 88-90. See also footnote (1) for Table 53 at 90.

June 7, 2023 draft I&A document workshop presentation states that the upgrade costs associated with the generic transmission upgrade zones were “adapted from large regional 500 kV upgrade costs from the 2023 Draft Transmission Capability Whitepaper and are uniformly greater than the costliest CAISO upgrade within each zone.”<sup>22</sup> In sum, CPUC either cites CAISO’s 2021 Transmission Capability White Paper or CAISO’s Draft 2022-2023 Transmission Plan as the source for the transmission costs associated with the generic transmission upgrade zones. The CPUC also includes the generic transmission upgrade zones along with the Cape Mendocino and Del Norte Offshore Wind regions in a table with incremental deliverability cost estimates that the CPUC attributes to CAISO’s 2021 Transmission Capability White Paper. However, the figures in that table are not readily available in either the 2023 White Paper or CAISO’s 2022-2023 Draft Transmission Plan.

Cal Advocates recommends that CAISO include, in a revised 2023 White Paper, information that addresses the CPUC’s transmission upgrade cost estimations for the generic transmission upgrade zones, as well as the Cape Mendocino and Del Norte Offshore wind transmission zones that will be used in RESOLVE. By providing this information, CAISO can support and clarify the transmission upgrade cost estimates that CPUC utilized for these regions.

## **CONCLUSION**

In closing, the 2023 White Paper is referenced and its transmission capability estimates are used in both the CAISO TPP and CPUC IRP proceedings. While there may be more discussions between CAISO and CPUC staff regarding these estimates, using the current 2023 White Paper to determine needed transmission capacity may provide capacity that exceeds the amount needed to support the upcoming IRP preferred system resource portfolio. Cal Advocates recommends that CAISO support the IRP modeling effort with transmission capability and upgrade information that more closely fits the needs of the IRP proceeding. This will assist with determining the least cost best fit transmission solutions.

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<sup>22</sup> Draft 2023 Inputs & Assumptions (2023 I&A) presentation slides by the CPUC’s Energy Division, June 7, 2023, at slide 86.