

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

In the Matter of the Application of Southern  
California Edison Company (U338E) for a  
Permit to Construct Electrical Substation  
Facilities with Voltage over 50 kV: Mesa 500  
kV Substation Project

Application 15-03-003  
(Filed March 13, 2015)

**REPLY BRIEF OF THE CALIFORNIA INDEPENDENT  
SYSTEM OPERATOR CORPORATION**

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## **I. Introduction**

Pursuant to the November 14, 2016 Scoping Memo and Ruling of Assigned Commissioner (Scoping Memo), the California Independent System Operator Corporation (CAISO) files this reply brief regarding Southern California Edison Company's (SCE) Application for a Permit to Construct (PTC) the Mesa 500 kV Substation Project (Mesa Loop-In Project).

The Bay Area Municipal Transmission group (BAMx) and the Office of Ratepayer Advocates (ORA) recommend that the Commission approve Alternative 1 (One 1600 MVA Transformer) to the Mesa Loop-In Project. In making this recommendation, both BAMx and ORA assert (1) that Alternative 1 can meet North American Electric Reliability Corporation (NERC) transmission planning requirements and (2) that the CAISO's modeling of renewable generation is not "realistic." The first assertion ignores that Alternative 1 would result in multiple transmission element overloads, including overloads under P0 conditions (*i.e.*, overloads would occur with all elements in service) that cannot be addressed by a remedial action scheme (RAS). The assertion regarding the CAISO's modeling of renewable generation is directly contrary to explicit Commission direction, inconsistent with sound transmission planning, and based on evidence that is not only contradictory and speculative, but also outside the record of this proceeding. The Commission should reject these arguments and approve the Mesa Loop-In Project to preserve southern California electric reliability and ensure the timely retirement of once-through-cooled generation in the Los Angeles basin.

## **II. Significant Environmental Impacts of the Proposed Project**

## **III. Feasible Mitigation Measures That Will Eliminate or Lessen the Significant Environmental Impacts**

## **IV. Environmentally Superior Alternative**

## **V. Infeasibility of Mitigation Measures and/or Environmentally Superior Project Alternatives**

### **A. Alternative 1 Does not Meet NERC Transmission Planning Standards.**

BAMx and ORA argue that Alternative 1 meets transmission planning standards apparently because the effective load carrying capability (ELCC) methodology the Commission is currently developing will likely result in “a reasonable dispatch pattern that can be accommodated by all the alternatives.”<sup>1</sup> This position turns the transmission planning process on its head. Instead of testing the alternatives “to stress the System within a range of credible conditions” as is required under NERC TPL-001-4, BAMx and ORA suggest that the Commission should approve an alternative on the basis that it meets one potential dispatch scenario under a yet-to-be developed resource counting framework. This illogically applies the NERC planning standards and will not ensure reliability.

The CAISO’s analysis shows that Alternative 1 does not meet NERC transmission planning requirements under the Commission’s currently effective resource counting methodology. Further, regardless of the particular configuration, Alternative 1 would result in thermal overloads under P0 system conditions.<sup>2</sup> In other words, even if no contingencies occur, Alternative 1 will result in thermal overloads on transmission facilities under reasonably credible conditions. Pursuant to NERC TPL-001-4, system overloads under P0 system conditions cannot be addressed by a RAS.<sup>3</sup> In addition to the overloads under normal system conditions, Alternative 1 would result in a host of overloads under other contingency events.<sup>4</sup>

### **B. The Mesa Loop-In Project is Electrically and Technologically Feasible Based on The CAISO’s Analysis.**

BAMx asserts that the Mesa Loop-In Project “also fails to meet the identified planning standards” based on the CAISO’s study case and dispatch patterns.<sup>5</sup> As the basis for this statement, BAMx cites the CAISO’s 2015-2016 Transmission Plan that identified a potential thermal overload on the Mesa-Laguna Bell #1 230 kV line under P6 or P7 contingencies.<sup>6</sup>

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<sup>1</sup> BAMx Opening Brief, p. 9.

<sup>2</sup> Exhibit CAISO-01, p. 6-7 (Table 1); p. 9-10 (Table 2).

<sup>3</sup> NERC TPL-001-4, p. 8. (NERC TPL-001-4 does not allow “non-consequential load loss” *i.e.*, a RAS, to address overloads under P0 conditions.)

<sup>4</sup> Exhibit CAISO-01, p. 6-7; p. 9-10.

<sup>5</sup> BAMx Opening Brief, p. 9.

<sup>6</sup> Exhibit BAMx-02, p. 42 (of .pdf version).

BAMx equates this potential overload with the reliability issues the CAISO identified with Alternative 1.<sup>7</sup> This is inappropriate for several reasons. First, the Alternative 1 thermal overloads occur during P0 system conditions in addition to a host of contingency event scenarios. This is an important distinction because thermal overloads that occur during P0 conditions cannot be addressed by a RAS. Thermal overloads that occur as a result of contingency events can potentially be addressed by a RAS, though a RAS is a sub-optimal mitigation strategy because it will potentially curtail renewable generation.

The 2015-2016 Transmission Plan identifies a low cost, feasible mitigation to the Mesa Loop-In Project, which notably does not include a RAS, to address the identified reliability issue. Specifically, the 2015-2016 Transmission Plan notes that “installing 10-Ohm series reactors on the Mesa-Laguna Bell #1 230kV Line and potentially the Mesa-Redondo 230kV line in the future (*i.e.*, the third option listed above) appears to have the least impact to the system under contingency condition and potentially have the lowest cost.”<sup>8</sup> A similar mitigation is not feasible for Alternative 1 because, as the CAISO analysis shows, multiple transmission elements will be overloaded (*i.e.*, not just the Mesa-Laguna Bell #1 230 kV line, as implied by BAMx).<sup>9</sup> BAMx cites no evidence that the Alternative 1 multiple overloads can be mitigated while preserving the small substation footprint (and attendant environmental benefits).

Based on the foregoing, Alternative 1 clearly does not meet NERC planning standards, and there is no feasible mitigation that would make it compliant. In contrast, the Mesa Loop-In Project is compliant and will mitigate thermal overloads without instituting a RAS.

**C. The CAISO Based its Study Case and Resource Counting Methodology on the Most Accurate and Appropriate Assumptions.**

**1. The CAISO’s Resource Counting Methodology is Based on the Commission’s Directives.**

As noted in testimony, the CAISO study case considers renewable generation that is built (or will be built by 2021) and dispatches those resources at their net qualifying capacity (NQC). On the other hand, the study case relied upon in the final environmental impact report (FEIR) analysis does not fully and adequately model all of the renewable generation that will be necessary to serve Los Angeles Basin load in 2021. Furthermore, the CAISO study case is

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<sup>7</sup> BAMx Opening Brief, p. 9.

<sup>8</sup> Exhibit BAMx-02, p. 6.

<sup>9</sup> Exhibit CAISO-01, p. 6-7 (Table 1); p. 9-10 (Table 2); BAMx Opening Brief, p. 9.

consistent with the Commission's explicit planning assumptions. As the CAISO noted in opening testimony, the CAISO modeled renewable generation at NQC based on the Commission's directives adopted in an Assigned Commissioner Ruling on assumptions and scenarios for use in the CAISO's transmission planning process.<sup>10</sup> This Ruling specifically notes that "[r]esources should be accounted for in terms of their most current net qualifying capacity (NQC)."<sup>11</sup> More recently, the Commission reaffirmed that the CAISO should continue to use the current exceedance methodology (rather than ELCC) to model renewable resources in the 2016-2017 transmission planning process.<sup>12</sup> The CAISO has followed the Commission's directives, BAMx has not.

Despite this explicit direction, BAMx argues that the Commission should now use the ELCC methodology instead of the existing methodology. The Commission's recent decisions make it clear that ELCC is not yet ready to be used for resource adequacy and transmission planning purposes. For example, the Commission's most recent resource adequacy decision noted that "[t]here are real challenges that remain to be resolved before [ELCC] can be adopted in our RA program, and therefore we do not adopt ELCC for 2017 and instead leave the existing NQC rules in place for wind and solar resources."<sup>13</sup> In another recent transmission line permitting case, ORA made an argument similar to BAMx's ELCC argument in this proceeding. The Commission summarily rejected this argument because the Commission had not yet relied upon the ELCC methodology.<sup>14</sup> Circumstances have not changed, and neither BAMx nor ORA

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<sup>10</sup> Exhibit CAISO-01, p. 8, fn. 9.

<sup>11</sup> See Commission Rulemaking 13-12-010, Assigned Commissioner's Ruling on Updates to the Planning Assumptions and Scenarios for Use in the 2014 Long-Term Procurement Plan and the California Independent System Operator's 2015-2016 Transmission Planning Process issued October 28, 2015, Attachment 1, p. 18.

<sup>12</sup> See Commission Rulemaking 13-12-010, Assigned Commissioner's Ruling Adopting Assumptions and Scenarios for Use in the California Independent System Operator's 2016-2017 Transmission Planning Process and Future Commission Proceeding, issued May 17, 2016, Attachment, p. 15. ("For 2016-17 TPP modeling purposes, the current Resource Adequacy exceedance methodology should continue to be utilized to model output levels of variable resources in the power flow (load flow) and stability studies typical of the CAISO's TPP.")

<sup>13</sup> D. 16-06-045, p. 24.

<sup>14</sup> D.16-08-017, p. 19 ("ORA argues that the proposed project is not economically rational because the value of the solar resources represented by the generation resources it would serve is expected to significantly decline when California transitions to the use of effective load carrying capability methodology for calculating system resource adequacy. ORA asserts that, by taking this factor as well as distributed generation and out-of-state resources into greater account, the newer RPS calculator (version 6) is unlikely to lead to the identification of need for the proposed project in the CAISO's 2016-2017 TPP. However, the Commission has yet to rely upon version 6 to develop its renewable generation portfolios, and the premise that the Commission should use it to develop the 2016-2017 renewable generation portfolio is subject to dispute.") (internal citations omitted).

have presented evidence to the contrary in this case. Consistent with the Commission's explicit directives and relevant precedent, the Commission should reject BAMx's and ORA's arguments.

## **2. BAMx's Alternative "Dispatch Pattern" does not Ensure Reliability.**

As discussed above, BAMx speculates that the Commission's yet to be developed ELCC methodology will change the "dispatch pattern" such that Alternative 1 will meet NERC planning standards. BAMx cites no actual power flow analysis to support this case, but merely surmises, and asserts without support, that "the NQC value of solar generation will incrementally decline" and that "ELCC should result in no overloading conditions" for Alternative 1.<sup>15</sup> These predictions are based on hope, rather than any objective and factual analysis, and they are incorrect or misleading in several ways.

### **i. Renewables Resources will be Vital to Meeting Load at Gross Peak Conditions.**

Much of BAMx's speculation is based on the premise that the ELCC methodology will reduce the NQC of solar resources because of "shifted peak demand" to later evening hours when solar generation output is reduced.<sup>16</sup> As BAMx notes, this "shifted peak" represents "net load after the impacts of behind-the-meter (BTM) generation."<sup>17</sup> BAMx fails to note, however, that the transmission system will continue to rely on significant amounts of solar and other renewable resources during the gross peak period (*i.e.*, the period when energy consumption is highest). As the generation fleet changes, the transmission system must be sufficiently robust to meet both the gross and net peak loads with potentially very different generation profiles. The Mesa Loop-In Project achieves that end; Alternative 1 does not.

Although BAMx advocates for a particular dispatch pattern that is contrary to the Commission's directives and unsupported by evidence, it illustrates that going forward the transmission system will need to be planned to address multiple credible conditions to ensure long-term reliability. Neither BAMx, the CAISO, nor the Commission should cherry pick a particular system condition to ensure reliability. Rather, reliability must be met under all credible conditions, consistent with the NERC planning standards. BAMx's approach does not achieve that result.

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<sup>15</sup> BAMx Opening Brief, p. 7.

<sup>16</sup> BAMx Opening Brief, p. 10.

<sup>17</sup> BAMx Opening Brief, p. 10.

ii. The ELCC Values Produced by BAMx are Contradictory.

In its opening brief, BAMx produces a number of ELCC figures for solar resources, none of which the Commission has adopted for transmission planning purposes. In addition, the figures BAMx uses do not appear to be internally consistent. BAMx alternative cites the ELCC for solar resources as 20%,<sup>18</sup> 63%,<sup>19</sup> and 57%.<sup>20</sup> It is unclear how BAMx applied these three very different values to determine that “correctly modeled” outputs would “apparently not overload the Mesa Substation under any of the alternative scenarios.”<sup>21</sup>

iii. BAMx Incorrectly Assumes that the ELCC Methodology will Reduce NQC for Existing Solar Resources.

Based on the discussion above, it is clear that many facets of the ELCC methodology are yet-to-be-determined. One of the most important aspects is the treatment of existing versus incremental renewable resources. As the CAISO explained at hearing, the ELCC takes into account the *incremental* impact of new generation resources.<sup>22</sup> The value of existing solar facilities to meet the peak is not impacted because those resources are still expected to meet the portion of the system peak they have always met, but the impact of incremental solar additions is reduced because those resources have a diminishing impact on the peak. BAMx’s position fails to consider how the ELCC will take into account any distinction between existing versus incremental resource additions.

**3. BAMx’s ELCC Arguments are not Supported by the Record.**

Concurrent with this reply brief the CAISO has filed a Motion to Strike (Motion) significant portions of BAMx’s opening brief due to its incorporation of evidence outside the record of this proceeding. Regardless of the outcome of the Motion, the Commission should give no weight to BAMx’s arguments that the Commission’s potential adoption of the ELCC methodology will (or should) obviate the reliability concerns associated with Alternative 1. BAMx provided no independent analysis of the Mesa Loop-In Project or the other alternatives presented in this proceeding. Furthermore, BAMx did not provide a witness to support its baseless opinion that the ELCC methodology will change the results of the CAISO’s analysis.

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<sup>18</sup> BAMx Opening Brief, p. 11.

<sup>19</sup> BAMx Opening Brief, p. 12.

<sup>20</sup> BAMx Opening Brief, p. 12.

<sup>21</sup> BAMx Opening Brief, p. 5.

<sup>22</sup> Tr. at 30:26-31:13.



BAMx's position lacks any analytical support and cannot be relied upon to establish the electrical or technological feasibility of Alternative 1.

**VI. Overriding Considerations**

**VII. CEQA Compliance**

**VIII. Necessity of Additional Measures to Maintain Electrical Reliability if Project Delayed Past 2020**

**IX. EMF Compliance**

**X. Safety Issues**

**XI. Conclusion**

For the foregoing reasons, the CAISO urges the Commission to approve the Mesa Loop-In Project and reject the CEQA project alternatives.

Respectfully submitted,

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