

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

Order Instituting Rulemaking on the Commission's Own Motion to improve distribution level interconnection rules and regulations for certain classes of electric generators and electric storage resources.

Rulemaking 11-09-011  
(Filed September 22, 2011)

**COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON THE E-  
MAIL RULING DIRECTING PARTY COMMENTS**

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**COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON THE E-MAIL RULING DIRECTING PARTY COMMENTS**

In accordance with Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), the California Energy Storage Alliance (“CESA”) hereby submits these comments on the *E-Mail Ruling Directing Party Comments* (“Ruling”), issued by Administrative Law Judge (“ALJ”) Kelly A. Hymes on November 23, 2021.

**I. INTRODUCTION.**

CESA appreciates the Commission looking to resolve outstanding questions and issues surrounding the appropriate treatment of Net Energy Metering (“NEM”) projects connecting to the California Independent System Operator (“CAISO”) transmission system. Issues were raised surrounding potential risks to grid stability and reliability due to interconnection of large NEM systems (greater than 1 MW) to the transmission system with little visibility for the CAISO grid operator. Back in April 2021, CESA and other parties responded to a Ruling seeking further information on potential risks of these NEM projects, advantages and disadvantages of having these projects interconnect under Rule 21, and other items pertaining to NEM projects. In response, the CAISO included recommendations to improve visibility into NEM projects while still allowing for interconnection under Rule 21. The investor-owned utilities (“IOUs”) also highlighted some

discrepancies between the technical requirements of Rule 21 versus the CAISO Open Access Transmission Tariff (“OATT”).

However, in comments, the CAISO reiterated that “[t]he CAISO believes that there are a number of simple, straightforward solutions that will allow resources to continue to interconnect under Rule 21 and participate under NEM tariffs reliably.”<sup>1</sup> CESA hopes that the Commission will heed these recommendations. Customers throughout California should be able to participate in NEM should they choose to, and customers should not be prohibited from participating because they seek interconnection to the transmission system. In these comments, CESA emphasizes the need to find solutions to allow for full NEM participation under a Rule 21 interconnection pathway, instead of subjecting these projects to CAISO tariff requirements.

**II. A WORKING GROUP PROCESS SHOULD BE ESTABLISHED TO COLLABORATE WITH THE CAISO AND THE UTILITIES TO DEVELOP CONSENSUS TECHNICAL RECOMMENDATIONS TO MAINTAIN NET ENERGY METERING AND RULE 21 INTERCONNECTION FOR THESE TRANSMISSION SYSTEMS.**

CESA agrees with other parties that transmission interconnection via Rule 21 for NEM systems should be possible. Customers intending to participate in NEM are using on-site systems largely to offset customer load, and these systems are designed to self-supply electricity and reduce customer electric bills, not to participate in the CAISO wholesale energy or ancillary service markets. Given that these systems are not participating in CAISO wholesale markets, the Commission has jurisdiction over these projects, and Rule 21 is the appropriate interconnection pathway for these systems.

However, CESA acknowledges that there may be gaps in the current Rule 21 tariff language and provisions that may be needed to maintain transmission system stability and

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<sup>1</sup> CAISO Response at 5.

reliability. Any changes that are needed to allow transmission-connected projects to interconnect and operate safely should be incorporated in a modified Rule 21 tariff. In response to the April 2021 Ruling, the CAISO made the following recommendations to allow NEM projects to interconnect and operate safely under Rule 21:<sup>2</sup>

- Interconnecting utilities should include the CAISO as an affected system at the beginning of the interconnection process.
- Developers and utilities provide the following information before synchronization under the CAISO’s New Resource Implementation (“NRI”) process, which begins 84 days before commercial operation: single line-diagram of generation and load; generator and load Pmax and Pmin; and modeling and study assumptions, including short-circuit/fault duty and steady-state (thermal and voltage) and stability analyses.
- Once operating, resources provide the CAISO with direct real-time telemetry, including: substation interconnection circuit breaker status (open/closed); generation connectivity status (online/offline); and net energy flow (+/-) at point of interconnection to grid.

On September 29, 2021, the Commission also hosted a workshop with the CAISO, IOUs, and other stakeholders surrounding this topic. Stakeholders raised a variety of issues and perspectives, including the importance of maintaining NEM eligibility because of its strong consumer protection provisions and annual true-ups that help seasonal loads (*e.g.*, agricultural loads) get value from behind-the-meter (“BTM”) resources. The CAISO raised their

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<sup>2</sup> CAISO Response at 6.

recommendations above, as well as needs for better data, better screening and sharing of information with CAISO, and North American Electric Reliability Corporation (“NERC”) compliant inverters. A large theme that came up in the workshop was better communication with between the utilities and CAISO, as the IOUs may have much of the telemetry and other information that CAISO needs to operate the system safely.

While the workshop was useful to learn more about the issue, many questions were raised surrounding the issues the CAISO discussed, particularly whether more tailored or narrow solutions could be pursued. For example, whether there could be different requirements for projects of different sizes, whether there need to be changes to Rule 21 screens so that the CAISO is aware of these interconnections, and whether the utilities are collecting data that is granular enough for CAISO use, and more. This Ruling asks parties to address some of these issues, including what is needed to maintain safety and reliability of the transmission system and how projects would be impacted by interconnecting via the CAISO Open Access Tariff.

Given the very technical nature of these issues, CESA recommends that the Commission work to resolve this issue via a working group process, especially as CESA and likely other stakeholders came out of the workshop with many unanswered questions. The current cadence of one-off workshops and infrequent written comments may not be conducive to addressing these highly technical issues and identifying specific tariff changes and interconnection/communication requirements, which may benefit from free-flowing dialogue to develop consensus recommendations and proposals. Additionally, a one-size-fits-all approach may not be the best solution insofar as the impacts of some projects – *e.g.*, non-exporting or export limited resources on the CAISO-controlled transmission system may be *de minimis* or easily mitigated – and as such, the imposition of new requirements and associated costs may be unnecessary. Having stakeholders

meet via a working group process to discuss these issues and identify various solutions that might be implemented, along with a characterization of the pros and cons, would, in CESA's view, be a more effective approach to resolving this matter. CESA is confident that a robust set of recommendations could be developed by such a working group within a matter of a few months by such a working group to further and more effectively inform the Commission's deliberations.

### **III. RESPONSES TO QUESTIONS.**

**Question 1: Does transmission interconnection of net energy metering systems via Rule 21 threaten the California Independent System Operator's (CAISO's) ability to maintain transmission grid safety and reliability? If it does, provide the details of any issues these systems raise.**

CESA mostly defers to the CAISO on any transmission grid safety and reliability concerns and may address parties' comments in reply comments. Yet, to the degree possible, CESA seeks any solutions to identified transmission grid safety and reliability concerns via greater data sharing and resource visibility requirements while remaining on the NEM and Rule 21 tariffs instead of interconnection under the CAISO tariff.

**Question 2: Does transmission interconnection of non-exporting systems via Rule 21 threaten CAISO's ability to maintain transmission grid safety and reliability? If it does, provide the details of any issues these systems raise.**

At this time, CESA defers to the CAISO on any transmission grid safety and reliability concerns and reiterates our response to Question 1 above. We look forward to reviewing parties' comments and may address them in our reply comments.

**Question 3: For what specific operational purpose does CAISO use four-second telemetry data? Why is a less temporally granular telemetry data stream (e.g., 15-minute granularity) not sufficient for maintaining transmission grid safety and reliability?**

At this time, CESA defers to the CAISO on any transmission grid safety and reliability concerns and reiterates our response to Question 1 above. We look forward to reviewing parties' comments and may address them in our reply comments.

**Question 4: Provide examples of how interconnection costs and timelines differ for a given system (or set of systems) interconnecting to transmission via the CAISO Open Access tariff versus net energy metering systems interconnecting via Rule 21. Provide illustrative examples of as many systems as possible and be as descriptive (system size, generation type, location in California, sector (e.g., agricultural, industrial, fuel production, etc.) and as specific as possible (a spreadsheet containing these descriptions, cost comparisons, and timelines may be an appropriate way to convey this information).**

There are many differences between interconnecting via Rule 21 and the CAISO OATT, including timeline and cost differences, that materially impact project viability. For example, the CAISO NRI process adds roughly 200 days to the interconnection process.<sup>3</sup> While a Rule 21 BTM NEM project can interconnect in as little as 145 days from submitting an interconnection request, any resource going through the NRI will interconnect in roughly 349 days.<sup>4</sup> While the timelines for projects going through Rule 21 can in some instances be as long as 500 days (*e.g.*, if upgrades are required), which would be roughly equivalent to the timelines these projects would face under the CAISO process (*i.e.*, since the CAISO NRI process can be done in parallel with deployment of these upgrades),<sup>5</sup> this does not mean that these processes should be viewed as equivalent since many projects that go through Rule 21 would not actually trigger upgrades. For these projects, the CAISO process would unequivocally add more than 6 months of incremental time to their development schedule. Additionally, it is unclear if additional upgrades might be identified via the

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<sup>3</sup> See Appendix A, Table 2.

<sup>4</sup> See Appendix A, Tables 1 and 2.

<sup>5</sup> *Ibid.*

NRI process. If additional upgrades were identified through that process, that too would add considerable time to the project timelines as compared to a project subject exclusively to Rule 21.

In addition to longer timelines likely needed to complete the CAISO interconnection process, there are additional ancillary costs as well associated with CAISO study processes and interconnection requirements. For developers, the CAISO process would require additional resources that may not be readily available to coordinate and complete the additional deliverables required pursuant to the CAISO NRI process. Rule 21 includes an \$800 application fee, with study costs increasing depending on the size of the project and the need for supplemental review and detailed studies.<sup>6</sup> By contrast, the CAISO OATT includes many more fees, including fees that would be inapplicable for resources with no interest or intent to participate in CAISO wholesale markets, such as Scheduling Coordinator (“SC”) fees.<sup>7</sup> However, under Large Generator Interconnection Procedures (“LGIP”) applicable for systems larger than 2 MW, a \$100,000 minimum deposit is required.<sup>8</sup> These costs are likely to be particularly burdensome on smaller developers and/or customers.

Outside of interconnection costs, there are major economic implications if systems interconnecting under the CAISO OATT are ineligible for NEM, forgo compensation for exports under NEM, and must support the financeability of projects by earning wholesale energy revenue, even though the project is intended to support onsite customer load and bill management. Compensation from exports under NEM differs from compensation for exports in CAISO markets,

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<sup>6</sup> See e.g., PG&E Rule 21 Tariff p. 55. If supplemental reviews and detailed studies are needed, Rule 21 interconnection can cost over \$20,000, excluding costs of any network upgrades or special facilities. For projects greater than 5 MW, the cost of detailed studies increases overall interconnection costs to over \$50,000.

<sup>7</sup> See e.g., CAISO Open Access Tariff, Section 11 “CAISO Settlements and Billing”

<sup>8</sup> See CAISO Tariff, Appendix U “Standard Large Generator Interconnection Procedures (LGIP)” Section 8.1.



and customers looking to install NEM systems are likely not interested in becoming CAISO market participants. Unlike in-front-of-the-meter (“IFOM”) generators and energy storage resources that primarily operate to provide capacity and energy to the CAISO grid and serve minimal onsite customer load (*i.e.*, other than station loads), transmission-connected NEM generators are intended to support significant onsite customer load and should be allowed to retain their eligibility for NEM. This also raises a fundamental question regarding whether an otherwise eligible NEM project that may be required to connect under the CAISO interconnection tariff would retain its ability to receive compensation for exports pursuant to the NEM tariff. CESA does not believe the intent of this rulemaking is to alter NEM eligibility, but given the scope of the CAISO tariff, which includes aspects related to participation in wholesale markets, CESA requests clarification on this matter.

For all of the foregoing reasons, CESA believes that a general requirement that all transmission-connected NEM projects be required to go through the CAISO interconnection process would be highly problematic and undermine the viability of these projects. While there may be instances where aspects of the CAISO interconnection process or requirements are appropriate given the potential impacts that some systems may have on the CAISO-controlled transmission system, care needs to be taken to ensure that such requirements are narrowly targeted and address the specific need the CAISO is seeking to address rather than pursuing a wholesale (both literally and figuratively) change to the framework under which these projects interconnect.

**Question 5:      Would interconnection to transmission via Rule 21 as a non-export system be a viable alternative for projects for whom interconnection to transmission via the CAISO Open Access tariff is cost prohibitive? Why or why not? Be as specific as possible with cost comparisons and business cases.**

CESA does not believe that non-exporting Rule 21 interconnection is a viable alternative in all cases. It represents an important alternative option for customers who find non-exporting Rule 21 interconnection to be the best fit for their usage and where exports may pose excessive risks/issues. For industrial customers with consistent load across time, non-export configurations can allow systems to self-supply their load and reduce electric bills, while having minimal need to export and avoiding paying for network upgrades needed to accommodate exports.

However, in other cases, for customers with seasonal load, for example agricultural customers or schools, retaining the exporting Rule 21 interconnection option can be an important part of ensuring that projects are cost effective. NEM allows these customers to provide energy to the grid during times of low load and use export credits during an annual true-up to offset energy costs during times of high load throughout the year. Depending on the project, the cost of interconnecting via the CAISO OATT may be manageable if exports are compensated via NEM. However, considering the variety of factors impacting cost-effectiveness for each project – customer load shape, cost of network upgrades, cost sensitivities, eligibility for incentives, vulnerability to outages, and more – it is hard to determine particular groups for which the CAISO OATT is cost prohibitive. Additionally, CESA questions of the prudence of, in effect, discouraging larger, exporting projects by categorically subjecting them to a more onerous process in the face of the system-level resource challenges the state faces and which led to rolling blackouts last year. For this reason, CESA reiterates its recommendation to pursue narrowly tailored solutions within Rule 21 that can minimize cost and timeline impacts while addressing the specific needs of CAISO.

#### **IV. CONCLUSION.**

CESA appreciates the opportunity to submit these comments on the Ruling and looks forward to collaborating with the Commission and stakeholders in this proceeding.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Jin Noh', written in a cursive style.

Jin Noh  
Policy Director  
**CALIFORNIA ENERGY STORAGE ALLIANCE**

December 21, 2021

**Appendix A:**  
Comparative Interconnection Timelines for Transmission-Connected  
Systems

**Table 1:** Rule 21 NEM Interconnection Application to Permission-to-Operate (“PTO”) Timelines

<b>Task Name</b>	<b>Duration (Business Days)</b>
	<b><i>145-500 Total</i></b>
• <b>Interconnection Application and Agreement</b>	<b>105-250</b>
○ Utility Design Set Completed	12
○ Utility application submittal	5
○ <b>Initial Review by Utility</b>	<b>78</b>
▪ Administration Review	10
▪ Engineering and Planning Review	20
▪ Variance Review (AC Disconnect / Line Side Tap)	15
▪ Utility site visit (For line side or Load side tap) (If Needed)	10
▪ Redesign or additional design information to utility (typically happens at least once during a project life cycle)	15
▪ Initial review results meeting (If needed)	5
▪ Invoice received for supplemental review (Trigger: over 1 MWAC CEC, or major grid upgrades required)	3
○ <b>Supplemental utility review of design (if required)</b>	<b>35</b>
▪ Supplemental review completed by utility	20
▪ Internal review of utility comments	5
▪ Scoping Meeting and internal review (Utility Engineering, Design team, Customer)	5
▪ Invoice & Distribution Study Agreement (DSA) received for Utility/ System Impact Study (If Required)	5
○ <b>Utility/ System Impact Study (If Required)</b>	<b>110</b>
▪ EIT (Electrical Independence Test)	20
▪ 2nd Scoping Meeting and internal review (Utility Engineering, Design team, Customer)	5
▪ DIS and telemetry design (distribution impact study)	60
▪ 3rd Scoping Meeting and internal review (Utility Engineering, Design team, Customer)	5
▪ Utility final review of supporting docs	15
▪ Utility invoice for IX upgrades	5
○ <b>IC/Customer review and execute Interconnection Agreement</b>	<b>10</b>

• <b>Project Installation &amp; Close Out</b>	<b>40-250</b>
○ <b>Utility Shutdown (If Required)</b>	20
○ <b>Utility Upgrade Installation (if required) *</b>	<b>100-190</b>
▪ Address utility design comments, if any	10
▪ Utility grid upgrade installation	90-180
○ <b>Commissioning and Testing</b>	<b>40 days</b>
▪ Utility Punch list/Close out documentation	20
▪ Commissioning test coordination	15
▪ PTO letter issuance/ PTO Received	5

*\*Utility Upgrade Installation (If required): does not include complex upgrades such as substation work. Timelines for more complex upgrades are addressed on case-by-case basis and typically require 18 months + for scope of work to be completed.*

**Table 2:** Rule 21 NEM Interconnection with Additional CAISO New Resource Implementation Process Interconnection to Permission-to-Operate and Commercial Online Date

<b>Task Name</b>	<b>Duration (business days)</b>
<b>Rule 21 / NEM + CAISO NRI Timeline: <i>Application Submittal to PTO &amp; COD</i></b>	<b><i>349-500 Total</i></b>
<b>• Interconnection Application and Agreement</b>	<b>105-250</b>
○ Utility Design Set Completed	12
○ Utility application submittal	5
○ <b>Initial Review by Utility</b>	<b>78</b>
▪ Administration Review	10
▪ Engineering and Planning Review	20
▪ Variance Review (AC Disconnect / Line Side Tap)	15
▪ Utility site visit (For line side or Load side tap) (If Needed)	10
▪ Submit redesign or additional design information to Utility (typically happens at least once during a project life cycle)	15
▪ Initial review results meeting (If needed)	5
▪ Invoice received for supplemental review (Trigger: over 1 MWAC CEC, or major grid upgrades required)	3
○ <b>Supplemental utility review of design (if required)</b>	<b>35</b>
▪ Supplemental review completed by utility	20
▪ Internal review of utility comments	5
▪ Scoping Meeting and internal review (Utility Engineering, Design team, Customer)	5
▪ Invoice & Distribution Study Agreement (DSA) received for Utility/ System Impact Study (If Required)	5
○ <b>Utility/ System Impact Study (If Required)</b>	<b>110</b>
▪ EIT (Electrical Independence Test)	20
▪ 2nd Scoping Meeting and internal review (Utility Engineering, Design team, Customer)	5
▪ DIS and telemetry design (distribution impact study)	60
▪ 3rd Scoping Meeting and internal review (Utility Engineering, Design team, Customer)	5

▪ Utility final review of supporting docs	15
▪ Utility invoice for IX upgrades	5
○ <b>IC/Customer review and execute Interconnection Agreement</b>	<b>10</b>
• <b>CAISO NRI Process</b>	<b>203 **</b>
○ Bucket 1	90
○ Bucket 2	60
○ Bucket 3 ( <i>aligns with Commissioning &amp; Testing deliverables</i> )	30
○ Bucket 4 ( <i>aligns with Commissioning &amp; Testing deliverables</i> )	10
○ Bucket 5 ( <i>aligns with Commissioning &amp; Testing deliverables</i> )	1
○ Bucket 6 (COD)	1
• <b>Project Installation to PTO</b> ( <i>can be done in tandem with CAISO NRI process if upgrades or shutdown are required</i> )	<b>40-250</b>
○ <b>Utility Shutdown (If Required)</b>	20
○ <b>Utility Upgrades Installation (if required) *</b>	100-190
▪ Address utility design comments, if any	10
▪ Utility grid upgrade installation	90-180
○ <b>Commissioning and Testing</b>	<b>40</b>
▪ Utility Punch list/Close out documentation	20
▪ Commissioning test coordination	15
▪ PTO letter issuance/ PTO Received from Distribution Provider (CA IOU)	5
• <b>Commercial Operation Date (COD)</b> ( <i>granted by CAISO</i> )	<b>1</b>

*\*Utility Upgrade Installation (If required: does not include complex upgrades such as substation work. Timelines for more complex upgrades are addressed on case-by-case basis and typically require 18 months + for scope of work to be completed.*

*\*\*CAISO NRI Process: CAISO has previously stated they would be willing to reduce this timeline down to 83 days vs the standard 203; however CESA does not have any examples where this has been the case and would be looking to other stakeholders to provide such examples.*