

**UNITED STATES OF AMERICA  
BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION**

Improvements to Generator Interconnection  
Procedures and Agreements.

Docket No. RM22-14

**MOTION TO INTERVENE AND COMMENTS OF THE CALIFORNIA ENERGY  
STORAGE ALLIANCE**

Jin Noh  
Policy Director

**CALIFORNIA ENERGY STORAGE ALLIANCE**  
10265 Rockingham Dr.  
Suite #100-4061  
Sacramento, CA 95827  
Telephone: (510) 665-7811  
Email: [cesa\\_regulatory@storagealliance.org](mailto:cesa_regulatory@storagealliance.org)

October 12, 2022

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Pursuant to the Rules of Practice and Procedure of the Federal Energy Regulatory Commission (“FERC” or Commission”), the California Energy Storage Alliance (“CESA”) respectfully moves to intervene and submit these comments on the Notice of Proposed Rulemaking (“NOPR” or “Proposed Rules”), issued by FERC on June 16, 2022. Overall, in an effort to address interconnection queue backlogs and resolve unjust, unreasonable, or discriminatory generator interconnection processes, the NOPR proposed various reforms to its *pro forma* Large Generator Interconnection Procedures (“LGIPs”), *pro forma* Small Generator Interconnection Procedures (“SGIPs”), *pro forma* Large Generator Interconnection Agreement (“LGIA”), and *pro forma* Small Generator Interconnection Agreement (“SGIA”).

In these comments, CESA focuses on key considerations specific to energy storage resources and how the proposed rules should apply to the California Independent System Operator (“CAISO”) balancing authority area (“BAA”). In addition to these comments, CESA generally supports the comments concurrently submitted by our national partner, American Clean Power Association (“ACP”).

**I. BACKGROUND.**

Founded in 2009, CESA is a non-profit membership-based advocacy group committed to advancing the role of energy storage in the electric power sector through policy, education, outreach, and research. CESA’s mission is to make energy storage a mainstream energy resource, which accelerates the adoption of renewable energy and promotes a more efficient, reliable, affordable, and secure electric power system. As a technology-neutral group that supports all business models for deployment of energy storage resources, CESA membership includes technology manufacturers, project developers, systems integrators, consulting firms, and other clean-tech industry leaders.

**II. COMMUNICATIONS AND CORRESPONDENCE.**

Address all communications and correspondence concerning this proceeding to:

Jin Noh  
Policy Director  
California Energy Storage Alliance  
10265 Rockingham Dr.  
Suite #100-4061  
Sacramento, CA 95827  
Telephone: (510) 665-7811  
Email: [cesa\\_regulatory@storagealliance.org](mailto:cesa_regulatory@storagealliance.org)

**III. MOTION TO INTERVENE IN THIS PROCEEDING.**

CESA represents over 120 members in the energy storage ecosystem, and our intervention in this proceeding is in the public interest. CESA’s interests will not be adequately reflected by any other party, particularly given CESA’s role in representing a wide range of companies that seek to develop and interconnect energy storage projects in the CAISO area that will be impacted by the Final Rules emerging from this NOPR. CESA therefore has a substantial interest in the instant proceeding and respectfully requests that this motion to intervene be granted.

#### IV. COMMENTS.

In light of exponentially growing Independent System Operator (“ISO”) and Regional Transmission Organization (“RTO”) interconnection queues as different state and local jurisdictions adopt mid- and long-term decarbonization goals, the NOPR on generator interconnection procedures and processes from the Commission are timely and warrant the consideration of broader reforms. Since the Commission last addressed sweeping reforms in the issuance of Order No. 2003 and more recently through Order No. 845, the landscape has clearly changed with the evolution of different technologies in terms of costs and capabilities and with the increasing drive to build new, incremental resources in response to state and local policies focused on decarbonization while maintaining reliability. The Commission clearly recognizes this in issuing this NOPR and companion NOPRs or dockets addressing regional transmission planning and cost allocation (RM21-14) and transmission planning cost management (AD22-8), as well as in convening regular meetings through the Joint Federal-State Task Force on Electric Transmission (AD21-15). Given the critical interplay of transmission planning with generator interconnection processes and procedures, CESA welcomes the Commission’s attention and priority on these issues to support building the decarbonized and reliable grid of the future.

In reviewing the NOPR, CESA generally supports the direction of the Commission in proposing a suite of reforms that, fortunately, the CAISO already has many in place. For example, CAISO already has a cluster study process in place and does not utilize a participant funding model for interconnection-related upgrades.<sup>1</sup> Some of the previous reforms in Order No. 845 to, for example, revise the definition of “generating facility” in the *pro forma* LGIP/LGIA to explicitly include electric storage resources, accommodate the load characteristics of an electric storage

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<sup>1</sup> NOPR at 64.

resource, and allow the use of any surplus interconnection service, among other key changes, were largely in place in the CAISO's tariffs and processes. In other words, the CAISO has been a forward-thinking leader in many areas to foster reasonable and efficient market participation and interconnection, including with the advent of standalone and hybrid energy storage resources.

Notwithstanding the relative progress and advanced state of CAISO's interconnection rules and procedures relative to other ISO and RTO markets, CESA sees several areas of continued improvement and wonders whether there is a possible need for more fundamental reforms than those currently proposed in the NOPR. While the NOPR will play a major role in bringing all ISOs and RTOs to a common baseline of best practices of generator interconnection procedures and processes, it is unclear if the proposed reforms in the NOPR will sufficiently address the interconnection queue backlogs faced by CAISO and others. Other than proposals to, for example, increase study deposits and increase data transparency, which are each incrementally helpful in their own right if done within reason, significant interconnection queue backlogs may still persist, albeit to a lesser degree. In tandem with proposals being considered in RM21-14, the Commission may wish to address larger reforms in a next phase of this docket or a future rulemaking on how transmission capabilities/capacity could be market-efficiently allocated, such as through auctions for proactively planned and built transmission upgrades or for existing, scarce transmission capacity.

At the same time, as the Commission reviews comments and contemplates Final Rules related to generator interconnection processes and procedures, CESA posits to FERC on whether avoiding "superclusters" or significant interconnection queue backlogs should be an end or goal in itself. Although queues should strive to be efficient and avoid wasteful studies and inefficient use of precious ISO/RTO interconnection staff and resources, high volumes of interconnection

applications in itself could be a sign of significant commercial interest in developing competitive renewable and energy storage projects to meet procurement obligations and market needs in support various decarbonization goals and reliability objectives. Combined with increased and/or refined commercial viability criteria to screen out less viable or speculative projects, the Commission should also focus on proposals that would streamline study processes and push ISOs and RTOs to invest and implement automation tools to ultimately decrease study times and push the interconnection process “down the cost curve.” Reasonable measures to incrementally increase the cost of entry and cost to stay in the interconnection queue is one lever in streamlining the process, but the Commission should also consider policies and requirements that incentivize ISOs/RTOs to do everything it can in terms of resourcing and automation to more expeditiously advance commercially-viable projects toward execution of GIAs and facilitate the significant resource build needed to advance the state’s energy transition. The Commission may not be in a position to direct how ISOs and RTOs utilize or invest in resources and tools, but it could incentivize these outcomes by setting minimum standards whereby studies must be completed.

In addition to our higher-level comments on the need to potentially pursue more fundamental reforms by reframing the issues and solutions of the NOPR from reducing or eliminating the current queue backlogs to one that can actually handle and efficiently process likely persistent queue backlogs, CESA offers several specific comments on the Proposed Rules in the NOPR, summarized as follows:

- Heat maps showing granular transmission availability and capabilities should be directed.

- Reasonable increases to study deposits may be helpful, but the commercial readiness criteria are not appropriate for CAISO projects or require significant revision.
- Interconnection studies and processes should accommodate both as-available and partial and full firm charging studies, along with the ability to be studied for charging-related upgrades if desired.
- Interconnection studies and processes should accommodate energy storage deliverability that reflect intended operations.
- The deferral of the self-build option for Wholesale Distribution Access Tariff (“WDAT”) projects should be revisited in this NOPR.

**A. Heat maps showing granular transmission availability and capabilities should be directed.**

As the NOPR recognizes, a visual representation such as a heat map provided by the Midcontinent Independent System Operator (“MISO”) “allows prospective interconnection customers to see estimated changes in variables such as the distribution factor (an approximation of congestion) and the percentage impact on power flow for monitored facilities based on a user-entered MW amount and voltage level at a user-selected point of interconnection.”<sup>2</sup> As such, the Commission proposed to “require transmission providers to maintain and make publicly available an interactive visual representation of available interconnection capacity as well as a table of relevant interconnection metrics that allow prospective interconnection customers to see certain

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<sup>2</sup> NOPR at 50.

estimates of a potential generating facility’s effect on the transmission provider’s transmission system.”<sup>3</sup> CESA strongly supports this recommendation and cites additional examples where such heat maps have been helpful, including those developed by the Alberta Electric System Operator (“AESO”) and what is done for the California distribution grid for WDAT projects. Even though the development of heat maps will not be a silver nor necessarily “solve” the queue backlog alone, likely driving interconnection customers to areas where the heat map indicates available transmission capacity, the Commission’s proposal in this regard would reduce the volume of so-called “speculative” interconnection requests that are really seeking preliminary or indicative information on available transmission capacity and interconnection costs where no such information is readily and publicly available.

Currently, the CAISO provides static, snapshot-in-time transmission capability estimates that are helpful compared to not having such information at all, yet these estimates do not capture locational granularity or other projects already in the queue, making it difficult to make an informed and efficient project siting decision. Other pieces of basic but useful information, including around specific points of interconnection, have been difficult to identify and confirm, often requiring data requests to the CAISO that is both inefficient and burdensome. Importantly, CESA stresses how the heat maps and associated data must be made available in a user-friendly and accessible format, avoiding or mitigating the need for interconnection customers to track down and reconcile different pieces of information located in different places, which only poses a significant

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<sup>3</sup> NOPR at 51.



administrative burden and leads to potential error in analyzing the collection of information.

Granted, CESA recognizes that the implementability (*e.g.*, time/costs to develop and launch, update) and the accuracy of the heat maps are important factors. Implementation may take some time, but CESA strongly believes that the development of this tool will produce significant dividends in reducing ISO/RTO time in answering interconnection customer questions and in studying interconnection requests that are non-viable or irrational given the existing transmission capacity. Similarly, timely updates and accuracy of the heat maps will need to be ensured to make these tools useful, but again, this should be a goal of every ISO/RTO since greater automated and advanced tools will be needed to efficiently process significant interconnection queues that are likely to be encountered for the foreseeable future as all grids evolve. Rather than wasting ISO/RTO staff with “pre-application” reports, such information could be more readily transmitted to interconnection customers through heat maps.

**B. Reasonable increases to study deposits may be helpful, but the commercial readiness criteria are not appropriate for CAISO projects or require significant revision.**

The NOPR proposes setting a tiered study deposit structure based on the MW size of the project and whether the project meets commercial readiness criteria at different stages of the interconnection process, along with withdrawal penalties based on the study or site exclusivity deposits provided.<sup>4</sup> CESA does not oppose the proposed \$/MW study deposit structure, which represents a reasonable means to reduce the queue, incrementally increase the bar to entry, and support greater resourcing and infrastructure to handle the

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<sup>4</sup> NOPR at 106, 121-123, and 160.

volume of interconnection applications. As opposed to a flat study deposit irrespective of the MW of a project, the NOPR proposal may help reduce the interconnection queue volume and incentivize developers to more strategically focus on a narrower set of potential projects since very few companies have the ability to provide upfront the significant amount of capital to submit a large multitude of IRs.<sup>5</sup> Yet, CESA believes that the Commission should reasonably temper raising the “cost of entry” into the queue, which only serves to increase resource development costs and thus ratepayer costs. If the higher deposits do not support manageable or reasonable queues, this proposal would be counterproductive to some degree to the intended effects of reducing these costs through the various incentives available in the Inflation Reduction Act of 2022 (“IRA”).

However, we strongly oppose the inclusion of a commercial readiness deposit to enter Phase II study process that is a higher multiplier of the study deposit and more punitive withdrawal penalties for projects that elect to use a commercial readiness deposit. First, the commercial readiness criteria in the NOPR unduly disadvantages merchant developers over utility or end-use customer developers, who would be considered more “commercially viable” under the current proposal. Merchant projects would have a cost-prohibitive means to bring resources to market, even though this is a reasonable and viable development strategy and would support broader market competition. While operating as a merchant facility initially, in California, they are strongly incentivized to market their resource to load-serving entities (“LSEs”) in solicitations to monetize key revenue streams, namely Resource Adequacy (“RA”). Without this path and given the significant multipliers

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<sup>5</sup> It is important to note that the MW size of any given project may not necessarily point to the complexity and time/resources required since smaller projects could pose greater challenges in certain cases depending on the location of the project.

for projects that do not meet the commercial readiness requirement, the Commission would be forcing all projects in California to work with LSEs first. Based on the state's recent history of sudden and short lead-time procurement and more volatile and higher weather and load forecasts, merchant generation and storage facilities can play a key role in preparedness for needs that emerge beyond the foresight of any LSE or state commission in their normal planning and procurement processes.

These requirements also represent an impossible standard in California since LSEs are unlikely or would never execute a binding term sheet, let alone one of at least five years, for a project without Phase I study results or within 30 days following the Phase I study results meeting. Recognizing that Phase I study results are still indicative and not final, it is still the minimum necessary to begin marketing the project to LSEs in their resource solicitations, though most projects are most competitive in solicitations upon completion of Phase II studies. Further, LSEs are unlikely to execute PPAs or other contracts with commercial online dates five years out into the future. In this regard, this aspect of the NOPR is more apt for vertically-integrated utilities centrally manage their planning processes and new resource procurement, not for California where such processes are decentralized and mostly coordinated and validated at the state level at the California Public Utilities Commission ("CPUC"). With the exception of certain special-interest resources such as offshore wind, almost all other IRs would therefore not be able to meet the commercial readiness requirements and would face the high multipliers for withdrawal penalties.

As such, any Final Rules from the Commission should recognize these commercial realities in different jurisdictions such as those in CAISO and develop commercial

readiness or “first ready” mechanisms that apply a more level playing field across projects. CESA does not have any specific proposals at this time and would recommend against commercial readiness criteria unless the Commission or other stakeholders offer a more suitable and reasonable alternative.<sup>6</sup> We look forward to reviewing stakeholders’ comments in this regard.

Finally, CESA supports how the NOPR tackles interconnection reforms more comprehensively to address the “other side” of the issue, which is ensuring accountability on transmission providers’ timelines, not just placing the burden and costs on interconnection customers alone. Specifically, the NOPR proposes to impose financial penalties (\$500/day) on transmission providers that fail to meet study deadlines.<sup>7</sup> The exact penalty level may need to be increased to truly incentivize accountability, with approaches to mirror the penalties at higher levels on delays for more advanced rather than initial studies.

**C. Interconnection studies and processes should accommodate both as-available and partial and full firm charging studies, along with the ability to be studied for charging-related upgrades if desired.**

The NOPR seeks comment on the impact of generator interconnection studies from the addition of electric storage and their charging modes, while recognizing how certain ISOs and RTOs manage their charging operations through congestion management (*e.g.*, CAISO-controlled transmission grid) and how energy storage charging is distinct from

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<sup>6</sup> If the Commission maintained the commercial readiness requirement, then CESA would alternatively recommend that meeting this requirement could entail: (1) accepting an affidavit by the interconnection customer that it will sell energy and capacity as a wholesale merchant generator; and/or (2) allowing interconnection customers to make a commercial readiness demonstration by providing documentation of developer due diligence, including available transmission capacity and modeling.

<sup>7</sup> NOPR at 169.

uncontrollable end-use customer loads.<sup>8</sup> CESA generally agrees with the NOPR's characterization and discussion of the issue. In California, whereas the CAISO has congestion management in place to operationalize the charging capabilities of energy storage resources, these issues come up in particular in the context of WDAT-interconnected projects on the distribution system, where the grid topology is more radial in nature and distribution utilities do not yet have the distributed energy resource management systems ("DERMS") to monitor real-world grid conditions and transmit operational or forecasted charging availability to energy storage resources.

To this end, it is important for the Commission to affirm how interconnection studies and processes accommodate the utilization of either as-available or firm charging services for energy storage resources where such considerations would apply. Optionality is important here so that projects are not forced under one type of charging service over another since the level of charging service required is not uniform for all projects, where some can take advantage of charging capacity as it is available on the current transmission or distribution grid (*i.e.*, as-available charging) whereas others may want or need greater assurances of charging capacity and are willing to pay for the requisite upgrades (*i.e.*, partial or full firm charging).<sup>9</sup> However, in line with the NOPR's discussion of the matter,<sup>10</sup> accommodating these charging service options should be structured and designed in ways to reflect the operating capabilities of the storage resource (*i.e.*, price responsive, dispatchable), achieve efficient market outcomes, and avoid expensive and unnecessary upgrades.

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<sup>8</sup> NOPR at 257 and 266.

<sup>9</sup> *See, e.g.*, Docket No. ER19-2505, *et al.*

<sup>10</sup> NOPR at 284.

For example, in defining how energy storage can charge on an as-available basis in any given GIA, the Commission may wish to set standards for how these parameters can be established to enable the energy storage charging on an hour-by-hour or multi-hour basis, reflective of actual grid conditions as opposed to conservative planning assumptions. Similarly, to avoid unnecessary upgrades for partial or full firm charging service, the Commission should set requirements as to how these services should be offered on a flexible, as-requested basis, such that an interconnection customer can seek firm charging service for specific time windows, or for a portion of the energy storage resources' nameplate or interconnection capacity. Without these determinations from the Commission, these options could be developed in practice that ultimately serve to impede the interconnection and subsequent operations of energy storage resources, even slowing down the interconnection process itself as multiple re-studies are conducted in the absence of clear and flexible charging service options.

In similar ways, CESA also requests that the Commission consider how such charging-related studies and upgrades could be incorporated into the CAISO's transmission planning process ("TPP") and/or generator interconnection study process. Currently, one of the challenges for meeting Local Capacity Requirements ("LCRs") in California is around the charging limitations (*i.e.*, energy storage charging without increasing local load) and lack of generation capacity within a defined Local Capacity Area ("LCA") under contingency conditions. While one means to address this situation could be to increase generation resources in the LCA, these localized load pockets are often constrained on land availability, thus limiting the ability for more modular and location-flexible standalone energy storage resources from fully addressing these needs. As a

potential solution, the CAISO could consider economic projects that would increase transmission capability into the local areas where the estimated storage characteristics show limited ability to support storage charging under contingency conditions – possibly an issue for RM21-17; alternatively, there may be improvements to interconnection processes to allow interconnection customers to exceed these LCA charging limits by requesting a study for upgrades that could facilitate the full charging of localized energy storage. Such a process could enhance energy storage development and better enable their interconnection for local contingency needs.

**D. Interconnection studies and processes should accommodate energy storage deliverability that reflect intended operations.**

The NOPR proposes to incorporate technological advancements into the interconnection process, such as using the operating assumptions for interconnection studies that reflect the proposed operation of an electric storage resource or co-located resource containing an electric storage resource, with certain exceptions.<sup>11</sup> CESA strongly supports this proposal, especially in light of the CPUC’s proposed adoption of slice-of-day (“SOD”) reforms for its RA Program, where energy storage resources can be “shown” and “counted” for capacity across different periods of the day. In other words, the RA Program is evolving such that RA resources do not always need to be deliverable for a single peak hour but could be used to support RA needs in other hours of the day, even as the resource would be available to the CAISO market via must-offer obligation on a 24x7 basis.

However, in CAISO interconnection studies, the assumed operations and dispatch of energy storage resources may not reflect their physical energy-limited nature and their

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<sup>11</sup> NOPR at 279, 286, and 288.

market-responsive dispatchable nature. For example, in deliverability studies, energy storage is modeled as operating at full capacity levels in hours where it would be economically irrational to do so, such as the Secondary System Need (“SSN”) period from Hours Ending 14 through 18, considering how storage resources would likely reserve its capacity for later net peak periods from Hours Ending 19 through 22, or the High System Need (“HSN”) period. As energy-limited resources (mostly four hours in duration), it would be physically impossible for energy storage to be dispatched at full or near-full capacity across all these hours, yet the studies assume such worst-case or extremely conservative scenarios. For energy storage resources that intend to have the flexibility to deliver its capacity at any hour and not be dispatch limited, such study criteria may be appropriate, but where energy storage seeks to allow restrictions on charging and discharging to count for specific hours (*e.g.*, due to economic efficiencies), there should be an option to do so. As a result, through refined study criteria and possibly commensurate parameters in the GIA, the intended operations of energy storage resources should be reflected.

**E. The deferral of the self-build option for WDAT projects should be revisited in this NOPR.**

While not addressed or raised in the NOPR, CESA recommends that the Commission revisit their deferral of the self-build option in Order No. 845-A. In April 2018, Order No. 845 provided the “Option to Build” whereby “[i]nterconnection Customers (IC) shall have the option to assume responsibility for the design, procurement and construction of Transmission Provider’s Interconnection Facilities (IF) and Stand



Alone Network Upgrades (NU).”<sup>12</sup> This measure was adopted to “expand the opportunity for ICs to exercise the option to build to reduce cost or complete construction more quickly” and because “[t]his reform will benefit the interconnection process by providing IC’s more control and certainty during the design and construction phases of the interconnection process.”<sup>13</sup> However, California investor-owned utilities (“IOUs”) received an exemption for their WDAT tariffs because, as the IOUs claimed at the time, they process a very small number of requests to interconnection wholesale generation projects to distributions facilities, and maintained that the administrative burden and costs of complying outweigh any benefits filed to exempt WDAT projects from Order No. 845.<sup>14</sup>

Since then, the volume of WDAT generation and energy storage projects have drastically increased, and interconnection queue backlogs plague not only the CAISO queue but also the WDAT queue.<sup>15</sup> One means to quickly reduce the interconnection queue could be to allow certain projects to move forward, freeing up limited IOU engineering and interconnection staff and resources by having interconnection customers self-provide utility facilities through alignment of interconnection processes, design standards, and stakeholder requirements. There may be common utility facilities that are “standalone” and could be constructed by third parties with qualified contractors. As such, CESA

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<sup>12</sup> Order No. 845, *Reform of Generator Interconnection Procedures and Agreements*, 163 FERC ¶ 61,043 at P 79.

<sup>13</sup> *Ibid* at P 74 and 85.

<sup>14</sup> Order No. 845-A, *Reform of Generator Interconnection Procedures and Agreements*, 166 FERC ¶ 61,137, at P 172.

<sup>15</sup> For example, according to the WDAT interconnection queue data for SCE as of September 30, 2022, active interconnection requests for energy storage resources totaled 89 projects. Accessed on October 11, 2022 [here](#).

recommends that the Commission take up this issue again and adopt reforms that would extend the option to self-build for WDAT projects as well.

V. **CONCLUSION**

CESA appreciates the Commission's considerations of these comments and looks forward to working with the FERC, CAISO, and other stakeholders on this matter.

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

October 12, 2022

