UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Improvements to Generator Interconnection Procedures and Agreements	Docket No. RM22-14-000

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INTRODUCTION

The staff of the Clean Energy States Alliance (CESA) is pleased to have the opportunity to submit the following comments on the Notice of Proposed Rulemaking, Docket No. RM22-14-000, regarding "Improvements to Generator Interconnection Procedures and Agreements."

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CESA is a national nonprofit coalition of public agencies and organizations working together to advance clean energy. CESA's members—primarily state energy agencies representing 18 states and the District of Columbia—include many of the nation's most innovative, successful, and

influential implementers of clean energy policies. The comments in this document solely represent the views of CESA staff and not CESA's individual member organizations.

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THE PROBLEM

Many of CESA's member states have established, through legislation, rulemaking, or executive order, 100 percent clean energy goals for their power sector or zero-carbon goals for their state economy. States and regions with such goals account for 42.3 percent of US power sales, 49.4 percent of customers, and 51 percent of the US population, with target dates ranging from 2032 to 2050.[1]

Much of the needed generation and storage capacity needed to achieve those goals is already in queues awaiting interconnection to the grid. Berkeley Lab found that as of the end of 2021, the seven regional transmission organizations plus 35 utility service territories outside of RTO regions (altogether representing 85 percent of US load) had over 1.4 Terawatts of generation

[1] Clean Energy States Alliance, *Guide to 100 Percent Clean Energy States*, https://www.cesa.org/projects/100-clean-energy-collaborative/guide/.

and capacity applying for interconnection, over 90 percent of which was from zero-carbon sources like solar, wind, and batteries.[2]

This is more nameplate capacity than the current total fleet of generators in the United States operating today.

We agree with the Commission's findings that dysfunction in the interconnection process "results in rates, terms, and conditions pursuant to which transmission providers provide generator interconnection service are unjust and unreasonable and unduly discriminatory or preferential. Further, because the interconnection queue backlogs and study delays afflicting generator interconnection service nationwide hinder the timely development of new generation and thereby stifle competition in the wholesale electric markets." [page 23-24] Many of FERC's proposed changes to the queue process are on the right track, and we support them. We limit our comments to a few topics that we think could be refined or clarified.

MAKE MORE INFORMATION AVAILABLE TO APPLICANTS

A chief cause of the overload of interconnection queues is that applicants are not given information about the grid that could guide their applications. As the Commission noted in the NOPR for transmission planning reform (docket RM21-17-000) "interconnection customers may submit multiple interconnection requests in an effort to determine the most favorable point of interconnection that minimizes their interconnection-related network upgrade costs." This "may lead to late-stage withdrawals of the excess interconnection requests, which can then impede the transmission provider's ability to process its interconnection queue in an efficient manner." [page 15]

[2] Joe Rand, Ryan H Wiser, Will Gorman, Dev Millstein, Joachim Seel, Seongeun Jeong, and Dana Robson, Lawrence Berkeley National Lab, *Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection*, April 2022, at https://emp.lbl.gov/queues.

In other words, because applicants are kept in the dark about the condition of the grid and its potential to accommodate their projects, they "go fishing" to discover where their project may be viable. We agree that transmission providers and grid operators should provide an initial screening tool that indicates points of interconnection with available capacity that are likely to be able to accommodate new generation or storage projects. The Commission points to operators that provide public interconnection information, such as MISO's congestion heat map. [page 43]

Requiring transmission operators to provide an informational interconnection study to prospective applicants is also prudent, and should help solve the problem of a lack of transparency. Costs for this study should not create an impediment to small generator projects, including many distributed wind, solar, and storage projects.

But we are concerned that the same dynamics that cause delays in finishing affected system studies may cause delays in doing informational studies – namely, an overload of projects that tax the staff of transmission providers.

It may be worth considering taking a DIY approach one step further. Given the availability of load flow and other grid modeling software, we wonder if it is possible to give access to some of the grid data needed to do the informational studies to applicants so they can do their own analysis.

At a minimum, users would need to sign non-disclosure agreements (NDAs) to protect commercially sensitive information. Inasmuch as it opens up potential security risks, FERC may want to limit access to permitted users, controlling the copying and dissemination of data, or other security measures. Perhaps DOE's national energy labs could create a platform that allows analysis but protects sensitive grid data. This could be, for example, a computer workstation with software and grid data located at secure facilities. Updated data would be provided to the centers by RTOs and transmission providers via secure file transfer or mailed

discs. Analysts for project applicants would visit the facility to do the analysis and generate their own report.

These reports would be non-binding, and not constitute a final affected system study, which would still have to be done by the transmission provider. But they would give prospective applicants more information than a public congestion map, and reduce a new chokepoint in the workflow of transmission provider analysts. Like the proposed cluster process mentioned below, DIY informational integration studies could shift some of the workload and agency to developers and increase the quality of interconnection proposals.

IMPLEMENT A FIRST-READY, FIRST-SERVED CLUSTER STUDY PROCESS

The NOPR proposes that transmission providers would be required to conduct interconnection studies clustering together numerous proposed generating facilities, rather than separate studies for each individual generating facility. This is a prudent policy and is likely to result in an improvement in speed and efficiency.

Since wind and solar projects can be relatively small, clustering should especially help smaller projects share the cost of interconnection studies and upgrades, providing projects of all sizes with a viable path through the process.

Defining clusters

The NOPR requests comment on how clusters should be defined [item 77, page 65]. Given the large number of wind and solar projects in the queues, it would make most sense to define clusters based on the topography of the grid and on "zones" of an energy resource, rather than on political boundaries, such as counties. For grid topography, this could mean projects that interconnect at a common substation, or along a single high voltage transmission line, or that affect flows in a discrete section of the grid. Energy zones could be like those that have been

identified for the Western Governors' Association's Western Renewable Energy Zone (WREZ) project, and for ERCOT's Competitive Renewable Energy Zone (CREZ) process.[3]

In a guidebook, the National Renewable Energy Laboratory (NREL) defines a renewable energy zone (REZ) as "a geographic area that enables the development of profitable and cost-effective grid-connected renewable energy. A REZ has high-quality renewable energy resources, suitable topography and land-use designations, and demonstrated interest from developers, all of which support cost-effective renewable energy development." [4]

The NREL guidebook adds that "the REZ transmission planning process is an approach to plan, approve, and build transmission infrastructure that connects REZs to the power system. The REZ process helps to increase the share of solar, wind, and other renewable energy resources in the power system while maintaining reliability and economics. The REZ process focuses on large-scale wind and solar resources that can be developed in sufficient quantities to warrant transmission system expansion and upgrades."[5]

This sounds very much like what is contemplated in the cluster concept, and could be used as guidance to the process of planning and organizing clusters and transmission to serve them.

Who defines clusters

It seems from the NOPR that FERC intends that the transmission provider will have the responsibility for defining clusters, through an annual call for projects in the cluster area during a 45-day open window. [page 60] Presumably the transmission provider will look at the location of projects currently in their interconnection queue and organize them into clusters.

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[3] Nathan Lee, Francisco Flores-Espino, and David Hurlbut, National Renewable Energy Laboratory, *Renewable Energy Zone (REZ) Transmission Planning Process: A Guidebook for Practitioners*, September 2017, at https://www.nrel.gov/docs/fy17osti/69043.pdf.

[4] Ibid, page iii.

[5] Ibid, page iii.

We believe project developers should be able to propose clusters, either as a supplement to those defined by the transmission provider, or as an alternative. By proactively banding together into clusters, developers could shape a package of projects that could provide an attractive generation profile, could solve integration issues, and find economies of scale for finance and construction. If they are instead thrust together by the transmission provider based solely on geographic proximity, the bundled package may not be as attractive and may be more likely to result in project failures.

The rise of hybrid generation-plus-storage plants has shown that developers are paying much more attention to the *value* of their output, rather than simply choosing a low LCOE option. Regions with high penetration of solar and wind are seeing a decline in wholesale market value at times of high sunshine and wind relative to load. In California, thanks to high levels of solar and the accompanying value decline of mid-day power, essentially all proposed solar projects in the CAISO queue are accompanied with storage.[6] Developers are taking advantage of low LCOE solar power but using battery storage to shift output to the higher-value evening ramp and evening net peak.[7]

This suggests that bundling projects together in a region could be attractive to groups of developers, not just to maximize wholesale market value but to create a competitive advantage in getting through the interconnection gauntlet. It would put more onus on developers to ease the interconnection and renewable integration process, leading to better projects and more coordination. It would also give developers more agency, which they may prefer.

[6] Rand, ibid.

[7] Cristina Crespo Montañés, Will Gorman, Andrew D Mills, and James Hyungkwan Kim, Lawrence Berkeley National Lab, *Keep it short: Exploring the impacts of configuration choices on the recent economics of solar-plus-battery and wind-plus-battery hybrid energy plants*, November 2021, at https://eta-publications.lbl.gov/sites/default/files/hybrid_configuration_report_final.pdf

Selecting clusters for study and deployment

Creating clusters or accepting pre-clustered projects raises the question of how competing clusters will be selected and prioritized. Certainly, given the overwhelming size of the present queue, along with ongoing policy drivers and market trends, there will be many clusters competing for limited space on the grid and in the interconnection study process.

In section II (A) 2 [page 56] of the NOPR, FERC proposes a "first-ready, first-served" process but only suggests that clusters will need "increased financial commitments and readiness requirements to enter and proceed through the queue." The readiness requirements can include site control, an executed term sheet, and other measures [page 81].

We believe that clusters should be prioritized for study based on a number of transparent and quantifiable factors, such as the "signs of commercial progress" noted, but also alignment with state policy, such as by participation in procurement actions, and benefits to low-income, environmentally impacted, and "energy communities" as defined under the Inflation Reduction Act, state policies, and the Justice40 initiative.

Clusters could further be prioritized for development by how well the combined cluster meets grid needs. Preference for interconnection agreements could be given to those that result in the lowest cost upgrades, have the most attractive operational profile, or deliver the best reliability improvements.

Again, all these metrics would have to be transparent and quantifiable so developers could prepare or revise their projects accordingly.

Other aspects of clusters

Replacing single projects with clusters will lessen but not eliminate some of the troublesome dynamics identified in the NOPR, such as the re-studies required when projects pull out of the queue. We believe the process should allow for changes in the makeup of the cluster, as

individual projects may fail to proceed for a variety of reasons, yet the cluster as a whole may still be viable. Indeed, the study process may identify ways to improve a cluster to provide better performance for the grid, such as by adding or subtracting certain resources from the cluster. A cluster should be able to be modified in response to developer changes or system study findings without threatening its standing in the queue or paying penalties.

The NOPR suggests bundling interconnection requests that are related to the same state-authorized or mandated resource solicitation. This has a coherent logic in that it allows for responses to solicitations in a timely and coordinated way, helping states or utilities meet their procurement targets. However, the projects in such a bundle may or may not be close geographically or have a single impact on grid operations. The interconnection studies would be done simultaneously but have very different impacts on the grid. A solicitation-based cluster analysis would have to describe both the individual and group effects of the proposed projects, to help the procuring body choose an effective portfolio of projects.

Lastly, we believe transmission providers should be open to receiving proposed clusters for study more often than once a year, as suggested at item 79 [page 65]. Since presumably there will be many fewer studies to be done, we believe transmission providers should provide opportunities more frequently, perhaps quarterly. And if the window will be opening at predictable and more frequent intervals, it need not stay open for 45 days, but could be shorter.

THE USE OF FINANCIAL PENALTIES

The NOPR proposes financial penalties that would help weed out speculative interconnection requests from proposed projects that are unlikely to ever be built, and to ensure that deadlines are met by transmission providers and RTOs.

Imposing financial penalties for tardy responses to integration studies is an interesting idea, but it may fully address the motivations of the entity responsible for the study. Because in some

cases the entity being penalized would be a non-profit RTO, the cost of the penalty would be passed along to ratepayers. In other words, ratepayers would be paying FERC due to the negligence of the RTO. This may not impose pressure on the RTO to be timely in finishing studies.

We have a few ideas about this problem.

First, since the developer is the one most inconvenienced by the lateness of the study, we think it could be more logical for the developer to not have to pay for the study costs if it is delivered after the deadline. The study provider then would absorb the cost of the study, taking FERC out of the loop, and the applicant would get a modest amount of compensation for the delay.

Second, FERC could encourage or require transmission providers to tie executive compensation to performance metrics, including timely completion of interconnection studies.

Third, FERC could disallow cost recovery for late interconnection studies. This would help inspire RTOs to allocate adequate resources, to avoid penalties.

As for financial penalties on interconnection applicants, we hope that the other reforms proposed, such as cluster studies and more transparent information, will have a significant effect on the quality and number of interconnection requests, and reduce the amount of jockeying and speculation by applicants. If penalties are imposed, they should be proportional to project size. We believe that allowing applicants to create their own clusters would result in an internal vetting of projects in the cluster and negotiation about how project costs and penalties will be managed.

However, the sheer number of projects presently in the queue has made nearly impossible the task of finishing studies in a timely way. Setting a fixed deadline may be pointless if there are hundreds of studies to be done. For both transmission providers and applicants, a focus on

better process, more information sharing, and better analytical tools will likely be more important than financial penalties.

CONCLUSION

In summary, CESA commends FERC for the direction of the NOPR and looks forward to a productive rulemaking process. In our comments, we urge FERC to consider the following points:

1) Make more information available to applicants, to facilitate better applications and fewer "fishing expeditions." In this vein, FERC should consider providing the tools to let developers do DIY informational interconnection studies, to offload workflow to applicants and create higher quality projects.
2) Implement a first-ready, first-served cluster study process, with clustering determined by grid topography, energy zones, and by mandated solicitations. This is another opportunity to encourage applicants to be more proactive in the process, by creating and proposing their own clusters, rather than having them imposed by transmission providers.
3) Use financial incentives and penalties to encourage good behavior by both applicants and transmission providers. The incentives should be aligned with the motivations of the various parties to make them more effective.

Sincerely,

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