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DEPARTMENT OF ENERGY
Federal Energy Regulatory Commission

[Docket No. AD20-9-000]

Hybrid Resources; Notice Inviting Post-Technical Conference Comments

On July 23, 2020, Federal Energy Regulatory Commission (Commission) staff convened a technical conference to discuss technical and market issues prompted by growing interest in hybrid resources.

All interested persons are invited to file post-technical conference comments to address issues raised during the technical conference and identified in the Supplemental Notice of Technical Conference issued July 13, 2020. For reference, the questions included in the Supplemental Notice are included below. Commenters need not answer all of the questions, but commenters are encouraged to organize responses using the numbering and order in the below questions. Commenters are also invited to reference material previously filed in this docket but are encouraged to avoid repetition or replication of previous material. Comments must be submitted on or before 45 days from the date of this Notice.

Comments may be filed electronically via the Internet. *See* 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's website http://www.ferc.gov/docs-filing/efiling.asp. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, (202) 502-8659. Although the Commission strongly encourages electronic filing, documents may also be paper-filed. To paper-file, mail an original and five copies to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426.

Questions

1. While this conference uses the term hybrid resources to refer to resources consisting of a generation resource and an electric storage resource paired together, we recognize that these resources can be configured differently, from the generation resource and energy storage resource being located at the same facility but operating separately ("co-located") to the generating facility and energy storage facility operating as one "hybrid" resource. How are these two terms used in the industry? What configurations are most common, and are there new configurations emerging?

2. What are some of the indicators of increasing interest by developers in hybrid resources? Where and in what circumstances does interest in hybrid resources appear to be greater? Approximately what percentage of interconnection requests for resources in interconnection queues are composed of hybrid resources? Has there been an increase in requests by hybrid resource developers to participate in energy, capacity and ancillary services markets operated by RTOs/ISOs?

3. How have the economics underlying hybrid technologies changed over the last three to five years? What future trends do you anticipate in this regard? Given these anticipated future trends, please comment on how you anticipate hybrid resources might be configured going forward. How could these changes impact interconnection requests?

4. We understand that increasing numbers of hybrid resources are participating as a single resource in energy, capacity and ancillary services markets operated by RTOs/ISOs. What are the advantages to the hybrid resource participating as a single resource? What are the disadvantages?

5. What factors are driving developers' decisions in how to configure hybrid resources? For example, what factors do developers consider when deciding to either charge the storage component of the hybrid resource solely from a co-located generation resource or to charge from the grid? In addition, alternating current coupling and direct current coupling are two technical options for interconnection of hybrid or co-located resources. What factors influence developers to choose one form of coupling over another?

6. How can an interconnection customer in your region propose to interconnect a resource composed of two or more resource types, operated as a single resource at a single point of interconnection? What are the advantages and disadvantages of pairing resource types into a single interconnection request?

7. What are the benefits and challenges of adding an energy storage resource to an existing generation resource? What are the benefits and challenges of adding an energy storage resource to an existing interconnection request that is already in an interconnection queue? What additional studies would be required to do this, and would the process be the same or different depending on whether the addition is to an existing generation resource or to an existing interconnection request? Also, with respect to the addition of an energy storage resource to an existing generation resource, would the new storage resource be subject to the full interconnection study process, and, if so, would any aspect of the request or study process differ from a traditional interconnection request for a new generating facility? Under what circumstances would the addition of an energy storage resource to an existing interconnection request be considered a material modification that would require the interconnection customer to go through the interconnection process again or obtain a new queue position? Please describe how this request would be processed.

8. How is the maximum output of a hybrid resource calculated currently? How is the interconnection service request sized? For example, is it sized to the combined maximum output of each of the hybrid components, limited to a level of output that corresponds to how the resource is expected to operate, or some other amount?

9. If a hybrid resource opts not to be studied to charge from the grid, is the resource allowed to later change its decision? If so, is this change or possibility reflected in an interconnection agreement? If so, how? If a hybrid resource seeks to make this type of change, is there a requirement that the resource undergo an additional study or studies?

10. Are hybrid resources able to participate in the energy, capacity and ancillary services markets operated by RTOs/ISOs using existing frameworks or market rules? If so, how do they participate? Are market rule changes needed to enable the participation of hybrid resources? Are RTOs/ISOs exploring market rule changes, and if so, what changes are they pursuing?

11. Hybrid resources consisting of more than one technology type could potentially participate in the market as the separate component parts, or as a single integrated hybrid resource. Should hybrid resources have a choice of whether to participate in the energy, capacity and ancillary services markets operated by RTOs/ISOs as each of the resource types or as a single resource type? If so, why is this flexibility important?

12. Does operating a hybrid resource as separate components (i.e., co-located) rather than as a single integrated resource create challenges for RTOs/ISOs in accurately modeling whether hybrid resources will provide operating reserves? If so, is this problem addressed if the resource operates as a single integrated hybrid resource?

13. What is the current ability of RTOs/ISOs to model hybrid resources? Is there a preferred approach?

14. Hybrid resources with certain characteristics may be able to provide essential reliability services. For example, when configured with advanced controls, these resources may be able to provide fast frequency response and dynamic voltage regulation. What considerations (e.g., models, tools, training) are needed to improve planning and operations models and utility practices to account for the various controlled operating modes of hybrid and co-located resources?

15. In some cases, RTOs/ISOs require variable energy resources to provide data and forecasts of resource production based on weather and other factors. Would the same requirements apply to hybrid resources with a variable energy resource component, or how may these requirements differ?

16. Are existing dispatch systems in the RTOs/ISOs capable of dispatching hybrid resources as a single resource? What are the challenges and/or limitations of such dispatch?

17. What are the technical considerations regarding state of charge of the electric storage component of hybrid resources? Are there different factors pertaining to state of charge that are dependent on whether the resource is co-located or is operates as a single integrated hybrid resource?

18. Do existing RTO/ISO market power mitigation rules appropriately recognize the particular operating characteristics of hybrid resources?

19. Are there established best practices for metering a hybrid resource for participation in wholesale markets? For example, with one meter, or with multiple meters that provide visibility into individual subcomponents or inverters, or some other configuration?

20. What are any other potential implications, advantages, and concerns for RTOs/ISOs regarding hybrid resources?

21. How do RTOs/ISOs currently calculate the capacity value of resources? Would those methods accommodate the characteristics of hybrid resources, or would new or modified methods be needed?

22. If new or modified methods are needed, how should the capacity value, including any seasonal variations, be determined for hybrid resources?

23. If an interconnection customer proposes to add an additional resource to an already existing resource or an existing interconnection request, should the capacity value of the existing resource or the existing interconnection request be modified? Why or why not? What options exist for determining such changes to capacity value?

24. What is the status of efforts in the RTOs/ISOs to define Effective Load Carrying Capability for hybrid resources?

For more information about this Notice, please contact:

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Dated: August 10, 2020.

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Deputy Secretary.

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