

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

Hybrid Resources

Docket No. AD20-9-000

**Comments of Adam Stern<sup>1</sup>**

On behalf of the members of the American Wind Energy Association (AWEA), I am here today to discuss the need for RTO/ISOs to adapt their market policies and operating procedures to accommodate the growing number of hybrid renewable energy and storage projects requesting interconnection to the nation's electric grids. The market is speaking, as hybrid and co-located projects now represent over ten percent of the resources seeking interconnection to ISOs in the U.S. We appreciate the initiative of the Commission and staff in holding this technical conference, as the record developed here can help to ensure that the regulatory environment keeps pace with technological innovation.

The types of supply resources that participate in wholesale electricity markets in the US, and the technologies they use, are evolving dramatically. As technology evolves, so too must the policies and procedures of wholesale electricity market operators to effectively integrate new resource technologies and fully realize the benefits they provide. For example, America's energy supply includes increasing amounts of renewable resources. Renewable energy now accounts for almost half of newly installed generation capacity, due to dramatic cost reductions and growing demand for carbon-free electricity.

The renewables industry understands that the Commission and RTOs continue to focus on the core requirement of assuring reliability. The Commission's past actions, such as Orders 764, 841, and 845, have maintained reliability while updating regulations and tariffs to integrate more renewables and storage. The renewables industry is constantly innovating to develop products that can provide additional flexibility and be interconnected at less cost to the developer, the grid operator, and ultimately to customers. Hybrid resources represent the next step in this evolution of the electric grid, which is why we are here today. AWEA applauds FERC for hosting this conference, which will provide an opportunity to learn from the RTOs and ISOs that are already taking significant steps to integrate hybrid resources. But there is more work to be done.

Hybrid and co-located resources are expected to provide considerable benefits to ISO markets because they can assure a range of benefits, including:

- facilitating the integration of variable energy resources such as wind and solar;
- shifting wind and solar generation from lower price periods to higher-priced periods when energy is more valuable to customers; and,
- enhancing the performance and capability of resources by adding operational flexibility.

However, the full potential of these resources will not be realized if market rules and practices do not allow hybrid and co-located resources to offer their full value into ISO markets.

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AWEA will soon be releasing a paper that identifies key issues hybrid and co-located resources are likely to encounter across four areas: **market participation**, **capacity valuation**, **interconnection**, and **market power mitigation**. The remainder of my comments and this entire panel will be devoted to interconnection issues.

AWEA urges the Commission to explore five main topics surrounding the interconnection of hybrid and co-located resources, many of which follow upon the significant reforms of Order No. 845.

1. **Interconnection agreements** – As a threshold issue, not all RTOs allow the components of a hybrid resource to execute a single interconnection agreement – even if the hybrid resource will be operated, bid, and dispatched as a single resource.
2. **Study requirements** – RTOs have widely varying methods for studying hybrid resources. The particular assumptions used in interconnection studies directly affect the need for network upgrades, which in turn can significantly affect the viability of hybrid projects.
3. **Injection rights** – Order No. 845 made significant reforms to the ability of interconnection customers to request injection rights below nameplate capacity, when accompanied by appropriate control systems. These issues remain highly relevant for hybrid resources, as RTOs have not adopted a consistent methodology for considering the capacity of the components of hybrid resources, or the ways in which a storage component could serve to limit the maximum injection from a particular resource.
4. **Material modification** – Interconnection customers that “materially modify” their interconnection requests may be forced to re-enter the queue in some RTOs, at significant cost and delay. Order No. 845 allowed for the addition of “permissible technological advancements” to an interconnection customer’s requested service. However, it is not clear whether the addition of energy storage to an existing renewable interconnection request would constitute a “permissible technological advancement” or a “material modification.” This uncertainty may prevent the potential increase in dispatchability and flexibility in projects which are already enqueued.
5. **Surplus capacity** – Finally, Order No. 845 required the addition of “surplus interconnection service” – the portion of interconnection capacity that is not being fully used. This service could be used to add energy storage resources to existing renewable projects, creating a pathway for new hybrid and co-located resources without requiring new upgrades.

For all these issues, there is a large degree of uncertainty from a developer’s standpoint for how a hybrid project will be treated. For example, one of the most important questions is whether a resource can submit one interconnection request for two or more components operating together behind one point of interconnection. AWEA believes that the answer to this question should be unambiguous. To reduce cost and administrative burdens, RTO/ISOs should permit hybrid resources at the same POI to submit a single interconnection request. For the other interconnection issues, we urge grid operators to work directly with project developers to relieve the uncertainty and remove the barriers to developing these extremely valuable resources. As intermittent renewable resources continue to represent a growing proportion of interconnection queues, ensuring that interconnection policies allow hybrid resources to provide their full potential benefits in reliability, flexibility, and economic dispatch represents a significant opportunity for the Commission and RTOs.