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Keeping Eyes on the Ball: Integration of Distributed Energy Resources

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California residents experienced rolling blackouts – the first in two decades – in August this year, amidst the pandemic and triple-digit heatwave. Microgrids, rooftop solar, distributed generation, behind-the-meter batteries, and Demand Response – each, an example of distributed energy resource (DER) – are some of the ways that an energy consumer can be shielded from blackouts. The California Public Utilities Commission has been working to integrate demand-side energy solutions with limited success since 2007 and has approved a Demand Response Auction Mechanism (DRAM) as well as a pilot program for competitive utility solicitation of Distributed Energy Resources that would displace or defer utility investments. Unfortunately, these programs were not adequate to prevent the August blackouts. While the California Independent System Operator (CAISO) also allows DERs to participate in wholesale markets on an aggregated basis through a "Distributed Energy Resource Provider" program, various rules and conditions have stifled participation by aggregators. Now, a recent rule from the Federal Energy Regulatory Commission (FERC) is expected to create additional opportunities for DERs not only to serve the homes, businesses, and communities on which they are installed but also to compete more effectively in the U.S. wholesale markets on an aggregated basis. In this post, we explore this new rule from FERC and how it serves as a step towards building the grid of the future.

What is a DER?

DERs are decentralized energy assets that are typically behind-the-meter and situated close to the consumer's electricity usage (load). Depending on the technology and the use-case, DERs can function as a load-only resource, load with generation, load with storage, or load with generation and storage.

Many DERs serving the grid do so under demand-response programs which are designed to reduce electricity usage during peak demand. DERs can also promote grid resilience in the form of microgrids. For example, earlier this year in California, Santa Barbara's public school system issued a request for proposal to build solar plus storage microgrids. The global energy company Engie won

the bid, launching this project. The idea behind this microgrid project is that the school system will be able to power their facilities through the solar installations and also address reliability through the batteries, which will keep lights on at key facilities in case of a power outage.

FERC Order No. 2222

DERs are typically located on an end-use customer's premises, often installed for purposes of supplying such customer's retail electric load. However, DERs also have the potential to serve the wholesale bulk power system with appropriately utilized injections and demand elasticity. DERs serving the bulk power system is a step towards creating the grid of the future, which can consist of bi-directional flow of electricity from power plants and DERs in creative and flexible ways. In recognition of this potential, in September 2020 the FERC issued Order No. 2222, which amends FERC's regulations to remove barriers to the participation of DERs in the wholesale markets. The rule applies to "any resource located on the distribution system, any subsystem thereof or behind a customer meter" above 100 kW and requires grid operators within FERC jurisdiction to include aggregated DERs in market participation models. Order No. 2222 is based on the premise that FERC has jurisdiction over DER activities to the extent they involve injection and sale of energy for resale in the wholesale energy markets.

Interestingly, the Order allows grid operators to set up participation rules designed to avoid market distortions that could arise from DERs participating in both the retail programs and the wholesale markets. The particular concern is that the double participation can allow DERs to earn revenue for the same services simultaneously from utility retail programs and wholesale capacity and energy markets.

Regional transmission organizations (RTOs)/independent system operators (ISOs), distribution utilities, electric retail regulatory authorities, and DER aggregators could face some challenges in the implementation of Order No. 2222. The Order provides RTOs/ISOs with significant flexibility in designing market rules. Such flexibility may result in considerable variations in the rules that each RTO/ISO proposes for DER aggregators in its markets. As a result, market participants that are active in multiple RTOs/ISOs will need to be aware of the differences among the various organized markets and plan and coordinate their participation accordingly.

Conclusion

Order No. 2222 does not offer states the option to opt out of the participation models that ISOs and RTOs create to comply with the Order. This is a good opportunity for states and stakeholders to review retail programs and work towards maximizing the value of DERs. Much thought and discussion will need to go into merging retail programs with wholesale market participation given the complexity of the task. Creative pricing methods that utilize both retail tariffs and wholesale capacity and energy market prices in ways that do not double count services will need to be part of the solution.

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