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DISTRIBUTED ENERGY RESOURCES IN WHOLESALE MARKETS

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About AEE and our members

- AEE represents more than 100 companies and organizations that span the advanced energy industry and its value chains.
- Technologies represented include energy efficiency, demand response, natural gas, solar photovoltaics, solar thermal electric, ground-source heat pumps, wind, storage, biofuels, electric vehicles, advanced metering infrastructure, transmission and distribution efficiency, fuel cells, hydro power, advanced nuclear power, combined heat and power, and enabling software.
- Used together, these technologies and services will create and maintain a higher-performing energy system—one that is reliable and resilient, diverse, cost-effective, and clean—while also improving the availability and quality of customer-facing services.



The importance of integrating DERs into wholesale markets

- Customers are increasingly adopting DER technology
 - Driven by consumer preference, declining costs, and expanding use cases
- DER participation in wholesale markets improves project economics and lowers overall costs to consumers
 - Stacking multiple values and revenue streams supports project development
 - Providing multiple services, at wholesale and retail, lowers overall system costs and costs of DERs themselves
- Many DERs provide ancillary services and grid flexibility more reliability and efficiently than traditional generation
 - Frequency regulation, reserves, fast ramping/response
- Market integration gives RTOs/ISOs visibility of DER operations and capabilities, improving reliability and resilience



State and local regulators and distribution utilities play a critical role

- Retail programs remain crucial to growth of DERs
- Reliability, safety, and cost implications for the distribution grid are a key consideration, and state / local authorities and distribution utilities must have room to address them
- Consumers are best served by a framework that provides this room, ensures active coordination of wholesale and retail operations, and allows participation in multiple markets, including wholesale (through aggregators)



Federal and State jurisdiction – a quick refresher on the “basics”

- FPA Section 201(b) (16 U.S.C. § 824(b)):
 - “The provisions of this subchapter shall apply to the transmission of electric energy in interstate commerce and to the sale of electric energy at wholesale in interstate commerce, but . . . shall not apply to any other sale of electric energy. The Commission shall have jurisdiction over all facilities for such transmission or sale of electric energy, but shall not have jurisdiction . . . over facilities used in local distribution”
- FPA Section 205(a) (16 U.S.C. § 824d(a)):
 - “All rates and charges made, demanded, or received by any public utility for or in connection with the transmission or sale of electric energy subject to the jurisdiction of the Commission, and all rules and regulations affecting or pertaining to such rates or charges shall be just and reasonable”



ELECTRICITY REGULATION: WHO IS RESPONSIBLE FOR WHAT?

Federal Regulation (FERC)

- Federal Power Act
- Wholesale sales of electricity for resale in interstate commerce (*and matters “affecting or pertaining to”*)
- Transmission of electricity in interstate commerce (*and matters “affecting or pertaining to”*)
- Mergers and issuances of securities by FERC-regulated public utilities
- (Very) Limited “backstop” transmission siting authority
 - See 16 U.S.C. § 824p
- Siting/Permitting of hydro plants
 - Otherwise, no generation planning or siting control
- Reliability of bulk power system

State Regulation (PUCs)

- State Public Utility Acts or similar
 - See, e.g., VA. CODE ANN. §§ 56-235 *et seq.* and 56-576 *et seq.* (Electric Utility Regulation Act)
- Retail sales to end users (“*any other sale*”)
- Mergers and other commercial transactions by regulated utilities
- Low-voltage distribution lines
- Siting of power plants and transmission lines
 - See, e.g., MD. CODE ANN. PUB. UTIL. COS. § 7-207 (transmission and gen.)
- Resource planning; *i.e.* the generation types (coal, natural gas, renewable) used by a utility to serve customers

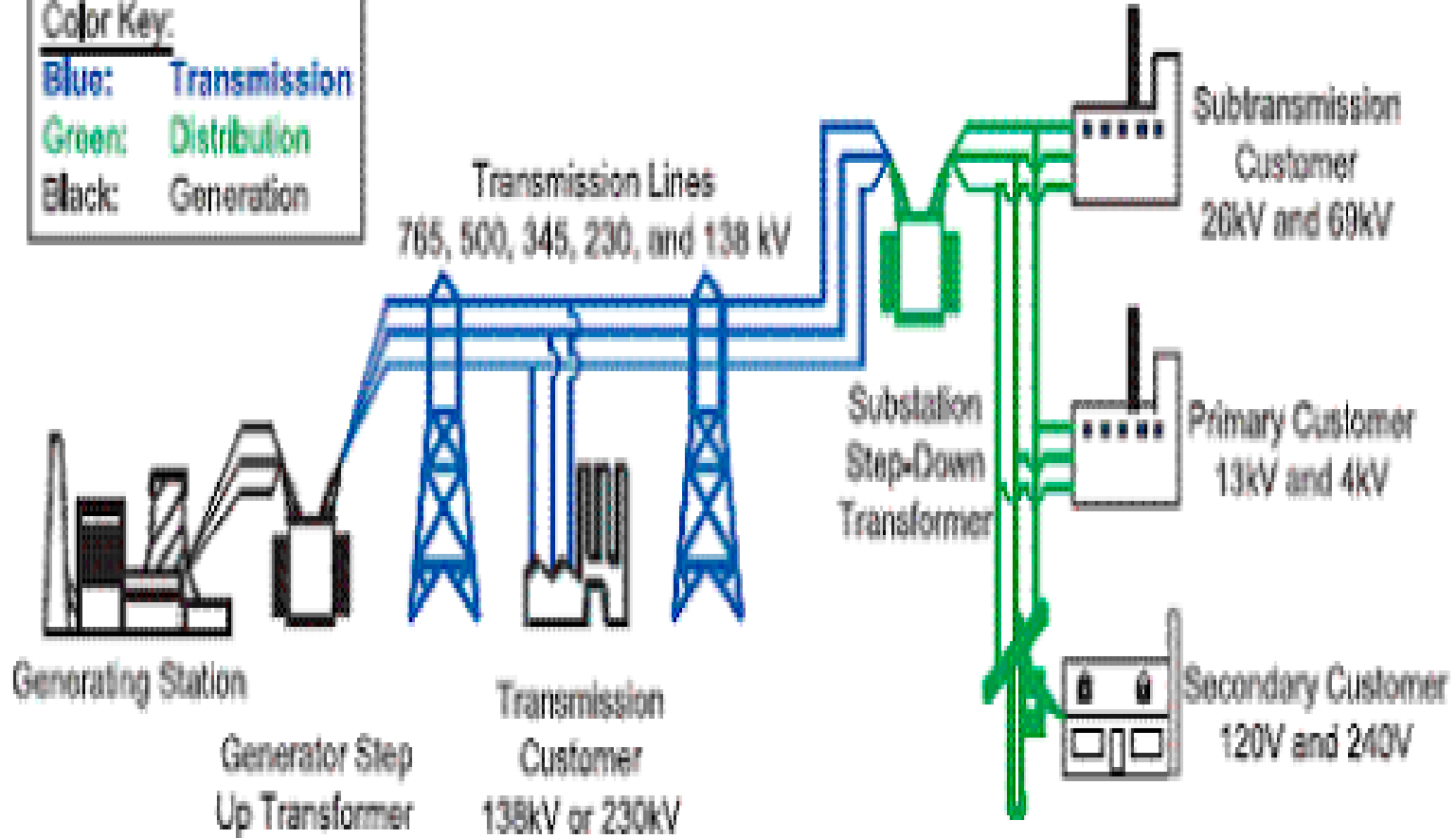


DERs exist in a jurisdictional grey area

- FERC proposed to define a DER as:
 - “a source or sink of power that is located on the distribution system, any subsystem thereof, or behind a customer meter. These resources may include, but are not limited to, electric storage resources, distributed generation, thermal storage, and electric vehicles and their supply equipment.”
- DERs thus reside on the state- and locally-regulated distribution grid, or at the customer site, close to load, **BUT**
- They can be a *source or sink* of power → create two-way flows of power, include generating and non-generating techs
- The wholesale services they provide thus likely occur over state- and locally-regulated distribution facilities
 - This is not unprecedented, but FERC’s decisions on authority over transactions occurring on “dual use” facilities are muddled



Color Key:
Blue: Transmission
Green: Distribution
Black: Generation



Demand Response in wholesale markets: Order 719, Order 745, and *FERC v. EPSA*

- FERC Order No. 719
 - Required RTOs/ISOs to accept bids from DR to provide ancillary services
 - Provided "Relevant Electric Retail Regulatory Authorities" ("RERRAs") ability to "opt out / opt in" of DR participation
- FERC Order No. 745
 - Required RTOs/ISOs to accept bids from DR to provide energy, and to pay DR full locational marginal price
 - Continued the RERRA opt out / opt in framework of Order No. 719
- *FERC v. EPSA*, 136 S.Ct. 760 (2016)
 - Holds that DR is a "practice affecting" wholesale rates and thus w/in FERC jurisdiction
 - Effect of FERC's regulation of wholesale DR practices on retail rates "of no legal consequence"



The *Advanced Energy Economy* decision

(161 FERC ¶ 61,245 (2017), *order on reh'g*, 163 FERC ¶ 61,030 (2018))

- Issue: Can state / local regulators use opt-out / opt-in framework to prevent energy efficiency resources (“EERs”) from directly participating in PJM’s capacity market?
 - EERs are aggregated energy-efficiency improvements that can be offered into PJM capacity market for max of four years
- FERC held:
 - It has exclusive jurisdiction over which resources can participate in the wholesale market
 - EERs, like DR, are a “practice affecting” wholesale rates
 - The opt-out / opt-in framework is an exercise of FERC jurisdiction; discretionary, not required under FPA
 - Existing opt-out / opt-in does not apply to EERs, which have different impacts on distribution utility operations



The patchwork of federal and state regulation of DER market participation

FERC

- Terms and conditions of participation in wholesale markets, including who can participate
- Rates for some (but not all) wholesale sales from DERs
- Rates, terms, and conditions of any transmission services provided by DERs

State / Local Regulators

- Terms and conditions of retail market service provided by DERs and retail DER programs
- Distribution interconnection agreements
- Reliability, safety, and cost impacts on distribution facilities
- Siting of DERs (in some cases)

- State and local regulators have ample authority to address reliability safety, and cost impacts of DER participation in wholesale markets, and terms and conditions of retail programs (regardless of wholesale impacts)
 - Cannot, however, regulate *who* can participate in wholesale markets, or *how*
 - Requires active coordination of wholesale and retail operations



Thank You!

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