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# **DER PARTICIPATION IN WHOLESALE POWER MARKETS**

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# About Advanced Energy Economy

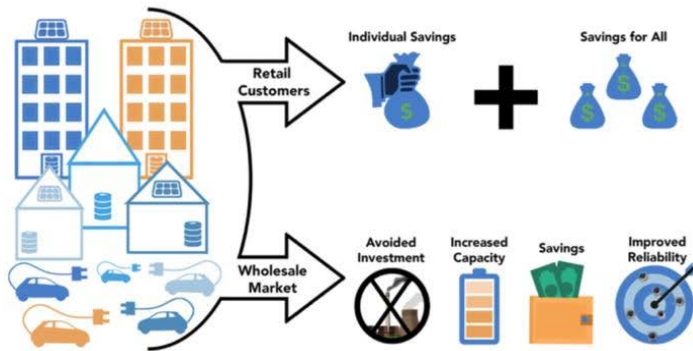
- Association of businesses dedicated to a future energy system that is clean, reliable, and affordable
- Technologies represented include wind, solar, distributed energy resources, energy storage, energy efficiency, and enabling software and platforms
- Membership also includes large corporate buyers who want to increase their use of advanced energy to meet sustainability goals
- Given our broad membership, we advocate for *systems-based, technology-neutral* markets and solutions



# The Value of DER Participation in Wholesale Markets: Five Case Studies

## PUTTING DISTRIBUTED ENERGY RESOURCES TO WORK IN WHOLESALE ELECTRICITY MARKETS

Case Studies of Emerging Applications and Their Benefits for Customers and the Grid



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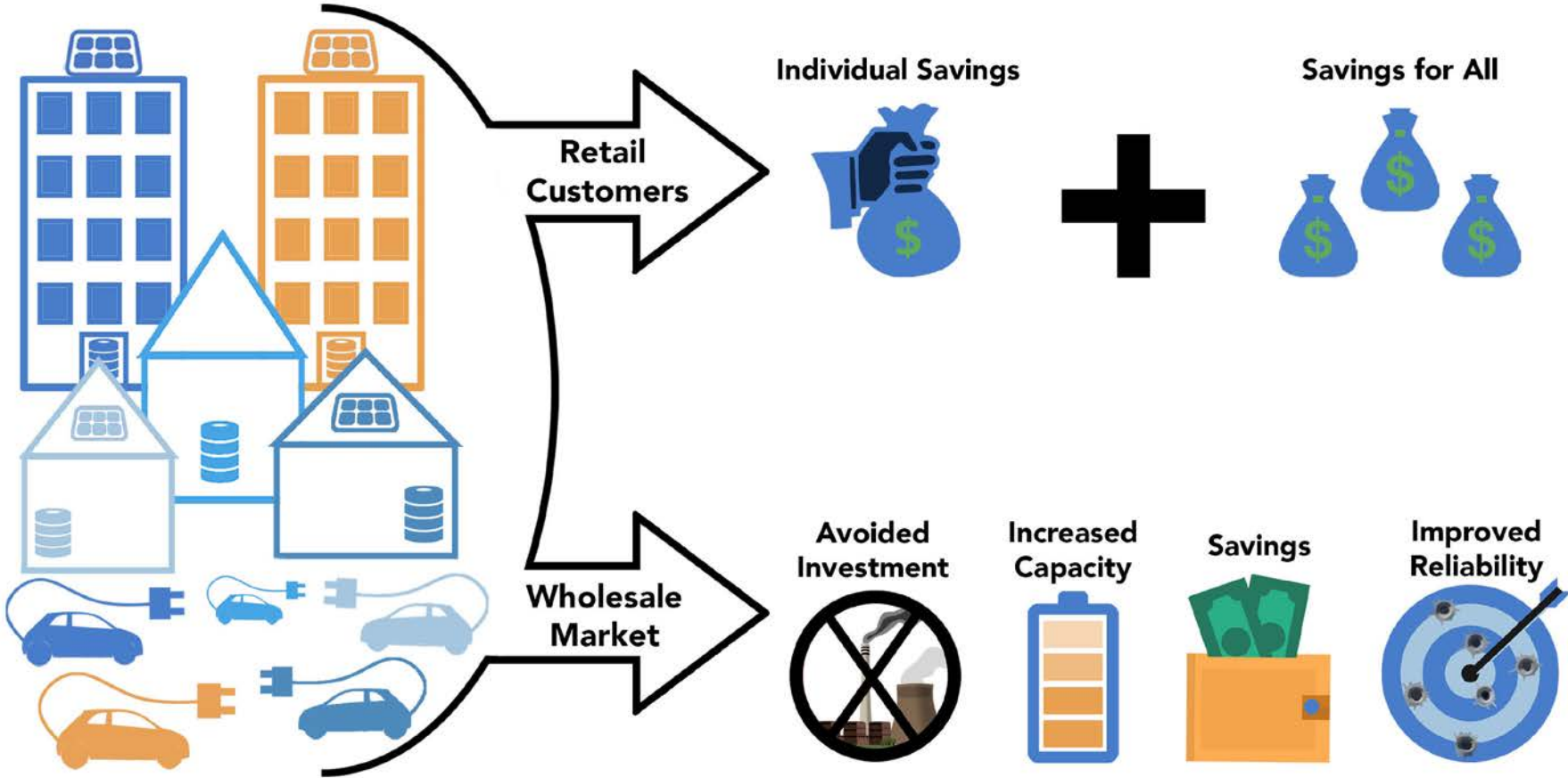
- Report details existing and emerging business models using DERs to provide both retail and wholesale services
- Catalogues the benefits of these business models and use cases for consumers, power markets, and grid reliability and resilience
- Also identifies barriers to capturing additional benefits

# The Five Case Studies in AEE's Report

- 1) Battery storage for demand-side management
- 2) Commercial solar plus storage for demand charge and wholesale market load reduction
- 3) Residential solar plus storage for forward capacity market participation
- 4) Electric vehicle fleets for demand response
- 5) Microgrids for district heating and cooling and electricity export during extreme weather events.



# Benefits for Markets, Consumers, Reliability and Resilience



# What Are The Obstacles to Realizing These Benefits More Fully?

- Existing wholesale market rules and practices that create barriers to full participation by distributed storage and DERs
  - Failure to account for physical and operational characteristics
  - Lack of a participation model or clear path for participation
  - Lack of clarity of roles (communications, interconnection, etc.)
- Market designs that favor traditional generation resources (inadvertently or otherwise)
  - For example, existing market designs favor resources that provide a lot of something for a long time, ruling out valuable contributions over shorter periods from others (storage, DERs, hybrids)
- Regulatory structures and jurisdictional disputes that threaten to “silo” distributed storage and DERs into specific markets and services



# Fragmented Wholesale and Retail Markets

- Traditional regulatory frameworks rely on historic notions of the division between federally-regulated wholesale markets and state-regulated retail markets
  - A “two-way” energy system challenges these historic notions
  - Applying these historic notions risks forcing DERs into silos
- Some (but not all) states and many (but not all) utilities assert FERC lacks jurisdiction to allow DERs to participate in wholesale markets, and that states must have the final word
  - Asserting distribution system reliability and cost concerns
  - Asking that FERC allow states (and coops and munis) to “opt-out” and bar DER participation in wholesale markets



# DERs Exist in a Jurisdictional Grey Area

- FERC defines 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 behind the meter at the customer site, **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 may 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





# FERC Authority Over DER Participation and State and Local Regulator “Opt-Out”

- Order No. 719 and 745
  - FERC allows state and local regulators to “opt-out” and prevent retail customers from participating in wholesale demand response
- *Advanced Energy Economy Decision*
  - FERC confirms it has exclusive jurisdiction over which resources can participate in the wholesale market
  - Allowing state and local regulators to “opt-out” and bar resources from wholesale market participation is an exercise of FERC’s discretion, and not required by FPA
- Order No. 841-A (May 16, 2019)
  - Rejected arguments for an “opt-out” for energy storage resources located on the distribution grid or behind the meter
  - Commissioner McNamee dissent: FERC lacks jurisdiction to allow distributed storage to participate in wholesale markets because distribution facilities are used.



# How federal and state regulation of DER market participation work together

## FERC

- Terms and conditions of participation in wholesale markets, including who can participate
- Rates for some (but not all) wholesale sales from DERs
- Transmission interconnection agreements (if needed)
- 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)

- Requires framework for active coordination of wholesale and retail operations



# Framework for Aggregated DER Participation

- AEE members have asked FERC to include in a Final Rule a requirement that RTOs/ISOs to develop a framework or “checklist” to guide the development of market rules for aggregated DER participation that (among other things):
  - Allow DERs to access all wholesale markets and provide all services they are technically capable of providing
  - Allow aggregation beyond a single pricing node
  - Credit aggregated DERs for net supply (along with the current required credit for net reductions behind-the-meter) (i.e., allow injection)
  - Permit DERs to export power and ramp up and down
  - Allow DERs to participate in both wholesale and retail markets
  - Allow both in-front-of and behind-the-meter DERs to participate (no “opt out”)
  - Establish reasonable telemetry, communications, and control equipment requirements focused on ensuring RTO/ISO visibility
  - Clearly define the roles and responsibilities of DER aggregators, RTOs/ISOs, and distribution utilities with respect to operational coordination



# Storage as a Transmission Asset

- Remerging as an issue in some regions
  - ISO-NE Order No. 1000 solicitation
  - FERC NOI on transmission incentives
- Storage can be classified as transmission and receive cost-based rate recovery
  - See *Western Grid Development LLC*, 130 FERC ¶ 61,056 (2010)
- FERC policy is muddled regarding how to address potential market impacts of cost-based and market-based participation
  - See Policy Statement, 158 FERC ¶ 61,051 (2017)
- RTOs/ISOs may need to clarify tariffs and operating agreements, or establish new protocols, regarding how they will operate storage that is classified as transmission



# Thank You!

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# **APPENDIX**

# 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