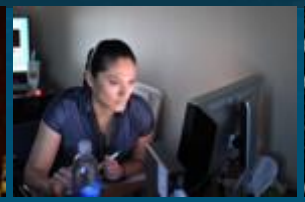
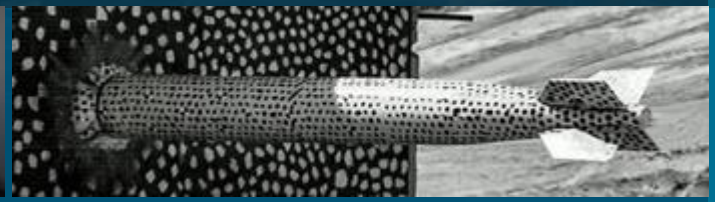
Energy Storage Investments: Managing Ownership Options & Stranded Assets





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My agenda for today

1. Ownership models for energy storage assets
2. Balancing decarbonization goals with utility investments
3. State regulation of utility stranded assets & cost recovery
4. Policy considerations for state regulators
5. Q&A

The flexible nature of ES assets results in multiple ownership options.

- **Energy storage can be interconnected:**
  - In front of the customer meter (FTM)
  - Behind the customer meter (BTM)
- **Energy storage may be owned by:**
  - Utilities
  - Customers
  - Third Parties
  - Hybrid Combinations (Utility/Customer, Utility/Third Party, etc.)

Through various permutations of these two factors, there are at least seven distinct ownership models for energy storage, based on where the device is connected, who controls it, and how it is used.

Ownership models for energy storage assets.

- Rules governing who should own and operate ES assets have long been a source of contention in electricity markets.
- Fundamental questions that are at the core of this debate include:
  - What kind of asset does ES represent? (G, D, or T…or some hybrid of all three?)
  - What services will the ES asset be capable of performing, and what services will it be allowed to perform.
- The answer to the first question may be embedded in long-standing state policy (e.g., in restructured markets, mandated utility divestiture of G assets).

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  - What services will the ES asset be capable of performing, and what services will it be allowed to perform?
  - Who should pay for ES assets? The public (i.e., ratebase) or free market?
- The answer to the first question may be embedded in long-standing state policy (e.g., in restructured markets, mandated utility divestiture of G assets).
- The answer to the second question may be rooted in federal policy / RTO rules.

Pros and Cons of utility ownership.

Arguments for Utility Ownership

- Opportunity for long-range, system-wide planning
- Opportunity to optimize the distribution system
- Enhanced flexibility to use cost-effective resources
- Enhanced economies of scale (i.e., prices drop with larger projects) + utilities have low cost of financing
- Ownership through ratepayers is most socially equitable

Arguments Against Utility Ownership

- Market power concerns: Utility ownership may preclude third-party participation.
- Utility ownership focus limits energy storage on reliability services only, forsaking other applications for storage
- Uncertainties about utility cost recovery and equitable rate treatment among customers
- Non-utility ownership will do more to ensure that storage will be fairly compensated for the broadest possible set of benefits

Ownership considerations are a global issue.

- We remain focused on U.S. policymaking, but it is interesting to note the global trends on the issue of ES asset ownership.

- As of 2019, T&D operators can own and operate ES assets only under exceptional circumstances.

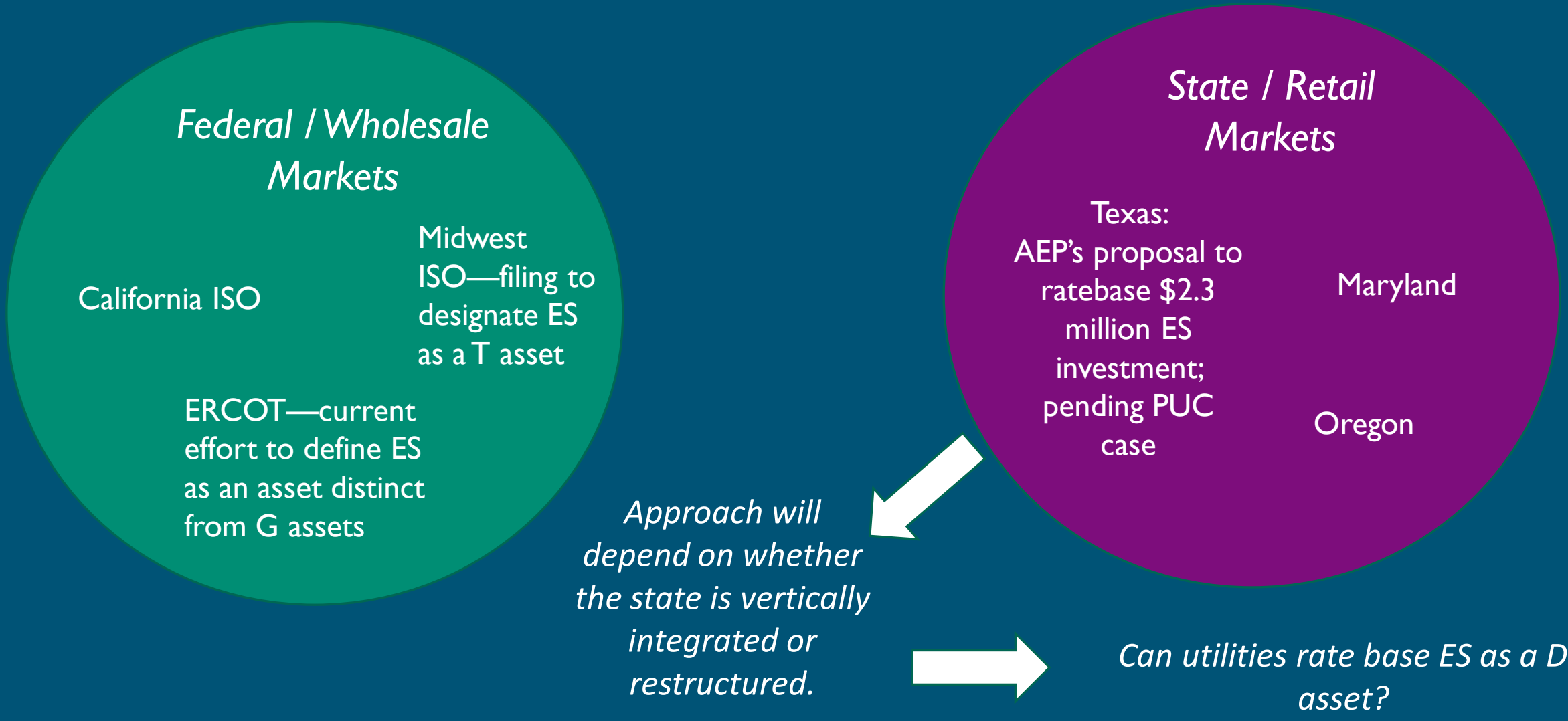
- As of 2019, grid companies are no longer permitted to include storage costs in their T&D fees

- Grid companies allowed to own ES assets only under certain circumstances.

- ES assets can be claimed as a T asset in emergency situations.

In the U.S., ownership issues are now under regulatory consideration.

- Ownership models are being vetted at both the federal and individual state levels.



Maryland: An Ownership-Focused Pilot Program.

- **Maryland's Energy Storage Pilot Project Act (SB 573 – 2019) creates a unique pilot program designed to test not only storage technologies, but different ownership models.**
  - Each of the state's four investor-owned utilities must solicit offers for at least two of four ownership models:

Utility-Owned	Utility/3rd Party Owned	3rd Party Ownership	Virtual Power Plants
• Utility owns and controls storage project for grid reliability. • Utility operates storage in wholesale markets when it is not needed for distribution reliability	• Utility owns and controls project for grid reliability. • 3rd Party operates project in wholesale markets.	• Utility contracts with a storage project that is owned by a 3rd party for grid reliability. • 3rd party operates the project for wholesale markets.	Utility aggregates, or uses a 3rd party aggregator, to receive grid services from multiple DERs projects owned by customers or a 3rd party.

  - The total size of the pilot projects will be between 5 and 10 MW, with at least 15 MWh.

Policy considerations for state regulators.

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The Energy Storage Association has taken positions on ownership policies.

- ES ownership should be open to all stakeholders
- ES assets should be enabled to provide both cost-recoverable T&D services AND revenue-based generator market services.
- In restructured markets, regulated utilities should not be restricted from owning and operating energy storage. Policies that restrict utility ownership by classifying energy storage only as generation should be modified to eliminate this restriction.
- Where vertically integrated markets require classification of ES assets into traditional categories of G, T, D, or Load, initial classification of ES by primary function is appropriate. Categories and criteria for primary function should be defined.
- ES technologies are a unique asset class. New and/or updated regulations and policies on asset classification, ownership, and competition are necessary to recognize and enable the unique functionalities of ES.

Ownership models are emerging, driving state trends.

- States can approach the topic of ES ownership from one or multiple, overlapping models:

	Utility-Centric	Third-Party Centric	Customer-Centric
How is the model managed?	Utilities pay for and own DERs, recovering costs (and taking risks) through ratemaking, whether COS, PBR, or some hybrid.	Third-parties (i.e. non-utility companies) may operate DERs in conjunction with or separately from utility programs.	Customer-owned and software-operated systems respond to electricity rates and optimize to reduce and manage electricity bills.
What are the pros/cons?	Revenues are certain for utilities; utilities are better able to manage D system. Can be hard to stimulate.	Greater opportunity for revenue creation;; regulators have less control.	Requires sophisticated aggregation tools in order to provide grid services; issues of equity are a challenge.
Examples	California utilities; given right to own PV but found it less economic than purchasing.	Texas	

Putting this into perspective for Wisconsin.

- Without a procurement mandate or requirement for including ES in utility, IRPs, what incentives are in place for an ES marketplace to develop?
- PSC guidelines (or mandates) could establish utility goals, and cost recovery mechanisms could be built around the goals.
- Has a performance-based regulation approach tied to new utility business models supporting grid modernization been fully vetted?
- What is the status of state policies governing customer data access and privacy protections? (any effort to move toward a third-party centric model would necessitate privacy safeguards).
- Reconsiderations of how ES is defined in state statute.

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- Improving Safety and Reliability
- Engineering Analysis and Project Support
- Policy Analysis and Regulatory Outreach
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- Industry Outreach

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