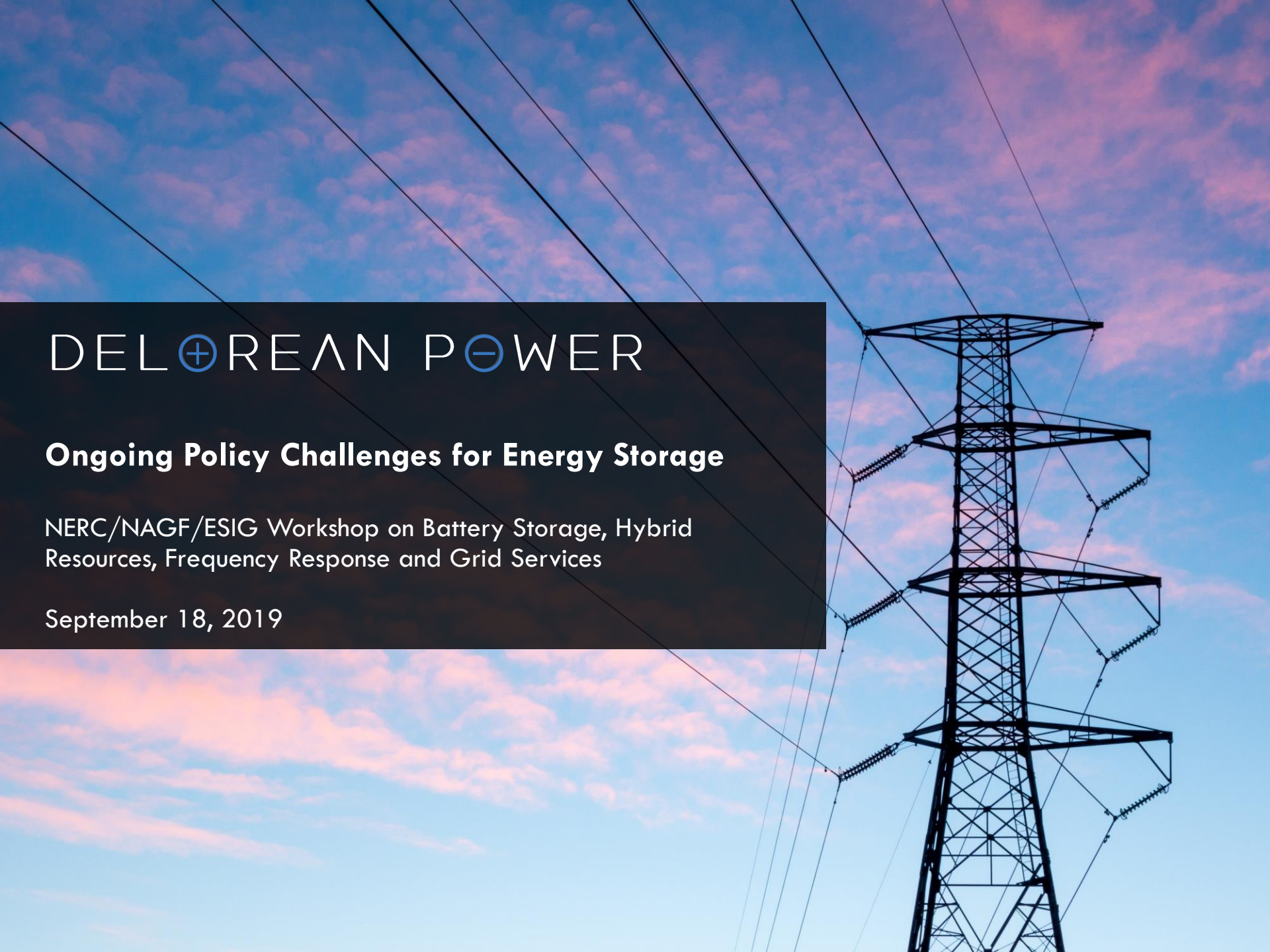


DELOREAN POWER

Ongoing Policy Challenges for Energy Storage

NERC/NAGF/ESIG Workshop on Battery Storage, Hybrid Resources, Frequency Response and Grid Services

September 18, 2019

Overview

- Multiple-Use Applications
- Storage Classification
- Distribution-Connected Storage
- Interconnection
- Hybrid Assets

Multiple-Use Applications

- Exclusive RTO/ISO market participation most often not economic and it can create view of storage as generation which exacerbates classification debate
- RTO/ISO market participation often not the primary use case, but can sweeten project economics and lower service costs
- 841 went a long way in allowing distribution-connected and BTM storage to participate in RTO/ISO markets, but FERC needs to require RTOs/ISOs to allow multi-use applications and ensure freedom to move between energy and ancillary service markets
- States may need to further determine which services are allowed in different domains, which can be provided simultaneously, and when conflicts may arise, but much of this can also be worked out in services contracts
- Metering and accounting practices may also need developed

Storage Classification

- Numerous IOUs, G&Ts, and states are now pointing to Order 841 and suggesting it equated storage to generation
- The opposite is the case – 841 was issued because treating storage like generation was creating barriers to its participation in the markets
- Particularly problematic for distribution-connected storage providing utility and/or customer services where the utility (e.g. co-ops and munis) is party to a power supply contract
- Need to clarify that storage and other technologies that can modify load profiles, make the grid operate more efficiently, and obviate the need for generation and transmission investment do not fall into traditional planning buckets

Distribution-Connected Storage

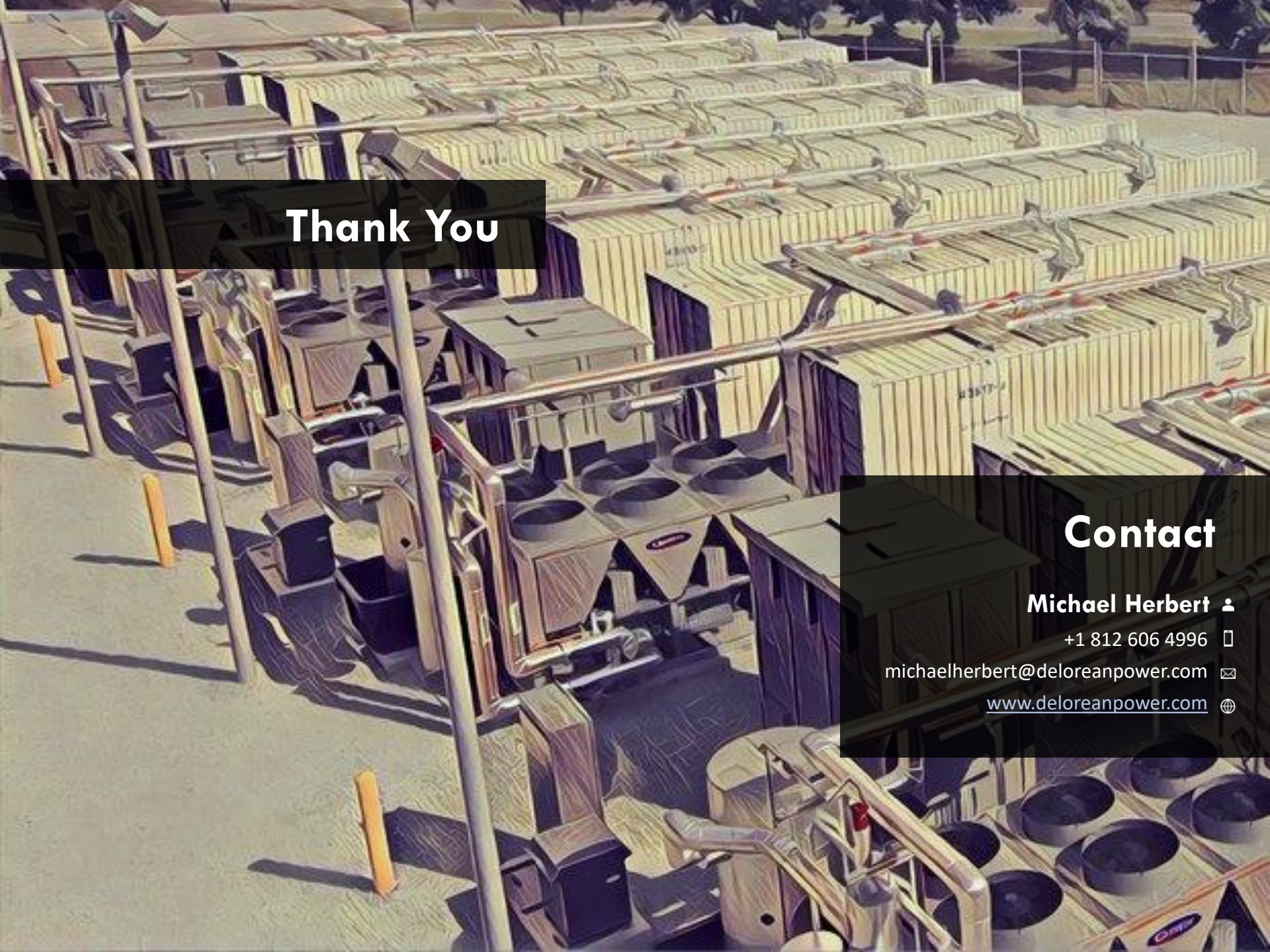
- Ambiguity exists regarding how the RTO/ISO accounts for these types of assets and how utilities may develop them
- Unclear whether storage capacity needs to be added back to utility load, counted as a “generation” or demand response resource for resource adequacy, and/or be available for system-wide emergency events
- Needs to be a stronger distinction between what constitutes a utility resource being used for planning and load management versus a market resource visible to the RTO/ISO and available for dispatch
- Classification should depend on what services are being provided (energy/capacity, ancillary services and/or utility/customer services)

Storage Interconnection

- For transmission-connected, a more tailored process will be necessary that looks at storage as a single, bi-directional resource and allows for firm and non-firm service in both directions
- For distribution-connected, the balance is between triggering FERC jurisdiction and ensuring utilities are not erecting barriers if FERC jurisdiction is not triggered
  - Would be ideal if FERC guarantees wholesale market access (which it hopefully has), interconnection remains in the hands of the states/utilities (to keep it simple), but any disputes regarding anticompetitive behavior in the interconnection processes can be taken to FERC (perhaps under market-based rate rules)
  - Also need more standardization and more confidence in state-jurisdictional interconnection processes to facilitate market participation – a FERC-led workshop and template procedures/agreement for storage interconnection could be useful

Hybrid Assets

- Need to define what a hybrid asset is and what characteristics it must possess
- Need to determine whether they need new RTO/ISO market rules/participation models, or whether they look similar enough to storage, renewables, and/or thermal generation
- If unique assets, then will need to determine how to benchmark new entrants and how to model and dispatch them
- Developers need to be careful what they ask for and regulators need to be careful what reforms they require as the prevailing technologies and their characteristics could change quickly



Thank You

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