

APRIL
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U.S. DEPARTMENT OF
ENERGY



Purchasing Renewable Energy: Best Practices and Strategies

Wednesday, April 12th, 2023
2:00-3:30 pm ET

Ahmad Abbas

Oak Ridge National Laboratory (ORNL)

Agenda

1 Welcome and Introductions

2 Speaker Case Studies

3 Panel Discussions

4 Closing and Audience Q&A

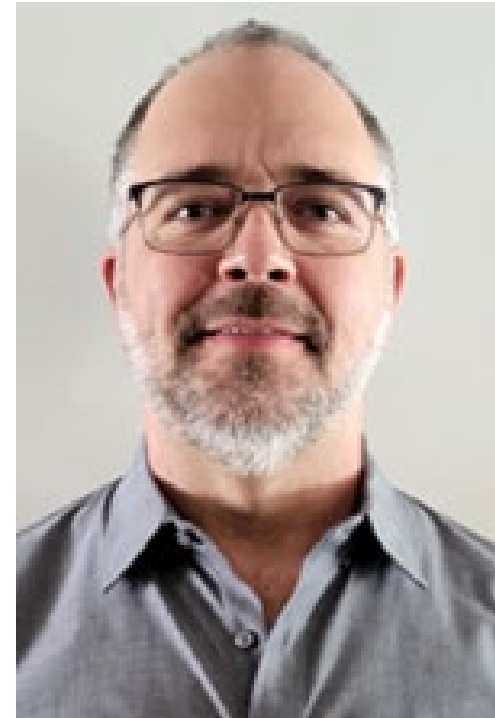
Today's Presenters



Nick Harbeck
Johnson Controls, Inc.



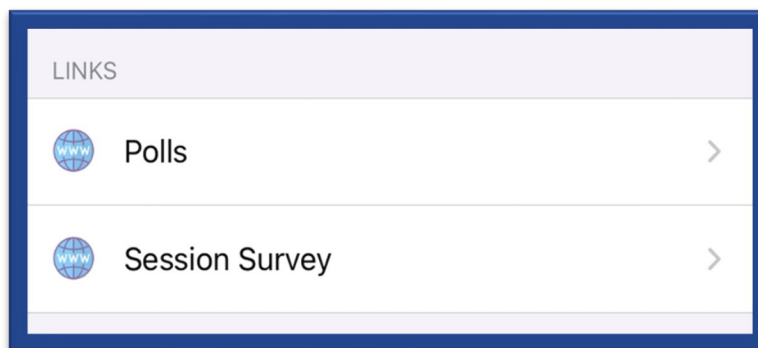
Jeff Hoover
East Penn Manufacturing



Dean Roberts
General Motors

Please open the Summit App to vote in Slido:

Find this session in the Agenda and select the **Polls link**.



Which sector are you affiliated with?

- Public sector
- Commercial sector
- Multifamily sector
- Industrial sector
- Consulting
- Other

Please go to www.slido.com and enter code **#DOE** to respond

In 1 or 2 words, what do you find most exciting or interesting about renewable electricity?

Please go to www.slido.com and enter code **#DOE** to respond

What barriers make it most difficult for your organization to procure renewable electricity?

Please go to www.slido.com and enter code **#DOE** to respond

Nick Harbeck
Johnson Controls, Inc.



Wind Energy Renewable Procurement in Wichita

April 12, 2023 – 2:00-3:30 PM ET

Purchasing Renewable Energy: Best Practices and Strategies

Nick Harbeck, Manager of Regulatory and Environmental Affairs

Wind Energy Renewable Procurement in Wichita

- Johnson Controls' Wichita manufacturing site is a 1.3 million square foot HVAC plant
- The facility is fully powered by a local Wichita wind farm completed in November 2020
- Reinforces Johnson Controls commitment for Smart, Healthy, and Sustainable Buildings.





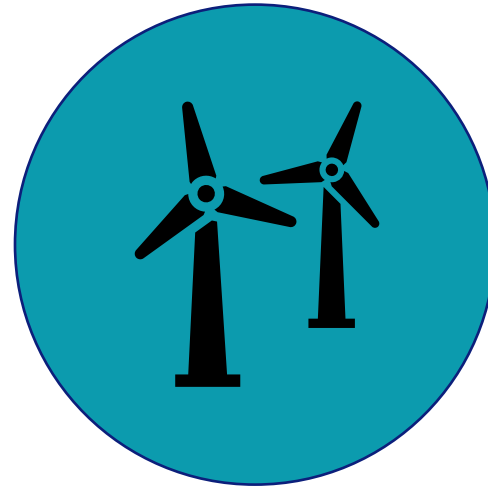
Today's Agenda

- Background
- Procurement Structure
- Application to Wichita Manufacturing
- Future Considerations

Background



Transitioning facilities to renewable energy helps meet Johnson Controls' 55 percent emissions reduction target by 2030.



Evergy's 300MW Soldier Creek Wind Farm completed in 2020. The Wichita facility purchased a share via a Direct Renewable Participation Service Agreement.



Energy cost savings projections are expected to be ~\$2.7 M over 20 years

Procurement Structure



Johnson Controls purchased a share of the wind farm at a consistent rate via the local utility's Direct Renewable Participation Service Tariff over 20 years.

The Wichita Facility purchases enough energy over the course of the year to cover the operational kWh draw.



Billing is generated on a monthly basis, but the agreement provides flexibility as needed.

Application to Wichita Manufacturing

Wichita Produces
100,000+
HVAC products each year

The wind farm generates **>** energy than Wichita consumes



Supplemental RECS can still help fill future growth and demand



Future Considerations



This structure works well for Kansas and may have application in other states.

Once a utility sets up a project, other utilities may try to emulate it and use the success as justification for recreating it.



Jeff Hoover

East Penn Manufacturing

SETTING THE STRATEGY FOR RENEWABLE ENERGY AT EAST PENN MANUFACTURING



Jeff Hoover, CEP, Corporate Energy Manager 12 April 2023

SETTING THE STRATEGY FOR RENEWABLE ENERGY AT EAST PENN MANUFACTURING EXEC. SUMMARY

1. Introductions
2. Drivers for Renewable Energy
3. Quantifying Needs & Setting Goals
4. Determine a Strategy for Renewables Sourcing



EAST PENN MANUFACTURING CO., INC.



- Manufacturers of the “DEKA” and other brands of Lead-Acid Batteries.
- Founded in 1946. Located in Lyon Station, PA
- Family Owned with > 10.5 thousand employees worldwide.
- Lead Acid Batteries are one of the most Recycled Consumer Products.
 - East Penn Recycles:
 - 187 million pounds of Lead and Lead Oxides
 - 8.5 million pounds of Plastics
 - 5.6 million pounds of Acid Reclaimed
 - 41.2 million gallons of wastewater (100% of industrial wastewater) reclaimed

DRIVERS FOR RENEWABLES AT EAST PENN



Who Buys Lead Acid Batteries?

Auto Makers and Big Retailers, Warehouse/Logistics Companies, Data Centers.



i.e., World Leaders in Carbon Reduction Efforts.

Each nominal battery is responsible for ~ 13 lbs. of Scope 1 and 2 Carbon.

Problem Statement: “How do we meet our customer’s Carbon Reduction requests without a sharp increase in pricing?”

Customers are asking for **Carbon Reduction Commitments**, not **Renewable Energy Commitments**.

Our most direct way to reduce Carbon is to procure **Renewable Energy**.

SITE POWER IS AN AVERAGE OF 72 MW ~ 630,000,000 KW-HRS/YEAR

1. Evaluate all sources of Reduction- Efficiency, Power Purchase Agreements, REC's, Onsite Renewables, Off Site Renewables and Offsets.
2. Forecast As-Is CO₂ Production
3. Determine how to Progress to a long-term goal
4. Plan Long-Term Actions for Reductions
5. Communicate the Goals and Plan to your Customers and Stakeholders.
6. Don't Let the Scope 3 Carbon Investigation get in the way of Scope 1 and Scope 2 Carbon Reductions.

CONSIDER MARKET FORCES AND PLAN FOR RENEWABLES

- We believe demand for renewables will increase faster than supply
 - Interconnection, Specialty Materials, and NIMBY-ism.
- We believe rule sets will become more difficult.
- Competing against some very big companies with pricing elasticity.
- Forecast your Renewable Needs and then strategically procure the energy. OK to Over Procure.



GIVEN THESE MARKET FORCES □ FOR LOWEST COSTS, PLAN AND BUY RENEWABLES IN ADVANCE

- Remember, the goal posts are going to change.
- Buy Renewables before you need them for lowest costs. Use Credits and Offsets only as a last resort.
- Understand what is important to developers
 - Cash Flow Commitment, Schedule, Credit rating
- Supply Chains will continue to be an issue.
 - Schedule Hits Common.
- Queues for the RTO's will get longer
- Renewables are Part of The Carbon Reduction



FOCUS ON “VIRTUAL POWER PURCHASE AGREEMENT”

- VPPA’s are usually multi year bilateral agreements.
- Using PJM as a reference: Renewable Developer does the work to connect to the grid.
- Heavy Up-Front Investment by the developer.
- Very Little Up-Front investment by the user.
- Cash Flow from Sale of Power and Credits is the only source of income
- Financing does not happen until the Cash Flows are assured.
- Planning for Future needs leads to lowest cost.

MANY THANKS,



BATTERIES & ACCESSORIES

Questions?- jhoover@dekabatteries.com

Dean Roberts

General Motors



General Motors Renewable Energy Journey

DEAN ROBERTS | APRIL 2023





zero crashes

general motors

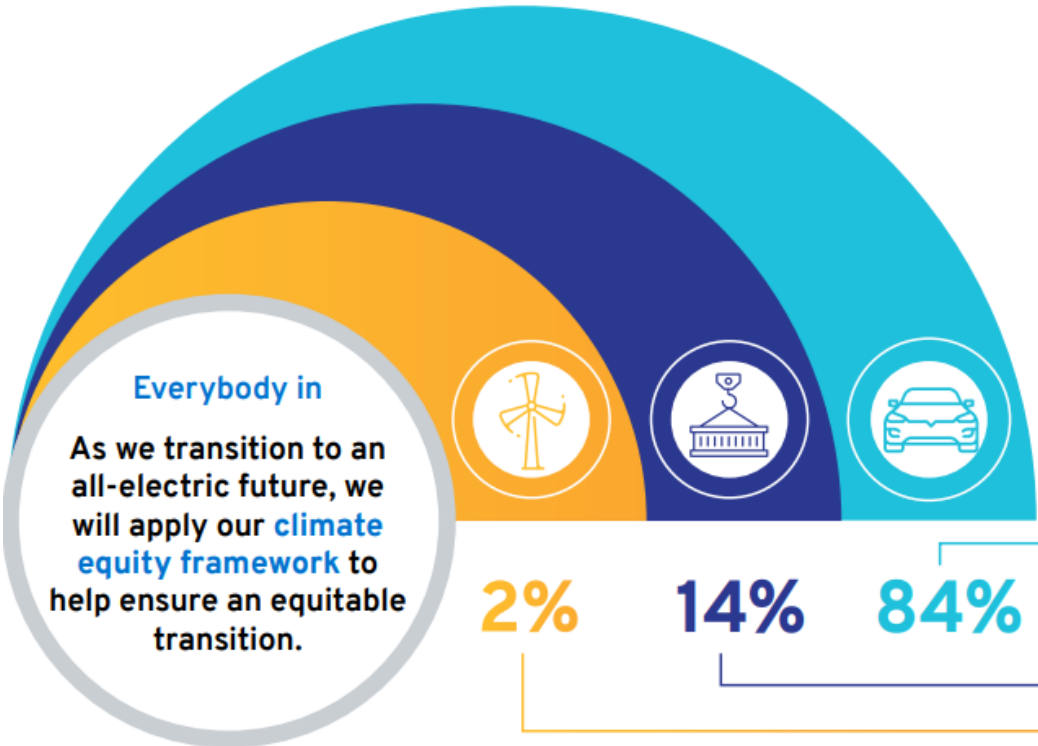


zero emissions



zero congestion

The Journey to Zero Emissions



SCOPE 3—Use of Sold Products¹

Strategic Plans

- Plan to eliminate tailpipe emissions from new light-duty vehicles by 2035.

SCOPE 3—Purchased Services and Supply Chain²

Strategic Plans

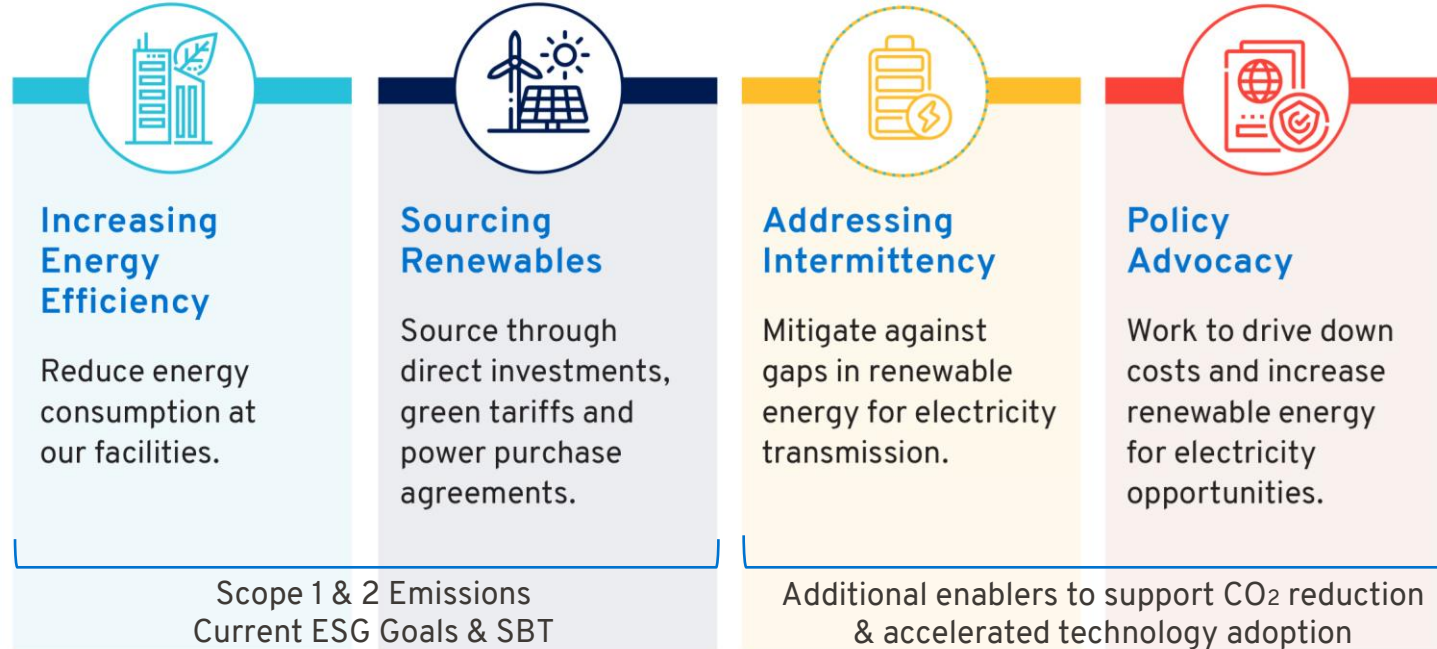
- Inviting our Tier I suppliers to sign the GM Environmental, Social & Governance (ESG) Partnership Pledge to show their commitment to the principles of sustainability and human rights.

SCOPE 1 & 2

Strategic Plans

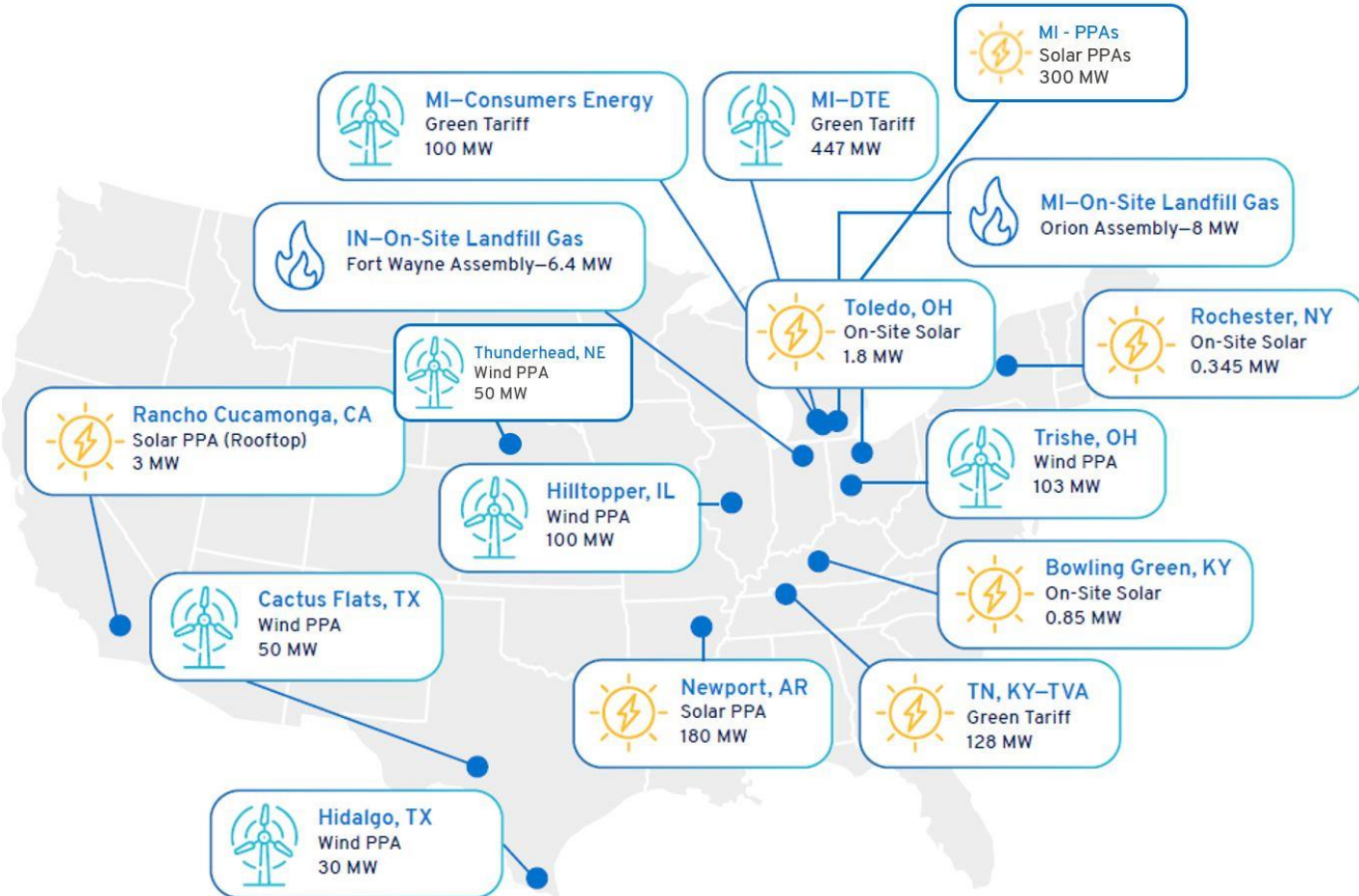
- Plan to source 100% renewable electricity at sites in the United States by 2025 and globally by 2035.

Four Pillar Energy Strategy



Goal: Plan to source 100% renewable electricity at sites in the United States by 2025 and globally by 2035.

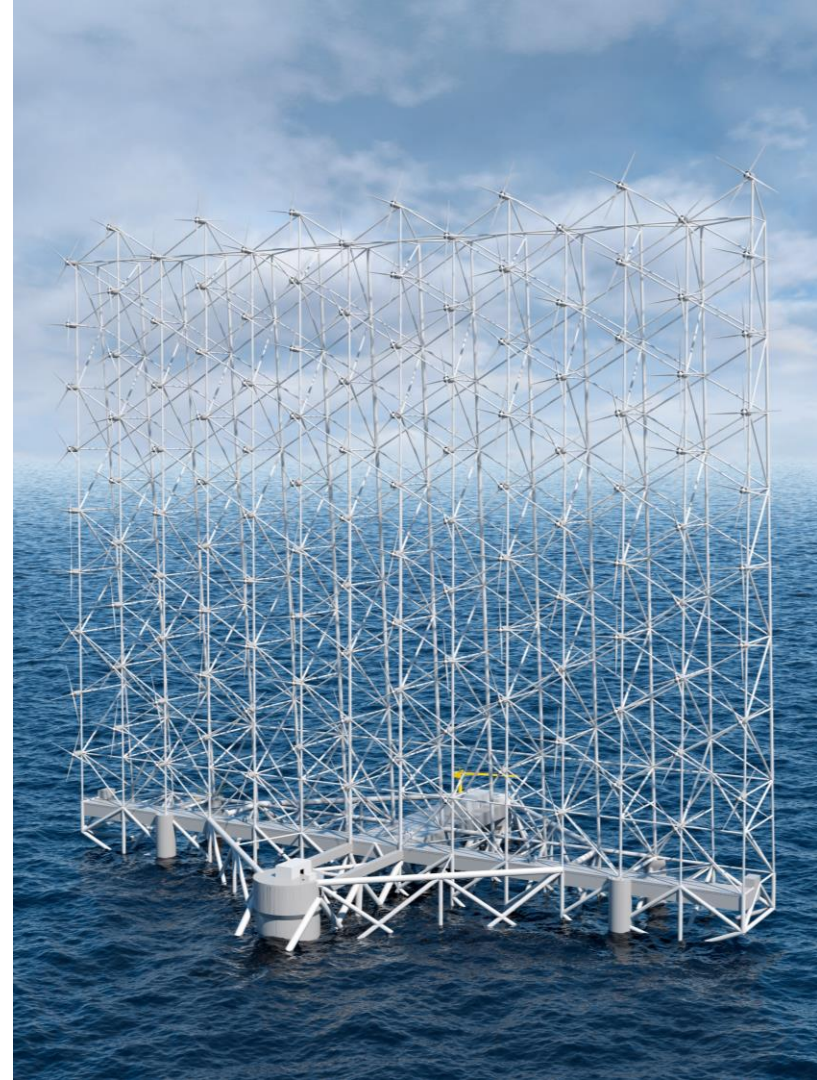
Current US Renewable Energy Footprint



Wind Catching Systems

Investing in Offshore Wind Technology

- GM Ventures made a strategic investment in WCS, a Norway-based offshore wind startup
- WCS is developing an innovative design that is more space efficient than offshore technology, and produces nearly 5x the energy in a single unit, and costs less to maintain
- WCS was the recipient of Fast Company's Innovation by Design Awards in the Sustainability Category



Carbon Tracking



A mix of generators send power to the grid



Sometimes that mix is clean



Sometimes it's dirty



The carbon tracker tells us what the carbon intensity is at a given moment and location



And we plan our energy use accordingly



Solving Policy Barriers to Achieve CO2 Reductions

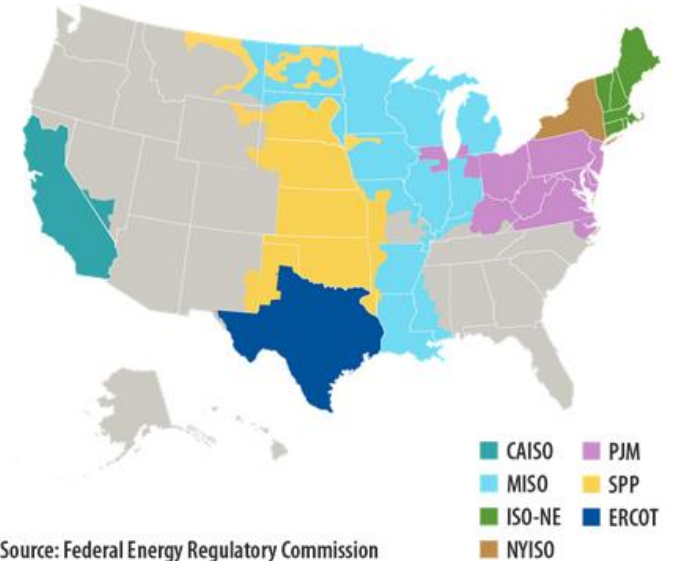


- + Expected increase in electric load demand
- + Bold renewables goals (GM, other companies, gov'ts)
- + More climate change-driven weather events

MUST LEAD TO.....

- Expanded and interconnected transmission infrastructure
- Wholesale market growth to reduce cost to consumers – beyond PJM, MISO, and ERCOT
- Engagement with policy shapers and innovators – CEBA, ACP, RTOs/ISOs – to accelerate the transition

Wholesale Electric Power Markets



Source: Federal Energy Regulatory Commission



Thank you

Panel Discussion

Q & A

Thank You!

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