



Customers First Coalition

November 1, 2017

Power Dialogue:

What is grid modernization... and are there benefits?

Public Service Commission of Wisconsin

Ellen Nowak, Chairperson

Agenda

- Public Service Commission of Wisconsin and grid modernization
 - What is grid modernization?
 - How does the PSCW view grid modernization?
 - PSCW grid modernization related dockets
- PSCW Grid Modernization Survey
 - Who responded
 - Topics included in PSCW grid modernization survey
 - Top five topics as prioritized by utilities and stakeholders
 - Overall results for all respondents
- Next Steps

What is Grid Modernization? It depends who you ask...

EI: “Broadly speaking, this is what grid modernization is all about: replacing distribution lines and deploying new technologies (e.g., distribution management systems, high speed communications, advanced sensors, energy storage) to provide new capabilities to enable a clean energy future.” ([Link to Quote](#))

DOE: “We are working with public and private partners to develop the concepts, tools, and technologies needed to measure, analyze, predict, protect, and control the grid of the future. Our portfolio of work will help integrate all sources of electricity better, improve the security of our nation's grid, solve challenges of energy storage and distributed generation, and provide a critical platform for U.S. competitiveness and innovation in a global energy economy. The grid of the future will deliver resilient, reliable, flexible, secure, sustainable, and affordable electricity.” ([Link to Quote](#))

- While grid modernization is a broad construct with various jurisdictions utilizing the term in a multiplicity of ways, the core tenets of grid modernization are the intersection of new technology with the existing electric distribution grid.

Grid modernization in Wisconsin

- Utilities and stakeholders should drive change and regulators should focus on outcomes
- PSCW is open to innovative proposals from utilities and stakeholders
- Regulator's role is to calibrate and stay informed
- Regulatory model has not changed nearly as fast as technology—this is a good thing
- Commission represents everyone's interest and need to foster respectful and meaningful dialogue

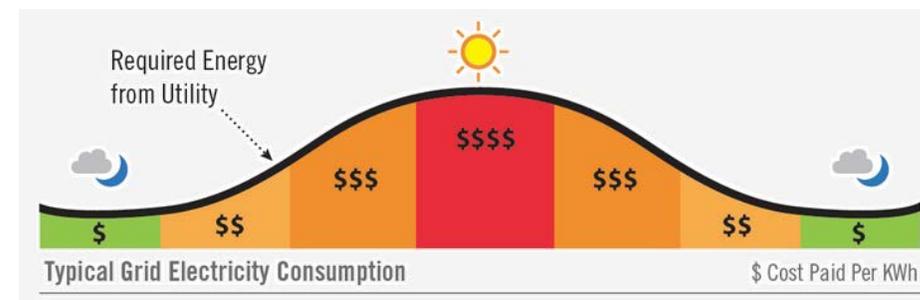
PSCW dockets involving grid modernization topics

- Electric Vehicle Pilots
 - MGE – Charge@Home Pilot Project - Tariff authorized 3270-UR-121 (2016)
- Community Solar
 - MGE – 3270-TE-101 (2016)
 - NSPW – 4220-TE-101 (2015)
 - New Richmond – 4139-TE-102 (2015)
 - River Falls - 5110-TE-102 (2015)
- Market Based Rate Designs
 - WEPCO - 5-UR-108 RTMP Tariff (2017)
 - WPSC - 6690-UR-125 NLMP Tariff (2017)
 - MGE - 3270-UR-121 Sp-3 Tariff (2016)
- Distributed Energy Resources Special Tariffs
 - We Energies - Tariff Restructuring - 5-UR-107 (2015)
 - WPSC - Net Metering - 6690-UR-122 (2015)
 - MGE – Renewable Energy Rider – 3270-TE-102 (2017)



PSCW dockets involving grid modernization topics (cont.)

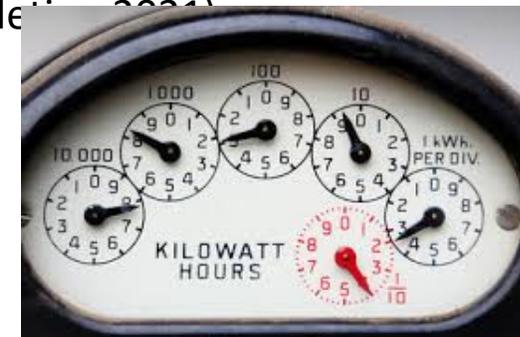
- Customer Information System Investments
 - WPSC – ICE Customer Software Project - 6690-UR-123 (2015)
 - MGE – Customer Information System Upgrade – 3270-UR-121 (2016)
- Customer Centric Rate Designs
 - WPL – Fixed Bill – 6680-UR-120 (2016)
 - WPL – Optional Demand Rate for Residential Customers – 6680-UR-120 (2016)
 - WPSC – Residential TOU Rate – 6690-UR-123(2014) & 6690-UR-124(2015)
 - MGE - Residential TOU Rates - 3270-UR-120 (2014)
 - MGE – Renewable Energy Rider – 3270-TE-102 (2017)
 - NSPW – Residential TOD Rates - 4420-UR-116 (2009)



PSCW dockets involving grid modernization topics (cont.)

Advanced Metering Infrastructure

- 5-GF-263 - AMI Survey of all 12 IOUs and 83 municipal electric utilities in Wisconsin
 - Of the 2.6 million residential electric meters in Wisconsin, 78% are AMI (can be read remotely) and about half of these employ two-way communications.
 - WEPCO will replace 500,000 aging AMR meters with AMI meters (Expected completion January 2019)
 - WPSC will replace 457,000 with AMI meters
 - WP&L will upgrade 18,000 meters to AMI in near Beaver Dam, WI (Expected completion 2019)
 - NSPW currently employs AMR enabled meters and will employ AMI in the future
 - MGE currently employs AMR and has plans for two pilot programs for AMI
 - SWLP is currently replacing the bulk of its meters to AMI
 - Pioneer P&L Co. & Westfield Milling & Electric Co. upgraded to AMI in 2011
 - Municipal Utilities:
 - 20 utilities have AMR or are planning to upgrade to AMR systems in the near future
 - 18 utilities have AMI or are planning to upgrade to AMI systems in the near future



PSCW grid modernization survey respondents

Utilities (and Energy Providers)

Dairyland Power Cooperative
Madison Gas & Electric Company
Municipal Electric Utilities of Wisconsin
Northern States Power of Wisconsin
We Energies
Wisconsin Electric Cooperative Association
Wisconsin Power & Light Company
Wisconsin Public Service Corporation
WPPI

Stakeholders

Citizens Utility Board of Wisconsin
Clean Wisconsin
Customers First Coalition
Initiative for Competitive Energy
International Brotherhood of Electrical Works Local #953
RENEW Wisconsin
Wisconsin Industrial Energy Group
Wisconsin Paper Council

What was in the PSCW's Grid Modernization Survey?

Stakeholders prioritized the following ten topics to help inform Wisconsin's continued grid modernization efforts:

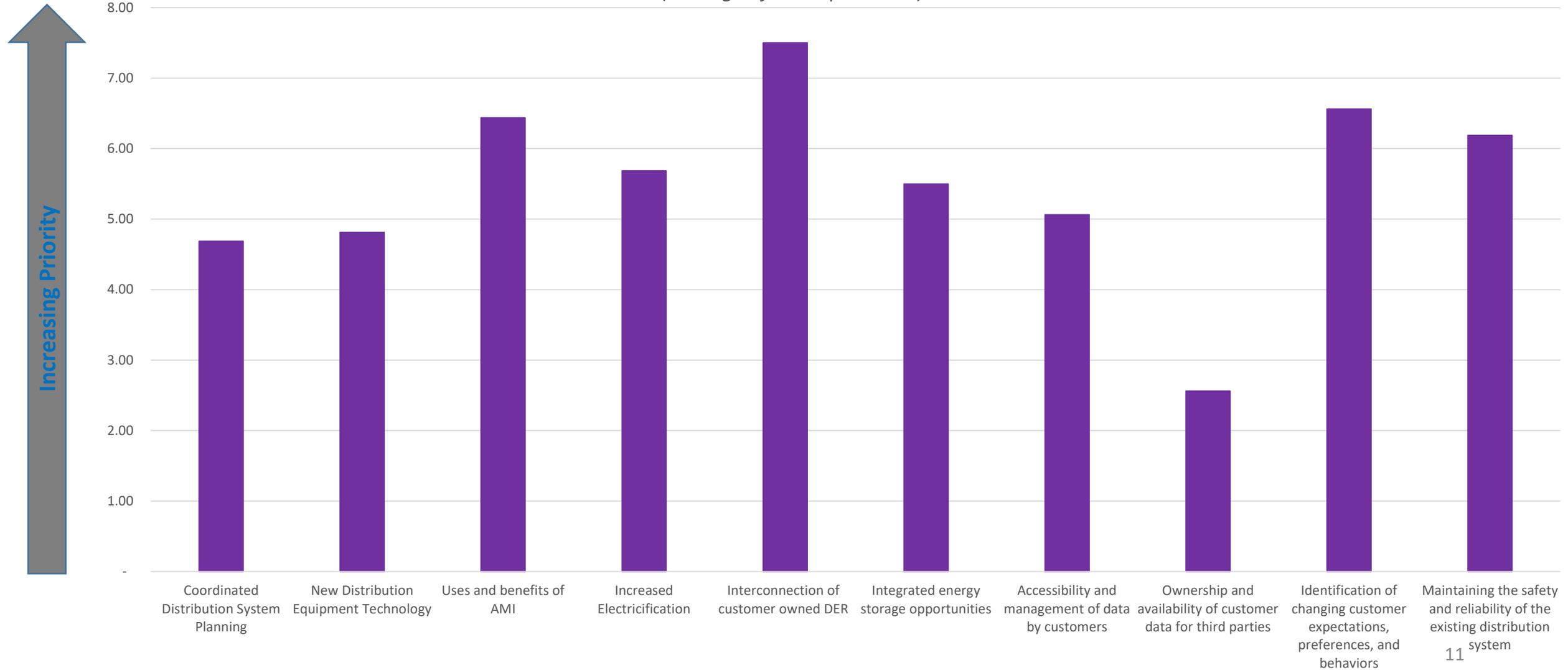
- Coordinated distribution system planning
- New distribution technology (inverters, transformers, remote sensing, predictive outage detection, etc.)
- Uses and benefits of AMI – advanced metering infrastructure
- Increased electrification (cars, pumps, etc.)
- Interconnection of customer owned-distributed energy resources (DER)
- Integrating energy storage opportunities
- Accessibility and management of data by customers
- Ownership and availability of customer data for third parties
- Identification of customers' changing expectations, preferences, and behaviors
- Maintaining the safety and reliability of the existing distribution system, including age and condition issues

Overall Top Five Priorities

1. Interconnection of customer-owned distributed energy resources
2. Identification of customers' changing expectations, preferences, and behaviors
3. Uses and benefits of advanced metering infrastructure
4. Maintaining the safety and reliability of the existing distribution system
5. Increased electrification (cars, pumps, etc.)

Grid Modernization Survey Results

(Average of all respondents)



Utilities' Top Five Priorities

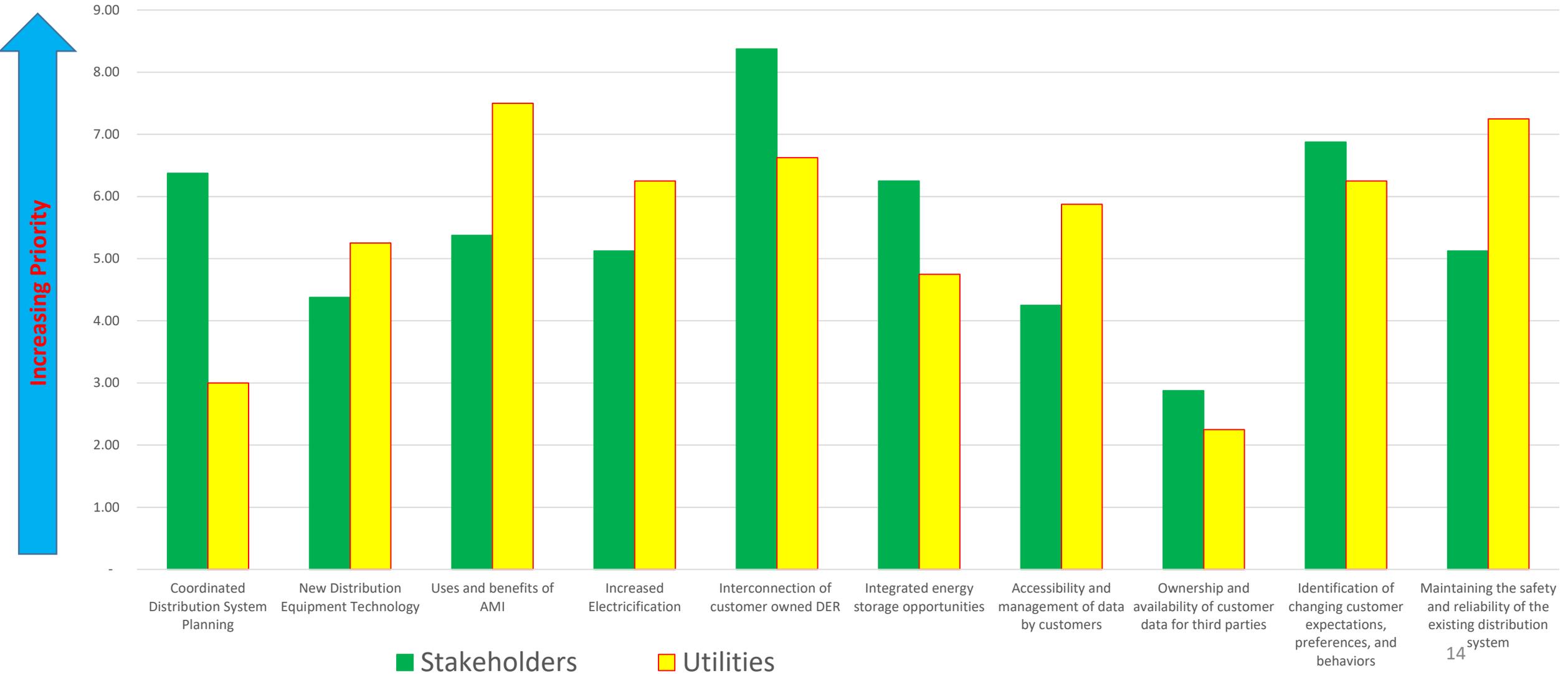
1. Uses and benefits of advanced metering infrastructure
2. Maintaining the safety and reliability of the existing distribution system
3. Interconnection of customer owned distributed energy resources
4. Identification of customers' changing expectations, preferences, and behaviors *(Tied for Fourth Priority)*
4. Increased electrification (cars, pumps, etc.) *(Tied for Fourth Priority)*

Stakeholders' Top Five Priorities

1. Interconnection of customer owned distributed energy resources
2. Identification of customers' changing expectations, preferences, and behaviors
3. Coordinated distribution system planning
4. Integrated energy storage opportunities
5. Uses and benefits of advanced metering infrastructure

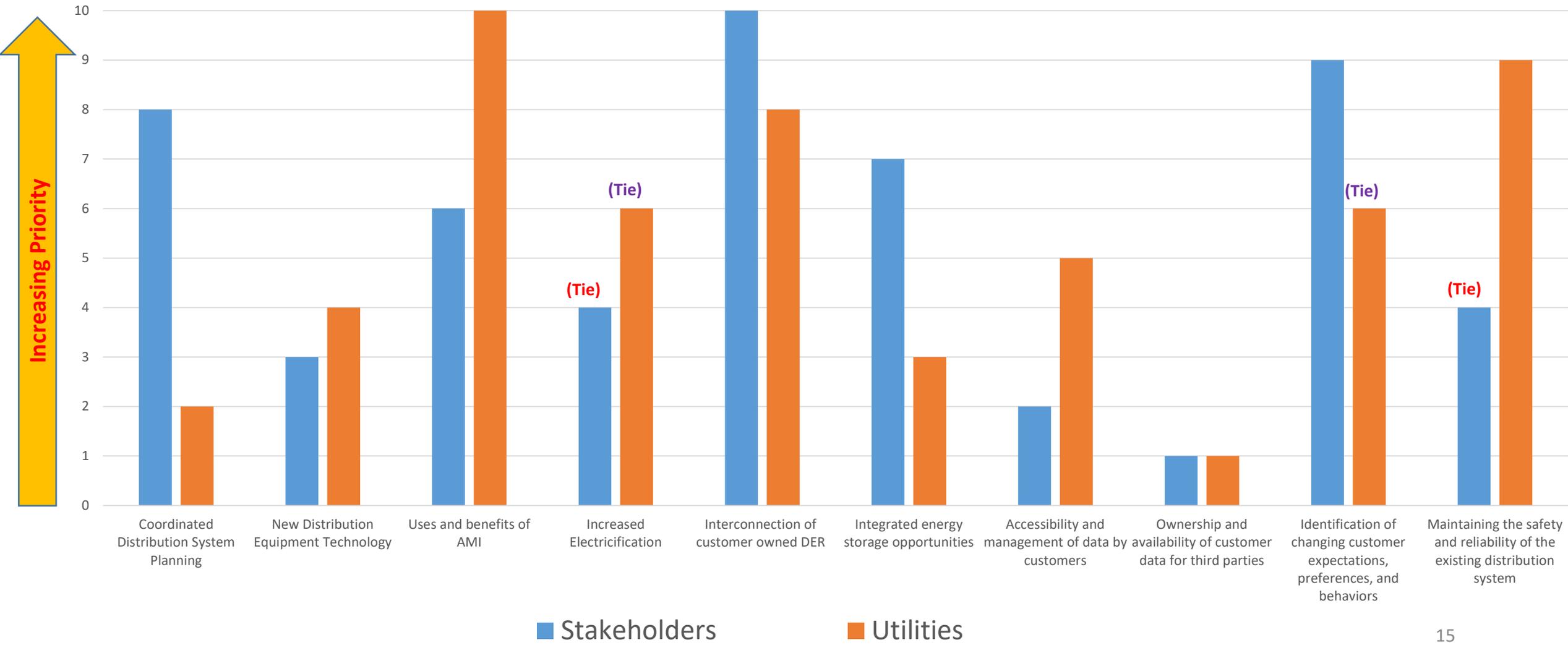
Grid Modernization Survey Results

(Chart below reflects the average responses by each group)



Grid Modernization Survey Results

(Chart below reflects the rank order by each group)



Next Steps

- Facilitate discussion and collaboration between all interested parties outside of a contested rate case setting.
- PSCW will work diligently to educate itself on grid modernization topics to aid in the collaboration.
- Utilities, customers, and stakeholders will drive policy setting process going forward on a case by case basis.
- The PSCW will facilitate information exchanges with grid modernization experts from different states to learn lessons from other jurisdictions.

Thank You