NARUC FINANCIAL TOOLBOX WEBINAR: ADMS/DERMS

NARUC CENTER FOR PARTNERSHIPS & INNOVATION

OCTOBER 12, 2022

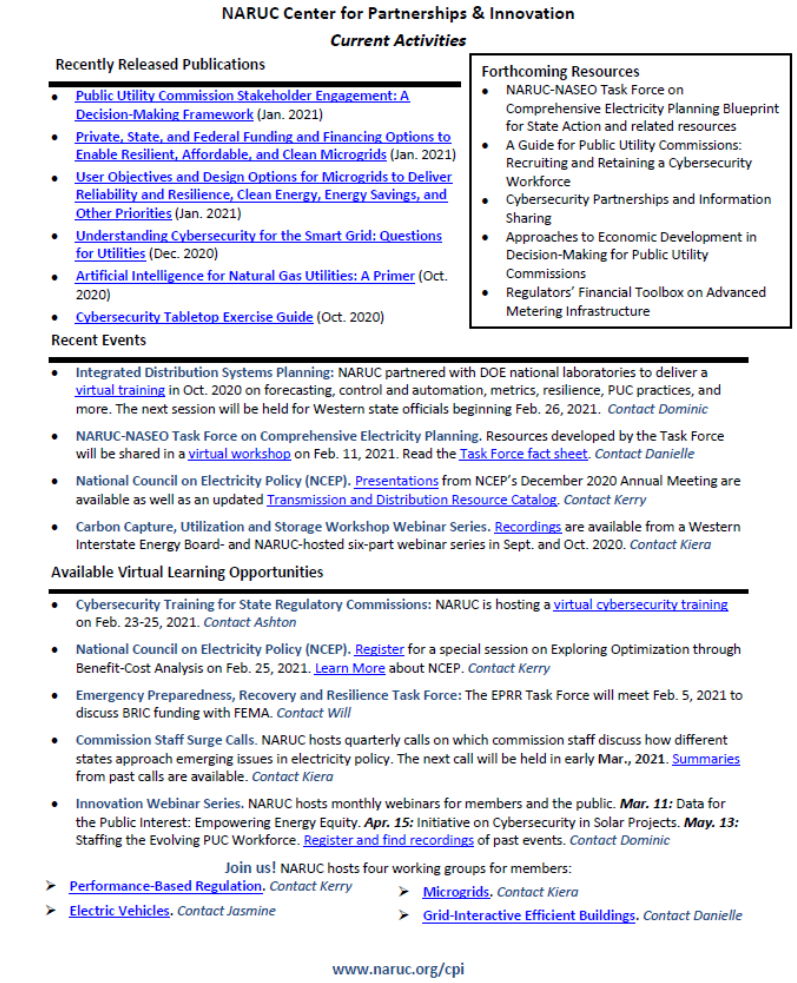
NARUC thanks the U.S. Department of Energy for its support of this resource series

ABOUT NARUC

- The National Association of Regulatory Utility Commissioners (NARUC) is a non-profit organization founded in 1889.
- Our Members are the state utility regulatory Commissioners in all 50 states & the territories. FERC & FCC Commissioners are also members. NARUC has Associate Members in over 20 other countries.
- NARUC member agencies regulate electricity, natural gas, telecommunications, and water utilities.

CENTER FOR PARTNERSHIPS & INNOVATION

- Grant-funded team dedicated to providing technical assistance to members.
- CPI identifies emerging challenges and connects state commissions with expertise and strategies to inform their decision making.
- CPI builds relationships, develops resources, and delivers trainings.



NARUC Center for Partnerships & Innovation

Current Activities

Recently Released Publications

- Public Utility Commission Stakeholder Engagement: A Decision-Making Framework (Jan. 2021)
- Private, State, and Federal Funding and Financing Options to Enable Resilient, Affordable, and Clean Microgrids (Jan. 2021)
- User Objectives and Design Options for Microgrids to Deliver Reliability and Resilience, Clean Energy, Energy Savings, and Other Priorities (Jan. 2021)
- Understanding Cybersecurity for the Smart Grid: Questions for Utilities (Dec. 2020)
- Artificial Intelligence for Natural Gas Utilities: A Primer (Oct. 2020)
- Cybersecurity Tabletop Exercise Guide (Oct. 2020)

Forthcoming Resources

- NARUC-NASEO Task Force on Comprehensive Electricity Planning Blueprint for State Action and related resources
- A Guide for Public Utility Commissions: Recruiting and Retaining a Cybersecurity Workforce
- Cybersecurity Partnerships and Information Sharing
- Approaches to Economic Development in Decision-Making for Public Utility Commissions
- Regulators' Financial Toolbox on Advanced Metering Infrastructure

Recent Events

- **Integrated Distribution Systems Planning:** NARUC partnered with DOE national laboratories to deliver a virtual training in Oct. 2020 on forecasting, control and automation, metrics, resilience, PUC practices, and more. The next session will be held for Western state officials beginning Feb. 26, 2021. *Contact Dominic*
- **NARUC-NASEO Task Force on Comprehensive Electricity Planning.** Resources developed by the Task Force will be shared in a virtual workshop on Feb. 11, 2021. Read the Task Force fact sheet. *Contact Danielle*
- **National Council on Electricity Policy (NCEP).** Presentations from NCEP's December 2020 Annual Meeting are available as well as an updated Transmission and Distribution Resource Catalog. *Contact Kerry*
- **Carbon Capture, Utilization and Storage Workshop Webinar Series.** Recordings are available from a Western Interstate Energy Board- and NARUC-hosted six-part webinar series in Sept. and Oct. 2020. *Contact Kiera*

Available Virtual Learning Opportunities

- **Cybersecurity Training for State Regulatory Commissions:** NARUC is hosting a virtual cybersecurity training on Feb. 23-25, 2021. *Contact Ashton*
- **National Council on Electricity Policy (NCEP).** Register for a special session on Exploring Optimization through Benefit-Cost Analysis on Feb. 25, 2021. Learn More about NCEP. *Contact Kerry*
- **Emergency Preparedness, Recovery and Resilience Task Force:** The EPRR Task Force will meet Feb. 5, 2021 to discuss BRIC funding with FEMA. *Contact Will*
- **Commission Staff Surge Calls.** NARUC hosts quarterly calls on which commission staff discuss how different states approach emerging issues in electricity policy. The next call will be held in early **Mar., 2021**. Summaries from past calls are available. *Contact Kiera*
- **Innovation Webinar Series.** NARUC hosts monthly webinars for members and the public. ***Mar. 11:*** Data for the Public Interest: Empowering Energy Equity. ***Apr. 15:*** Initiative on Cybersecurity in Solar Projects. ***May. 13:*** Staffing the Evolving PUC Workforce. Register and find recordings of past events. *Contact Dominic*

Join us! NARUC hosts four working groups for members:

- Performance-Based Regulation. *Contact Kerry*
- Electric Vehicles. *Contact Jasmine*
- Microgrids. *Contact Kiera*
- Grid-Interactive Efficient Buildings. *Contact Danielle*

www.naruc.org/cpi

Regularly updated CPI fact sheet with recent publications & upcoming events under Quick Links at:

https://www.naruc.org/cpi-1/

PAST FINANCIAL TOOLBOX TOPICS

- Resilience Technologies
- Communications Networks
- Advanced Metering Infrastructure
- Cloud Computing
- Building Electrification
- Community Solar

Resources

- **Webinar: Regulators' Financial Toolbox: Resilience Technologies** August 25, 2021 from 3:00-4:30 pm ET
  The Regulator's Financial Toolbox series examines regulatory issues where technology meets bookkeeping. In this 90 minute webinar, speakers will address technology, economic, and accounting considerations for resilience technologies. This webinar will explain current resilience technologies, utilities benefits, and regulatory considerations such as useful life, inclusion in rate base, and other decision-making information.

  Moderator: Commissioner Carrie Zalewski, Illinois Commerce Commission

  Speakers:
  Jennifer Kallay (Synapse Energy)
  Dr. Robert "Bobby" Jeffers (Sandia National Labs)
  Leuwam Tesfai (California Public Utility Commission)
  Julio Romero Aguero, Quanta Technology

  View speaker biographies and presentations
  View recording
  View Summary

- **Webinar: August 10 Regulator's Financial Toolbox: Communications Networks.**
  The Regulators' Financial Toolbox series is where technology meets bookkeeping. On the Communications Networks Toolbox webinar, regulators will hear multiple perspectives on how communications networks work; what is unique about distribution system and grid edge communications vis a vis the distribution system and bulk power system communications; what their benefits are to the electricity system; and considerations specifically for regulators. Like many things, the perfect communications solution will be up to the jurisdiction, but this webinar will provide a framework for making decisions and help regulators be prepared to engage with utilities on this thorny issue.

  Moderator: Gladys Brown-Dutrieuille, Pennsylvania PUC

www.naruc.org/cpi-1/electricity-system-transition/valuation-and-ratemaking/

Resources available:

- Presentations
- Recordings
- Summary briefs with links to more detailed information

MODERATOR

VICE CHAIR JOSEPH SULLIVAN, MINNESOTA PUBLIC UTILITIES COMMISSION

SPEAKERS

CHRISTOPHER VILLARREAL, PLUGGED IN STRATEGIES

ALI IPAKCHI, OPEN ACCESS TECHNOLOGY INTERNATIONAL, INC. (OATI)

TED BURHANS, SMART ELECTRIC POWER ALLIANCE (SEPA)

COMMISSIONER KATHERINE PERETICK, MICHIGAN PUBLIC SERVICE COMMISSION

- Please submit questions through chat or Q&A at any time.
- Q&A session after all four presentations.

A System In Transition

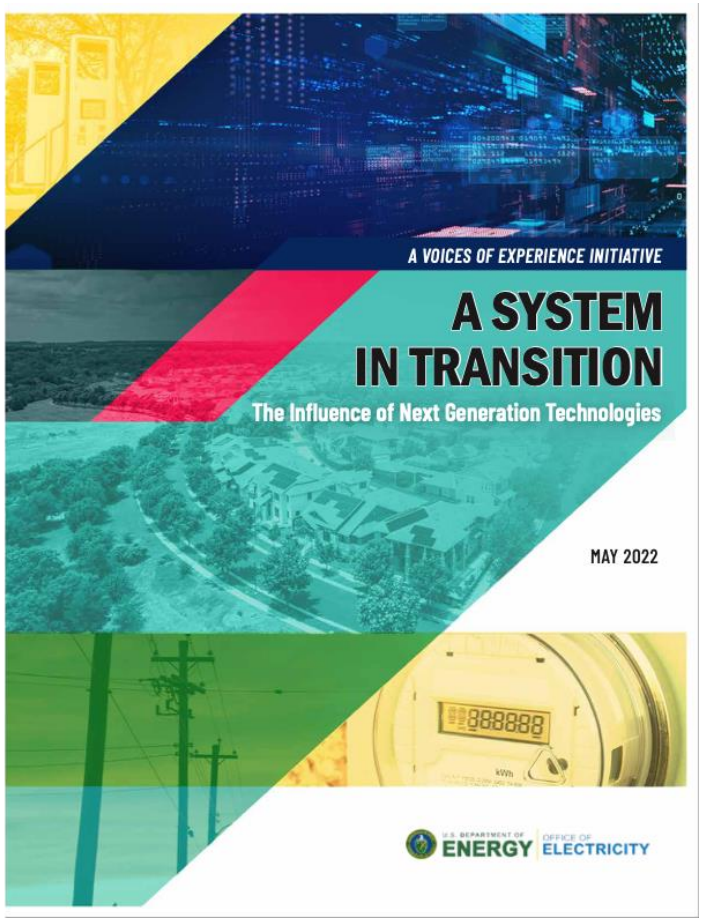
An Overview of Newest Voices of Experience Report: Focus on Distribution Controls

NARUC Financial Toolbox on ADMS/DERMS

October 12, 2022

U.S. DEPARTMENT OF ENERGY | OFFICE OF ELECTRICITY

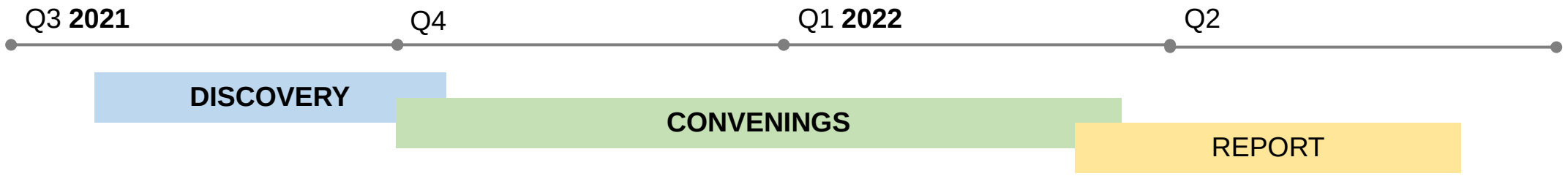
Introduction



- Building from the foundation established in the *Voices of Experience* series
- Findings represent perspectives of state energy regulators shared in multiple conversations
- Regulators identified 4 priority topics and coordination with NARUC ensured diversity among states and market structures
- The four technology areas represent the complexity, and the opportunity, grid modernization presents to regulators
- Informed by review of over 100 dockets

Initiative Overview

- OE-funded study for peer learning and regulator perspectives
- Discovery meeting with commissioners and staff to confirm topics
- 5 multi-state convenings with nearly 200 participants from 26 states
- Report findings are drawn from those conversations and highlight perspectives, needs, concerns and objectives of commissions
- A complementary objective to identify areas of potential assistance



Representative Technology Areas

- **Distribution Control Technologies**
- **Advanced Metering Infrastructure (AMI)**
- **Electric Vehicles**

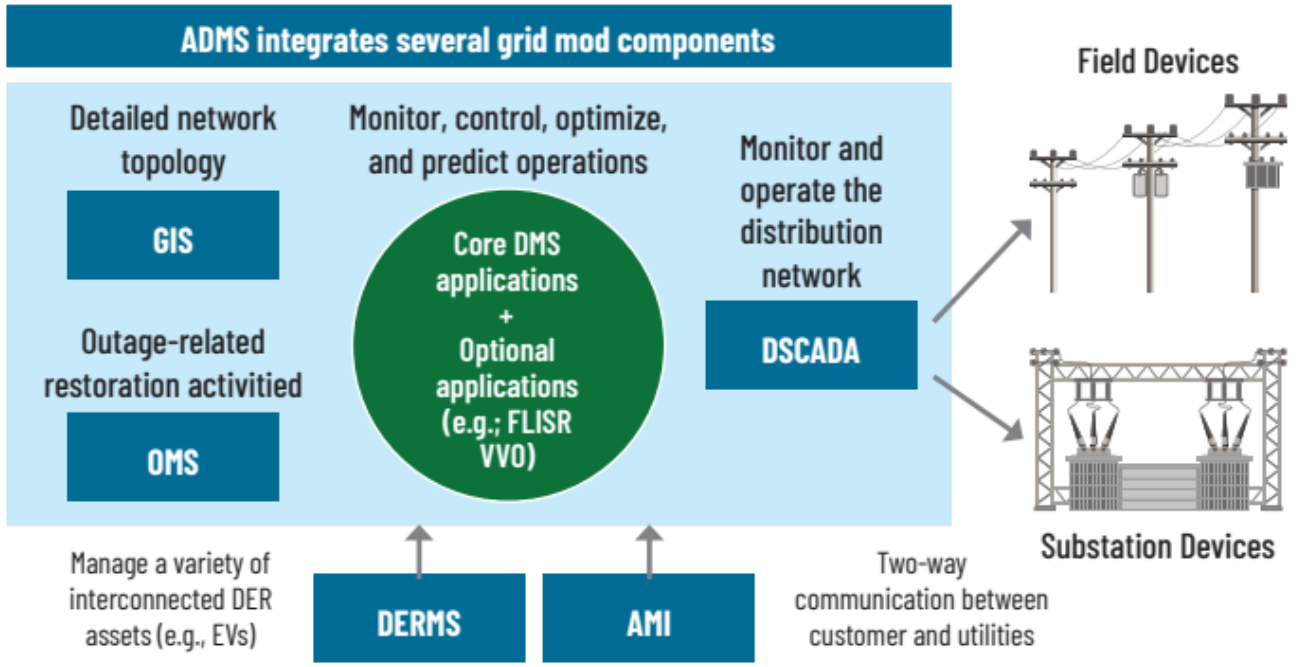
Additional focus on:

- **Data**
- **Coordination between state agencies to support EV deployment**

What this report is…and isn't

- **The collective voice of regulators**
- **Not a "how-to" guide**
- **Not one-size-fits-all**
- **What's in the report**
  - Insights
  - Questions
  - Powering knowledge
  - Commission actions
  - Battery of resources

Distribution Controls Suite



Source: Adapted from a DOE Grid Modernization Lab Consortium presentation for Distribution Systems and Planning Training from Tim Wolf March 7-8, 2019. https://e9radar.link/9et

Definitions of Distribution Control Technologies

ADMS – a software platform that integrates numerous utility systems and provides automated outage restoration and optimization of distribution grid performance.[1] It gives utilities the capability to proactively manage day-to-day maintenance, peak demand, optimization, and repair efforts. It acts as a centralized repository of data and functions, and it will prescribe and coordinate actions utilizing information from across the utility's distribution system, taking into account renewables or DERs on the system.

DERMS – a software-based solution that increases an operator's real-time visibility into the status of distributed energy resources and allows distribution utilities to have the heightened level of control and flexibility necessary to more effectively manage the technical challenges posed by an increasingly distributed grid.[2] It is a peer to ADMS.

FLISR – technologies and systems that automate power restoration, making outages shorter and lessening their impact. Such systems involve numerous components involving automated feeder switches and reclosers, line monitors, communication networks, distribution management systems (DMS), outage management systems (OMS), SCADA systems, grid analytics, models, and data processing tools.[3]

Distribution Controls

- These technologies provide greater visibility into operations of distribution system.
- With greater amounts of DER, these technologies can help utilities, along with regulators and other stakeholders, better understand impacts on distribution system.
- However, understanding needs and benefits are conditional upon actual need and current and future amount of DER
- Aligning these technologies with broader distribution system planning efforts can help identify when and where these technologies are needed

Four I's of Distribution Controls

The following four aspects were noted as important considerations when evaluating proposals for distribution control technologies.

1. INTERFACES | What other utility and/or customer systems or technologies will interact with the investment?

2. INTEGRATION | How will the technology seamlessly integrate with other systems?

3. INTERDEPENDENCIES | What other investments do the benefits for the investment depend on?

4. INTEROPERABILITY | Will the other systems and technologies be able to communicate with each other?

What we heard

- Steep learning curve
- Need to better understand how it works and is integrated with other systems
- Planning is important!
- How to identify when is the right time to invest?

Distribution Controls Challenges

- Identifying needed functionality
- Determining timing for implementation
- Obtaining the necessary technical expertise
- Learning from other jurisdictions

Questions Commissions Are Asking

- What is the importance of distribution controls for achieving the future vision?
- When are the capabilities of distribution controls needed to support resilience and reliability?
- How will distribution controls systems integrate with or facilitate DER?
- What is needed to support new consumer technologies?
- Are there alternatives and what are their benefits or limitations compared to the proposed grid controls?
- How are the benefits of these technologies quantified or valued? (e.g., DER vs. energy efficiency vs. outages)
- How much control over DER does the utility need?
- What integration with the existing system is needed and how will that be accomplished?
- What is the level of data quality needed to operate and maintain the system effectively?
- To what extent are the technologies providing an enabling platform to other parties?

Resource examples

- DOE Voices of Experience Utility Insights into ADMS
  - https://www.energy.gov/sites/prod/files/2015/02/f19/Voices%20of%20Experience%20-%20Advanced%20Distribution%20Management%20Systems%20February%202015.pdf
- Kentucky
  - PSC sought more information from utility about need for ADMS/DERMS due to low solar adoption and whether other technologies were more appropriate
  - https://psc.ky.gov/pscscf/2020%20cases/2020-00350/20210924_psc_order.pdf
- Virginia
  - Conditional approval of DERMS investment with subsequent reporting requirements and would meet Order 2222 and PJM requirements
  - https://scc.virginia.gov/getattachment/e8e72f65-b3a7-45b3-a395-1f34431715c5/DEV-Grid-Transformation-Final.pdf

Thank you!

Research Team:

- Cameron Brooks (E9 Insight)
- Chris Villarreal (Plugged In Strategies)
- Tanya Burns (Arara Blue Energy)

Resources:

- Report: https://e9radar.link/DOE/NxGen
- Highlights: https://e9radar.link/NxGenHighlights
- Article: https://www.energy.gov/oe/articles/system-transition-report

NARUC Toolbox Webinar: ADMS/DERMS

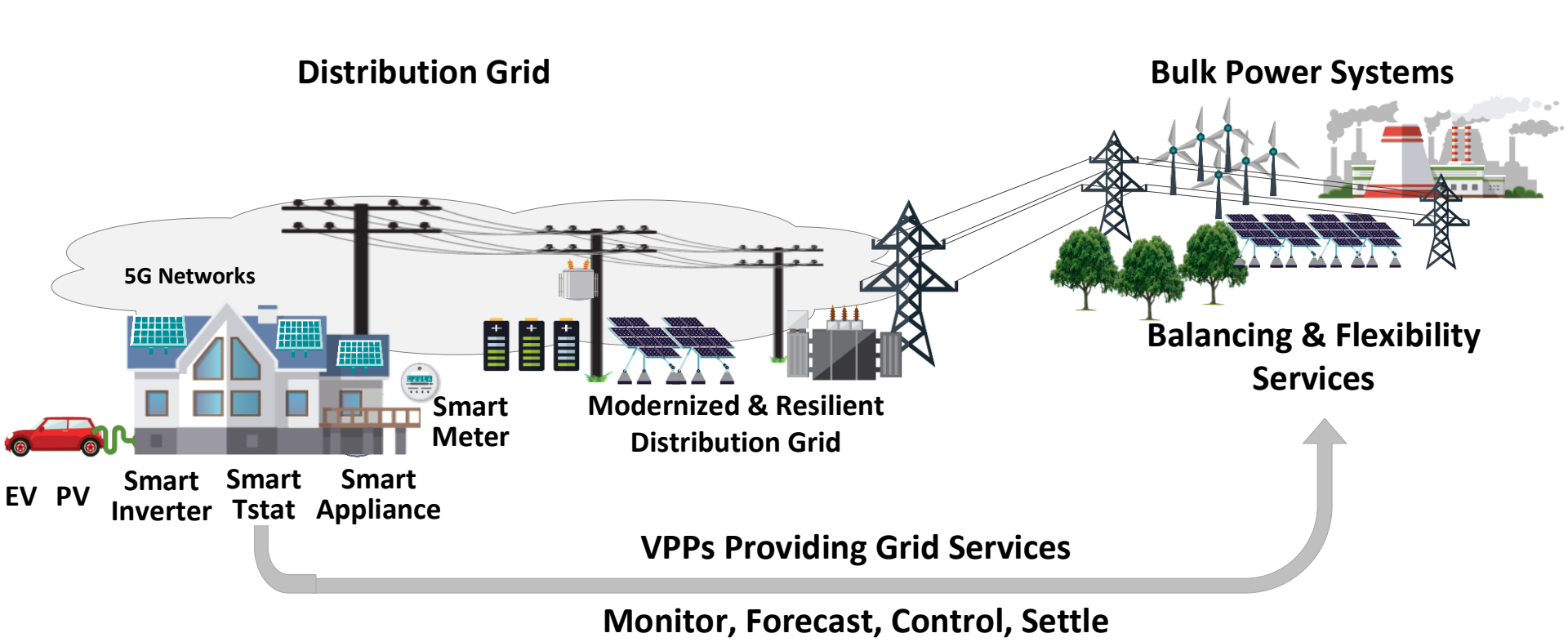
Ali Ipakchi

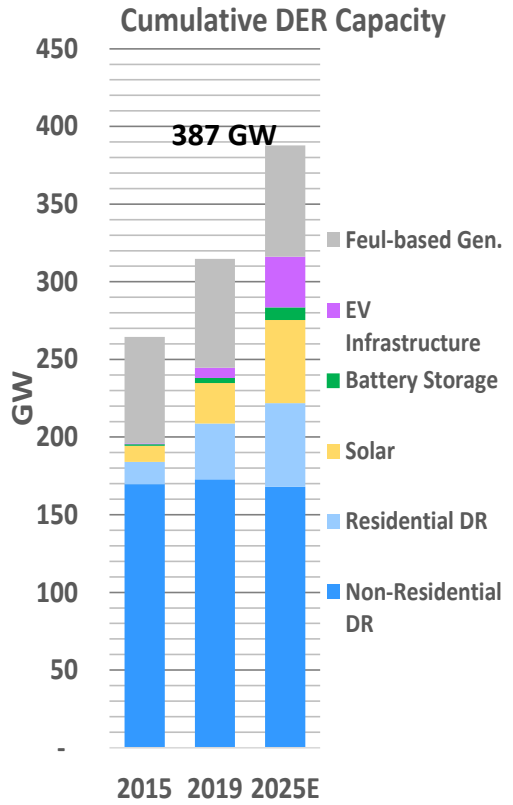
Executive VP,

Open Access Technology International, Inc.

October 12th, 2022

DR/DERs Emerge as Economic & Reliability Resources





Source: Wood Mackenzie – www.woodmac.com

ADMS and DERMS

Distribution Grid Reliability: SAIDI, CAIDI, SAIFI

Utility Owned Grid Assets

Operational Economics & Reliability/Resilience Support

Customer, 3rd Party & Utility Owned Resources

ADMS

DMS

- Situational Awareness
- Switching Configuration
- Voltage & Power Quality
- FLISR

OMS

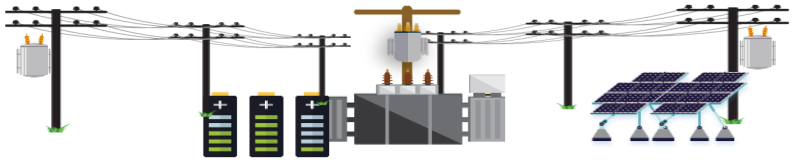
- Outage Detection
- Outage Restoration
- Mobile Crew Mgmt

D-SCADA

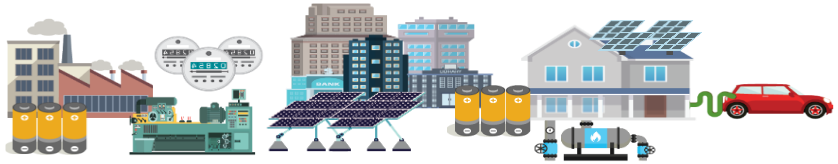
DERMS

- Programs, Enrollments & Qualifications
- Aggregations VVPs & Grid Services
- Forecasting & Optimization
- Scheduling, Dispatch & Controls
- Monitoring & Verification
- Settlements

IoT-SCADA



Control Center Operations

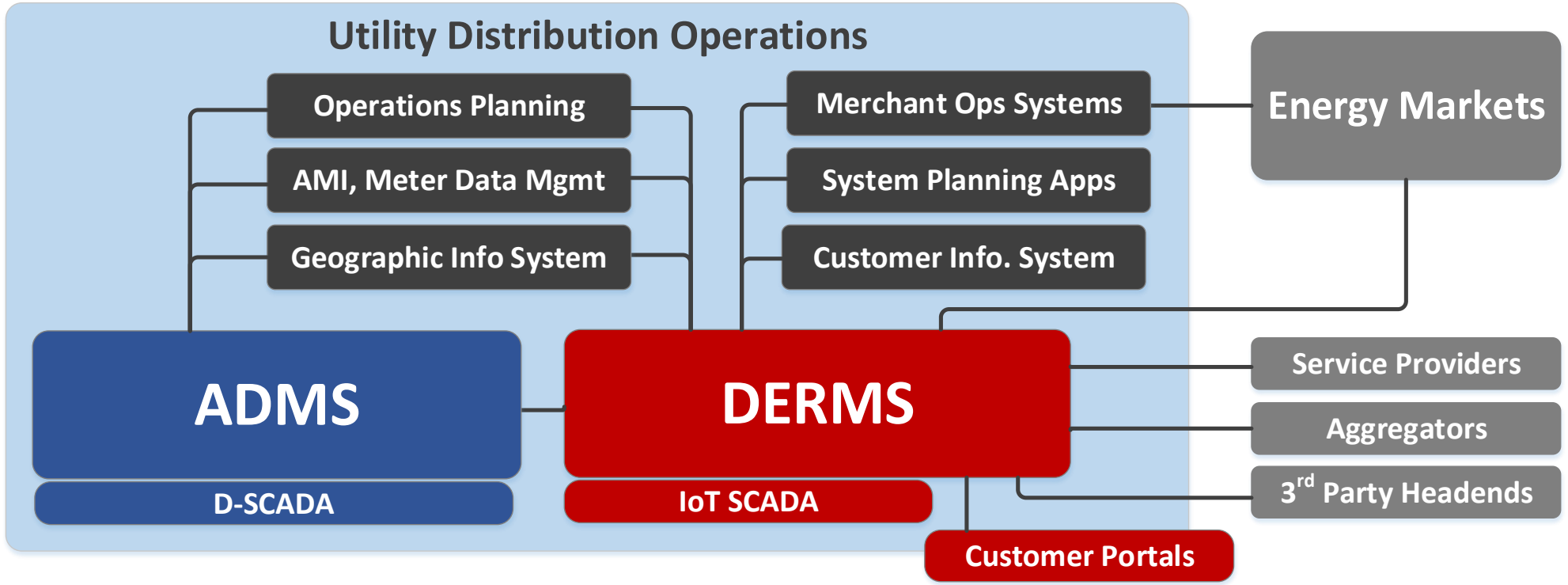


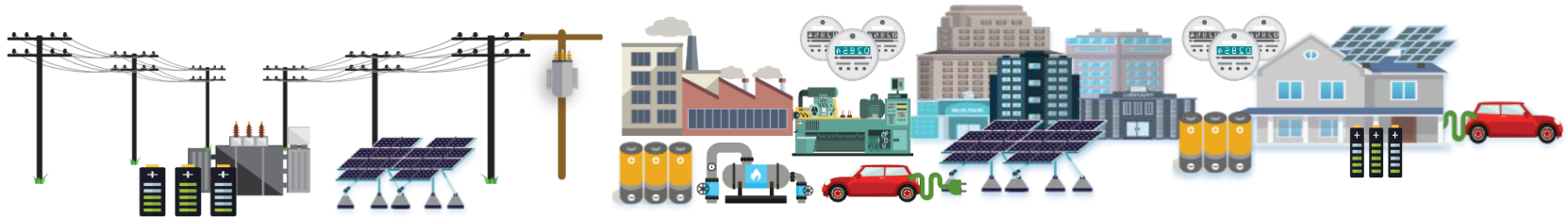
Customer Services & Commercial Operations

What groundwork needs to be laid before deployment of ADMS and DERMS?

- Projected Requirements: Functions, Scale, Performance and Cyber Security
  - *Load growth & customer DER adoption rate, IRP projections, resiliency needs, ….*
- Systems Integration Requirements, and Data Availability
  - *Operations and customer facing requirements; Process and Data Integration; GIS data and distribution network parameters*
- Organizational/Operational Alignment
  - *Distribution System Operations, Customer Services, System and Commercial Operations*
  - *Roles and Responsibilities, Business Process Coordination*

Systems Integration





What are the costs associated with deployment of ADMS and DERMS?

ADMS

Typically On-Premise Deployment

- **Initial Costs**
  - *License: Platform and selected applications*
  - *Hardware Costs: Servers, data communications*
  - *System Staging: Hardware, software and telecom Integration*
  - *Systems Integration: GIS, Asset Management, AMI, etc.*
  - *System configuration: Network modeling, One-lines, etc.*
  - *Field deployment, Integration and Configuration: RTUs, Alarming, etc.*
  - *Training and Acceptance Testing*
- **On-Going Costs**
  - *System Maintenance*
  - *Functional and Software upgrades*
  - *Help-Desk Support*

DERMS

Typically Cloud-Based Deployment

- **Initial Cost**
  - *License: Module/function, use cases, and scale*
  - *Solution configuration and initial set-up*
  - *System integration: CIS, AMI/MDMS, GIS, SCADA, ADMS - scope & requirements*
  - *Field integration scope & requirements*
  - *Training & Acceptance Testing*
- **On-Going Costs**
  - *Cloud-based system access – Monthly Fee*
  - *Secure field integration – Telecom Fees*
  - *Data storage, and special performance requirements*
  - *System Maintenance*
  - *Functional and Software upgrades*
  - *Help-Desk Support*

How are utilities paying for ADMS and DERMS?

ADMS

- **IOUs**
  - *Rate-Based*
  - *System Reliability Justification*
    I. D-SCADA
    II. OMS
    III. DMS
- **Coops and Munis**
  - *Cost-Benefit Assessment*
  - *Targeted scope and functions*

DERMS

- **IOUs**
  - *Rate-Based*
  - *Customer Service, supply economics and reliability justification*
    - Combined with Demand Response (DRMS) applications
    - Targeted scope and functions
- **Coops**
  - *Shared implementation at G&T level*
  - *Support customer resilience needs (Microgrids)*

How have ADMS and DERMS been deployed by utilities across the country?

- Typically two separate systems, but integrated
  - *Smaller Utilities: D-SCADA <-> DRMS/DERMS*
  - *Larger Utilities: DMS/D-SCADA <-> DRMS/DERMS*
- DMS typically covers the primary distribution circuits focused on flows, voltages and network configuration
- DERMS typically deals with grid-edge and behind-the-meter (BTM) assets, programs, contracts and tariffs, as well as microgrids
- FERC Order 2222, integration of DERs with bulk power markets enhanced the need for DMS – DERMS integration in support of DSO operations

Is phasing in or scaling up an option with early ADMS and DERMS investments?

- Yes phasing and scaling up is a viable option
  - *with the growing adaptation of DERs and electrification, and the increased value of demand-side flexibility for reliable power system operations and enhanced customer resilient, it is important that the selectyed solution architecture support the required expansion in functionality, scale and performance.*

Thank You!

Smart Electric Power Alliance

SEPA DERMS Collaborative Study and Learnings

October 12, 2022

Clean + Modern Grid

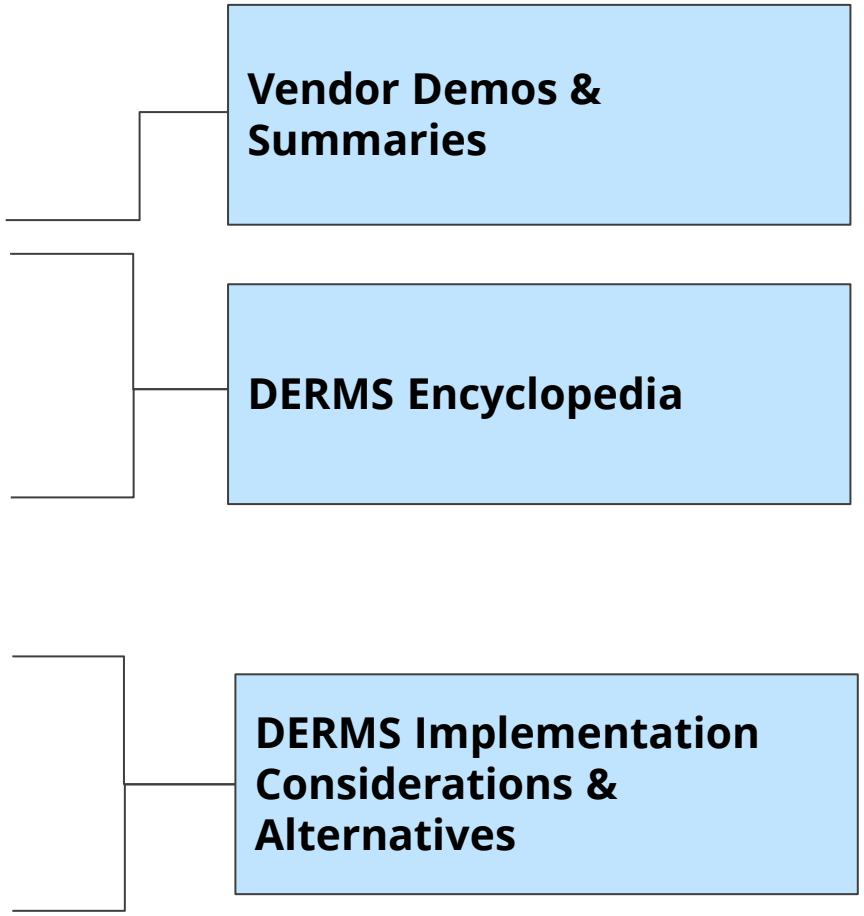
Regulatory and Business Innovation | Grid Integration | Electrification

Ted Burhans
Director, DER Technology

Project Review - Scope

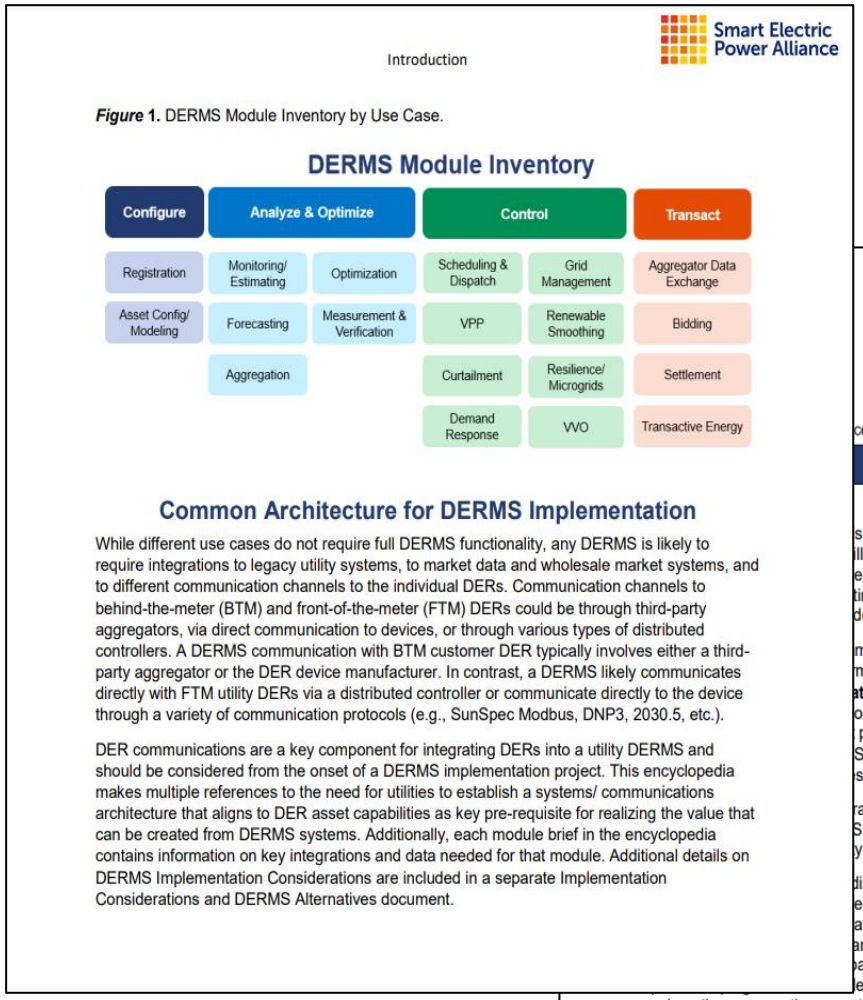
Convene a cohort of utilities (task force) to review the DERMS landscape

- Identify and compare the many emerging variants of DERMS and DERMS modules
- Develop use cases to create a menu of DERMS modules
- Articulate options to DERMS (alternatives) to streamline discussions on the value of DERMS internally and with regulators
- Identify key DERMS implementation considerations



Encyclopedia of DERMS

- **Overview of functions**
  - Use cases supported
  - Explanation of interactions with other systems
  - Supported DERs
- **Market Availability**
  - Phase of market adoption
  - Vendor support
  - Example utility projects
- **Technical Considerations**
  - Pre-Requisites
  - Key Integrations and Data Requirements



Introduction

Smart Electric Power Alliance

Figure 1. DERMS Module Inventory by Use Case.

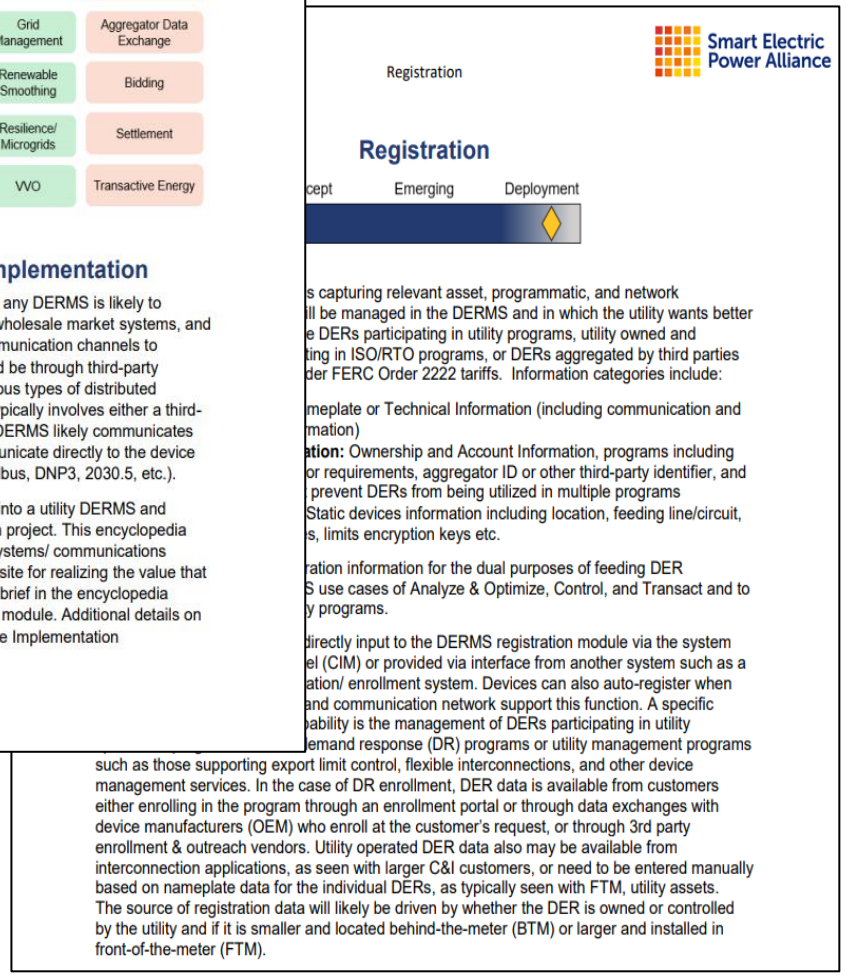
DERMS Module Inventory

Configure	Analyze & Optimize		Control		Transact
Registration	Monitoring/ Estimating	Optimization	Scheduling & Dispatch	Grid Management	Aggregator Data Exchange
Asset Config/ Modeling	Forecasting	Measurement & Verification	VPP	Renewable Smoothing	Bidding
	Aggregation		Curtailment	Resilience/ Microgrids	Settlement
			Demand Response	VVO	Transactive Energy

Common Architecture for DERMS Implementation

While different use cases do not require full DERMS functionality, any DERMS is likely to require integrations to legacy utility systems, to market data and wholesale market systems, and to different communication channels to the individual DERs. Communication channels to behind-the-meter (BTM) and front-of-the-meter (FTM) DERs could be through third-party aggregators, via direct communication to devices, or through various types of distributed controllers. A DERMS communication with BTM customer DER typically involves either a third-party aggregator or the DER device manufacturer. In contrast, a DERMS likely communicates directly with FTM utility DERs via a distributed controller or communicate directly to the device through a variety of communication protocols (e.g., SunSpec Modbus, DNP3, 2030.5, etc.).

DER communications are a key component for integrating DERs into a utility DERMS and should be considered from the onset of a DERMS implementation project. This encyclopedia makes multiple references to the need for utilities to establish a systems/ communications architecture that aligns to DER asset capabilities as key pre-requisite for realizing the value that can be created from DERMS systems. Additionally, each module brief in the encyclopedia contains information on key integrations and data needed for that module. Additional details on DERMS Implementation Considerations are included in a separate Implementation Considerations and DERMS Alternatives document.



Registration

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Registration

cept Emerging Deployment

s capturing relevant asset, programmatic, and network
ll be managed in the DERMS and in which the utility wants better
e DERs participating in utility programs, utility owned and
ting in ISO/RTO programs, or DERs aggregated by third parties
der FERC Order 2222 tariffs. Information categories include:

meplate or Technical Information (including communication and
rmation)
ation: Ownership and Account Information, programs including
or requirements, aggregator ID or other third-party identifier, and
prevent DERs from being utilized in multiple programs
Static devices information including location, feeding line/circuit,
s, limits encryption keys etc.

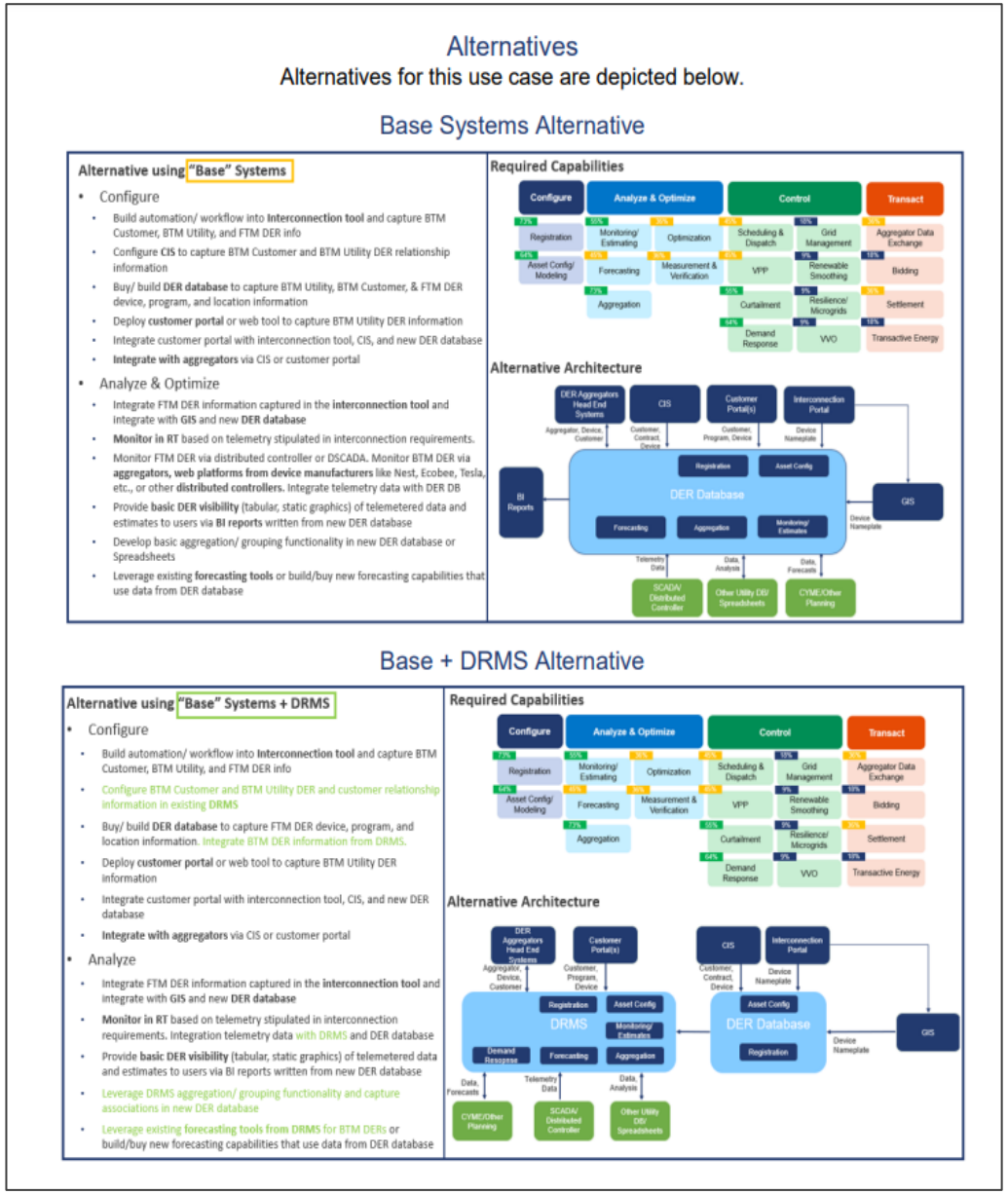
ration information for the dual purposes of feeding DER
S use cases of Analyze & Optimize, Control, and Transact and to
y programs.

directly input to the DERMS registration module via the system
el (CIM) or provided via interface from another system such as a
ation/ enrollment system. Devices can also auto-register when
and communication network support this function. A specific
ability is the management of DERs participating in utility
emand response (DR) programs or utility management programs
such as those supporting export limit control, flexible interconnections, and other device management services. In the case of DR enrollment, DER data is available from customers either enrolling in the program through an enrollment portal or through data exchanges with device manufacturers (OEM) who enroll at the customer's request, or through 3rd party enrollment & outreach vendors. Utility operated DER data also may be available from interconnection applications, as seen with larger C&I customers, or need to be entered manually based on nameplate data for the individual DERs, as typically seen with FTM, utility assets. The source of registration data will likely be driven by whether the DER is owned or controlled by the utility and if it is smaller and located behind-the-meter (BTM) or larger and installed in front-of-the-meter (FTM).

DERMS Alternatives & Implementation Considerations

Smart Electric Power Alliance

- **Introduction**
  - Introduction
  - Brief explanation of ADMS, DRMS, & DERMS
  - Approach & Reference Architecture
- **Use Cases**
  - DER Visibility, Device Configuration, & Program Management
  - Optimizing DERs for Peak Management
  - Optimizing DERs for Grid Services
  - Market Animation
- **Implementation Factors**
  - Key Implementation Considerations
  - Developing a DERMS Implementation Approach

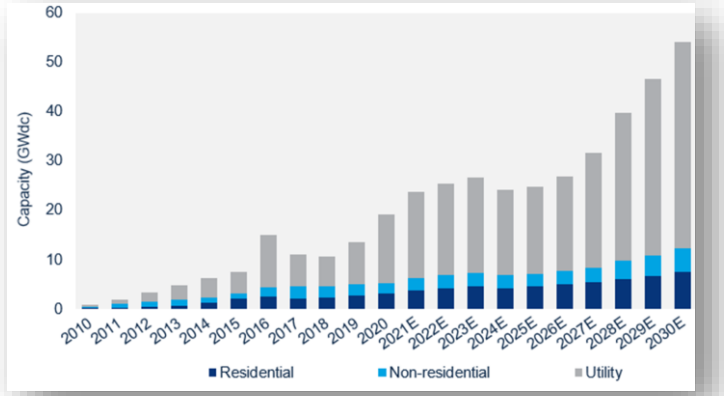


Learnings

Utility DERMS Drivers

What are the drivers of DERMS for utilities?

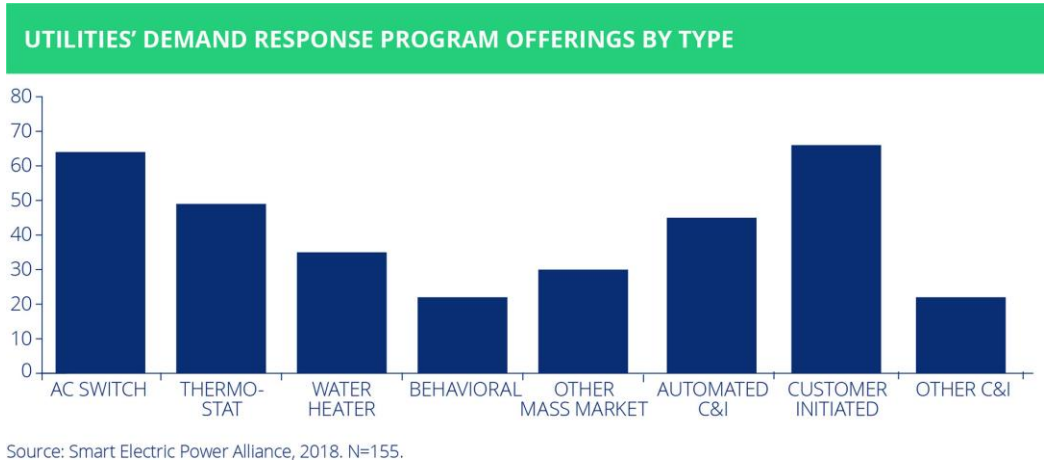
- DER adoption
- Existing types of technology deployed
  - Utility (grid visibility, security, etc.)
  - Customer (solar PV, T-stats., batteries, etc.)
- Costs
- Customer expectation for green power
- Regulations (ex. FERC 2222)



Source: Wood Mackenzie

Benefits

Current State DER Management



Source: Smart Electric Power Alliance, 2018. N=155.

Piecemeal – Legacy Energy Efficiency, Demand Response visibility

Many Screens – Operators don't have just one button to click

Low-Yield Programs – If a program has not shown to produce large reductions or grid benefits, it will be ignored in favor of higher values

Passive vs. Active – Some are incentive based, others 3rd-party, and occasional utility-owned

Future State DER Management

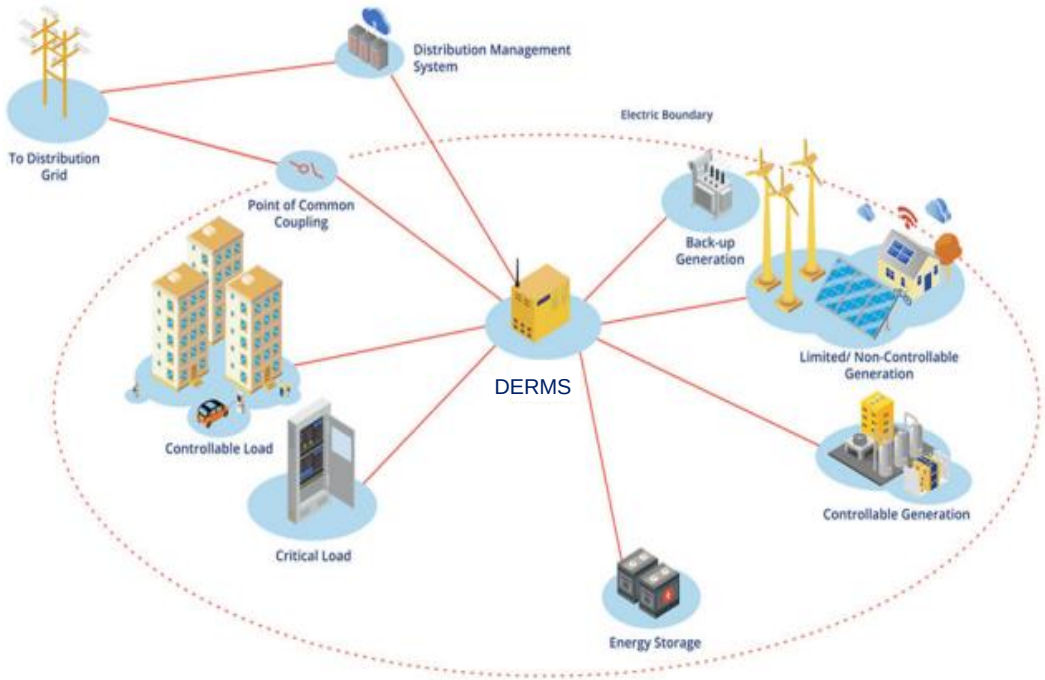
Aggregate – Combining DERs into grid-wide resources to simplify control, monitoring, and management of those systems

Simplify – Streamlining settings and data

Automate – Employing algorithms to take actions, often in coordination with a distribution management system (DMS)

Coordinate – Supply operational information for individual or aggregated DER assets to the DMS

Forecast – Provides forecasts of DERs



Cost Considerations

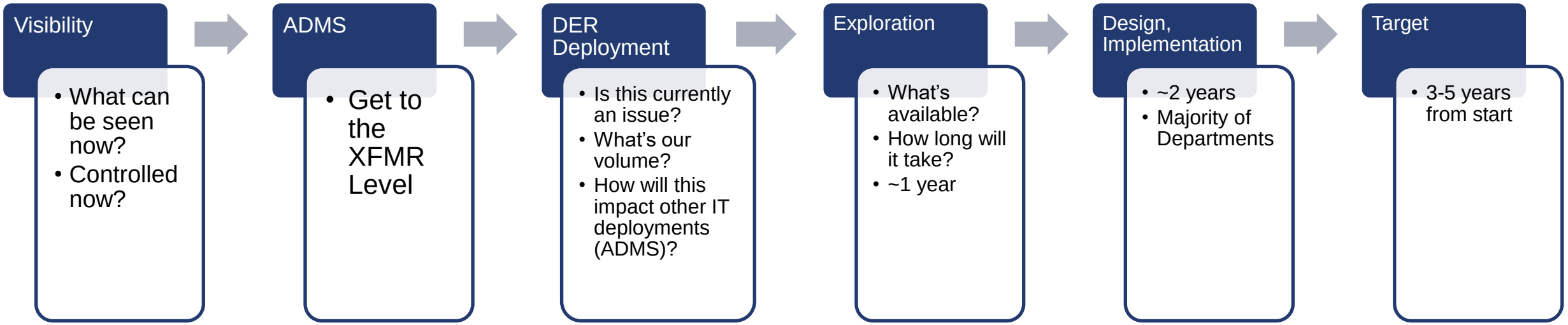
- Internal Resources and Budgets
  - Current or planned software deployments
  - Available key personnel
- Regulatory Environment on Costs
  - Rate Base (pre- or post-test year)
  - Customer Programs
  - Regulatory Asset
- Ownership of Devices
  - 3rd-party aggregators
  - Utility-owned
  - Market-driven (e.g. FERC 2222)

Image by: Alamy

Utility Deployment

What is the state of Utility deployment?

- Often DER penetration levels are not ready for full-scale DERMS
- Many are using individual solutions (e.g. demand response, T-Stats)
- Visibility is primary, control is future state
- Timelines are phased, and unique to each utility



Recommendations

- Start early!
  - Regardless of utility sophistication, planning can start now
    - Implementation may be many years out
  - Customer adoption of DERS won't wait
    - Inflation Reduction Act
    - Declining costs
- Phased approach
  - Ex: EMS → EE/DR → ADMS → DERMS
- Review Use Cases of Similar Utilities
  - IOUs
  - Co-Ops
  - Munis.

Image by: Social Table

Smart Electric Power Alliance

Thank you.

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ADMS/DERMS

NARUC Center for Partnerships & Innovation

Regulators' Financial Toolbox

Katherine Peretick

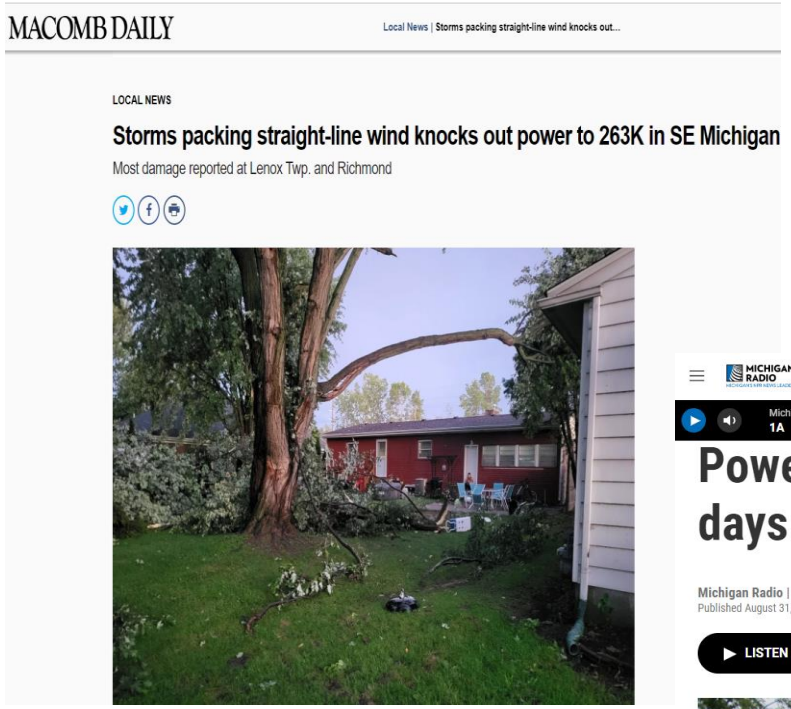
Commissioner- Michigan PSC

October 12, 2022

MPSC
MICHIGAN PUBLIC SERVICE COMMISSION

A “reasonable and prudent” response to industry trends

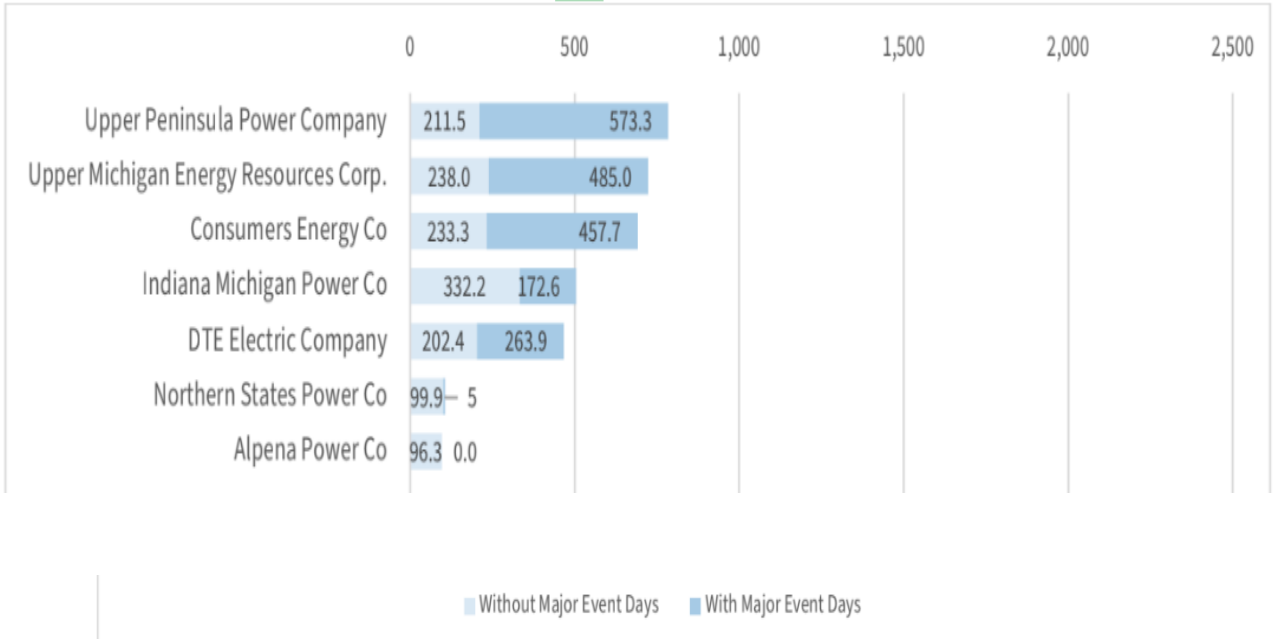
- DER penetration growing quickly in Michigan
- FERC Order 2222
- ADMS: Reliability, outage management, renewables firming
- Downed wire response time and efficient work order organization



Broader Context: Utility IRPs and Distribution Plans

- ADMS/DERMS investments discussed in rate cases, integrated resource plans, and 5-year distribution plans
  - Transparency in the planning process
- Distribution grid infrastructure nearing end-of-life throughout MI
  - Replace and upgrade while preparing grid for the future
- ADMS data tracking = fewer SAIDI outage minutes
  - DTE projects 29-60 minutes of all-weather SAIDI reduction from ADMS

Figure 13: 2019 System Average Interruption Duration Index (SAIDI) in Minutes for Michigan Utilities



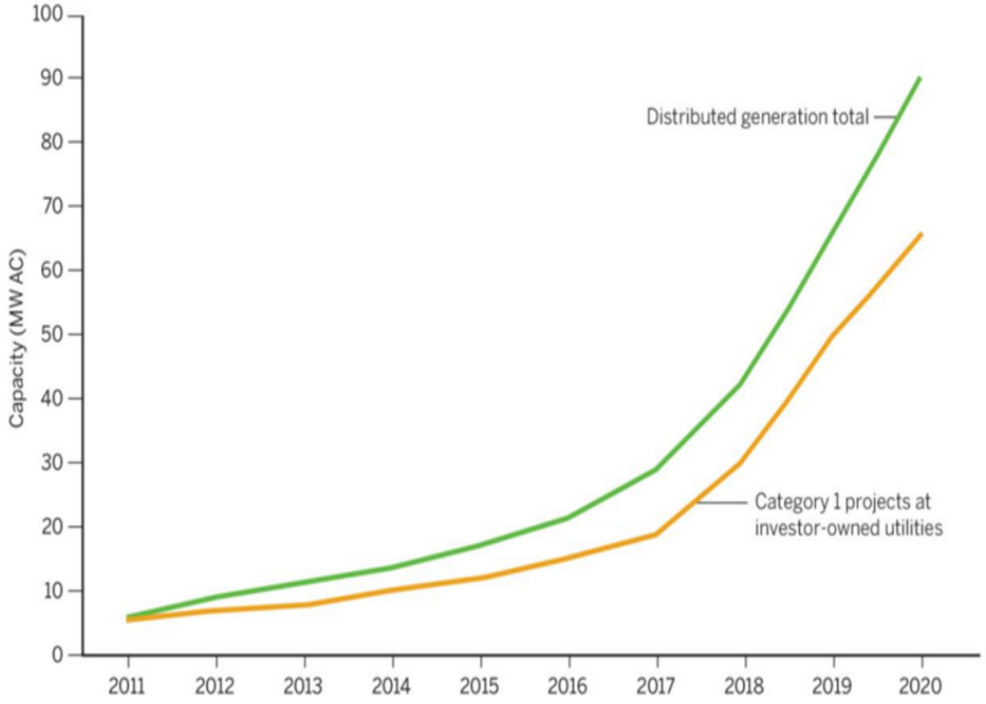
ADMS/DERMS questions to ask as a regulator

- What are the benefits to the customer? Are they MEASURABLE (i.e., quantifiable)?
- How does ADMS improve reliability/outage management?
- Describing requests for funding: what are the individual components of an ADMS plan and their associated costs?
- What is the timeframe, and what could impact that timeframe?
- What is the selection process for a specific ADMS vendor over another vendor?
    - Further, why use a vendor as opposed to an in-house project?
- What additional data functionality is required for the project? What additional data will become available as a result of the project?
- Is ADMS/DERMS part of a longer-term plan, and if so, what is that plan? What other costs/investments will be needed in the future to support ADMS? How will DERMS and other technologies be sequenced and utilized to the benefit of customers?
- What is the life of the investment? When will the technology become obsolete? What updates will be required?
- Has similar technology been used and worked in other states?

Timing of ADMS/DERMS Investments

- Scalability of projects
- **DER growth projection curves**
  - There must be sufficient DER penetration to justify DERMS investments
- Delays on implementation (e.g., COVID-19)
- Data requirements to roll out ADMS/DERMS
  - SCADA & AMI

Figure 3. Distributed generation adoption in Michigan overall and in small-scale projects



Data sources: Michigan Public Service Commission distributed generation, net metering and solar program annual reports

“Just because a technology is new does not mean that it should be ignored, or that it will not provide a benefit to ratepayers”

How is it paid for?

- Previous Michigan utility rate case authorized creation of regulatory asset for ADMS
- $65 million total ask, $58 million included in rate base
- Initial request for ADMS funding occurred in a rate case
- Projected 5% SAIDI savings

Federal funding for ADMS/DERMS

Infrastructure Investment & Jobs Acts

- Senate Energy & Natural Resources Energy Infrastructure Act
  - $8 billion for “preventing outages, grid resilience & smart grid investments”
- IIJA “SMART Grants”
  - ADMS potentially eligible as “smart grid” infrastructure for EVs

Inflation Reduction Act

- Green Bank / Clean Energy Accelerator
  - $27 billion for qualified clean energy projects focusing on disadvantaged communities
  - “Qualified” = “projects that assist communities in their efforts to reduce or avoid GHG emissions”

Thank You!

Questions

MODERATOR

VICE CHAIR JOSEPH SULLIVAN, MINNESOTA PUBLIC UTILITIES COMMISSION

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TED BURHANS, SMART ELECTRIC POWER ALLIANCE (SEPA)

COMMISSIONER KATHERINE PERETICK, MICHIGAN PUBLIC SERVICE COMMISSION

- **Please submit questions through chat or Q&A at any time.**

Upcoming Virtual Events

All NARUC members and stakeholders are invited

CPI Innovation Webinar: Long Duration Storage: What's on Tap?

October 13, 2022 | 4:00 - 5:00 PM ET

Regulators' Roundtable on DER Interconnection (*members' only*)

October 24, 2022 | 3:30 – 5:00 PM ET

NCEP Webinar: DOE Transmission Needs Study Overview

November 2, 2022 | 2:00 – 3:00 PM ET

CPI Innovation Webinar: Green Banks: Financing a Reliable Future

November 17, 2022 | 3:00 – 4:00 PM ET

Details and Registration Links: www.naruc.org/cpi-1/cpi-events/