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Perspectives on Aligned Planning

Michigan Public Service Commission
MI Power Grid Phase II
Advanced Planning Workgroup Meeting #2
Case No. U-20633

John Shenot
Senior Advisor
The Regulatory Assistance Project (RAP)®

Fort Collins, Colorado
United States

+1 802 595 1669
jshenot@raponline.org
raponline.org
Introduction

The Regulatory Assistance Project is a global, non-profit team of veteran regulators advising current regulators on energy sector issues. ([www.raponline.org](http://www.raponline.org))

- Foundation-funded; some contracts
- Non-advocacy; no interventions

John Shenot joined RAP in 2011 after serving three years as policy advisor to the Public Service Commission of Wisconsin and 15 years with the Wisconsin Department of Natural Resources as an air pollution regulator and electric utility specialist.
1 Overview of NARUC/NASEEO Efforts
• The National Association of Regulatory Utility Commissioners (NARUC) is a non-profit organization founded in 1889.

• NARUC Center for Partnerships & Innovation (CPI) identifies emerging challenges and connects state commissions with expertise and strategies to support their decision making.

• Our members are the state regulatory commissioners in all 50 states & the territories. FERC & FCC Commissioners are also members. NARUC has associate members in >20 countries.

• NARUC member agencies regulate electricity, natural gas, telecommunications, and water utilities.

• Only national non-profit organization whose members include the 56 governor-designated energy officials from each state and territory.

• NASEO improves the effectiveness of state energy programs and policies; acts as a repository of information on issues of particular concern to the states and their citizens.

• The Nation’s 56 State and Territory Energy Offices:

• Advise State Legislators and Governors on policy development (e.g., smart grid, cybersecurity, energy security, energy efficiency)

• Engage with utilities (IOUs, Cooperatives, Municipals) on resiliency, planning, energy efficiency, economic development

• Conduct statewide energy planning and energy assurance planning
Purpose: Develop new pathways for aligned electricity planning

1. **Innovation**: Pioneer new tools and roadmaps for aligning planning to meet state needs
   - Participants are convening in multi-state cohorts with others operating in similar market, regulatory, and policy environments

2. **Action**: Apply insights to directly benefit state action
   - Each state will develop concrete steps / an action plan at the end of the initiative

3. **Replication**: NARUC and NASEO will publish templates and resources to support all members

Announced Nov. 2018
Launched Feb. 2019
Leadership

Task Force Co-Chairs

Hon. Jeff Ackermann
Chairman
Colorado Utilities Commission

Jennifer Richardson
Executive Director
Indiana Office of Energy Development

Hon. Beth Trombold
Commissioner
Public Utilities Commission of Ohio

Task Force Co-Vice-Chairs

Dr. Andrew McAllister
Commissioner
California Energy Commission
Main Contacts

Danielle Sass Byrnett
Director, Center for Partnerships & Innovation
NARUC
(202) 898-2217
dbyrnett@naruc.org

Kirsten Verclas
Program Director, Electricity
NASEO
(703) 299-8800
kverclas@naseo.org

Johanna Zetterberg
Senior Advisor
U.S. Department of Energy
(202) 288-7414
johanna.zetterberg@hq.doe.gov

www.naruc.org/taskforce
States are Diverse and Representative:

- Geography
- Market models (e.g., retail competition, wholesale market)
- Planning approaches (e.g., state energy office roles, distribution system planning)
- State goals (e.g., grid mod, resilience, climate, clean energy, economic development)
Five State Teams ("Cohorts")

3 states per cohort

Vertically Integrated

Coral
- Within organized markets
- Pragmatic state; works collaboratively in region; operates in 2 RTOs

Turquoise
- Outside organized markets
- Anticipates range of energy policies; juggles urban vs. rural needs; long distances between load centers; transmission challenges

Amber
- Within organized markets
- State is facing increasing weather-related damages and costs; new transmission and generation siting requests coming in

Silver
- Outside organized markets
- Coastal state vulnerable to weather-related natural disasters; experiencing flat to declining load

Jade
- Within organized markets
- Focused on integrated distribution planning (combined with other energy planning & programs)

Restructured
Task Force Process

2 years | 4 workshops

Workshop 1
- Identify key trends, articulate guiding principles, map status quo planning processes, begin identifying alignment needs
- April 2019

Workshop 2
- Refine opportunities for planning process alignment with support from stakeholders and subject matter experts
- “Process Maps”
- October 2019

Workshop 3
- Consider what it takes to implement idealized aligned planning processes with support from utility planners & experts
- “Roadmaps”
- September 2020

Workshop 4
- Develop “State Action Plans” to build on the work of the Task Force
- November 2020

February 2021:
- Release system planning process maps, roadmaps, blueprint for action, and state action plans

We are here
Process Maps Based on “Building Blocks” of Electricity System Planning

- Represent fundamental steps in system planning
- Use common language across cohorts while preserving diversity in approach
- Focus on information/results (“what”) state decision makers want to see, in what order (“when”) to inform decision making, not on specific methods/tools (“how”) or “who” will perform
- Discussion draft and description of the building blocks at: www.naruc.org/taskforce/resources/
Cohort Process Map (Example)
Key Issues Being Addressed by Cohorts in Process Maps

- **Clearly set expectations** at outset
- Identify improved approaches for **stakeholder engagement**
- Incorporate **emerging planning methods** (e.g., multi-scenario forecasting, non-wires alternatives)
- Evaluate a **wide range of solutions and procurement strategies**
- Coordinate and **sync data, assumptions, and modeling scenarios** across the entire system
- Acknowledge use of **DERs as a resource**
Additional Questions Pondered *(not visible in process maps)*

- How does rate design fit into aligned planning?
- What metrics should be used to factor resilience into aligned planning?
- How do we ensure equity and affordability in the transition being envisioned and articulated by new planning approaches?
- When will tools and models exist or need to be created to enable the types of holistic analysis that would allow for optimization of possible solutions across G, T, and D?
- Where should a state/utility draw the line between transparency and security when considering data access / data sharing?
Partnered with EEI, NRECA, EPRI to identify ~30 utility planners for engagement --- each assigned to a cohort

Engagement:
- Webinars to orient them on Task Force and their cohort’s materials
- Individual interviews in August 2020
- ‘Focus Group’-style dialogue with cohort Sept. 15

Interviews asked Qs related to:
- *Lessons learned* from experts’ own experience with aligning planning
- *Feedback* on the cohort’s process map
- *Implementation challenges & opportunities*
### Utility Planner Reactions

<table>
<thead>
<tr>
<th>What’s Good?</th>
<th>What Could be Better?</th>
<th>What’s Going to be a Challenge?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The steps are logical and nothing is missing</strong></td>
<td><strong>Target when to involve stakeholders</strong></td>
<td><strong>Lack of optimization models</strong></td>
</tr>
<tr>
<td><strong>Adding a guidance document is an excellent suggestion</strong></td>
<td><strong>Refine approach based on how recent market-based RFPs went</strong></td>
<td><strong>Still need solid DER performance data</strong></td>
</tr>
<tr>
<td><strong>Thoughtful &amp; well considered; very coherent</strong></td>
<td><strong>Establish where data access gets resolved</strong></td>
<td><strong>Order of grid needs, wire soln’s, locational value, non-wire soln’s</strong></td>
</tr>
<tr>
<td><strong>Stakeholder engagements beneficial</strong></td>
<td><strong>Distribution planning needs to include grid mod</strong></td>
<td><strong>How to balance iteration with timeliness</strong></td>
</tr>
</tbody>
</table>
Task Force Resource Library

https://www.naruc.org/taskforce/resources/

15 categories of publications & webinars
- Data access
- Ratemaking
- Distribution System Planning (DSP)
- Emerging DSP practices
- Forecasting
- Grid Modernization
- Planning Coordination
- Planning Criteria
- Procurement Strategies
- Resilience
- Rural DER integration
- Scenario and risk analysis
- Solution Evaluation
- Stakeholder Engagement
- Utility best practices for integrated planning
Final Products: February 2021

PROCESS MAPS (5)

Cohort vision for **WHAT STEPS** need to happen in **WHAT SEQUENCE** to better align planning processes -- some combination of:
- Distribution-level planning
- Resource planning
- Transmission planning

ROAD MAPS (5)

**HOW** a cohort-level process map could be implemented. Contains:
- Short description of each step in the **process map**
- Guidance, resources, or examples ("GREs") that could offer a starting point

BLUEPRINT FOR ACTION

What Task Force resources are available and how to use them. Includes:
- Vocabulary / structure for collaboration and progress within a state
- Examples of approaches from the 15 Task Force states

Final Products: February 2021
The Importance of Aligning Utility Planning Processes
Planning Used to Be “Simple”

Source: European Distribution System Operators' Association for Smart Grids
Planning Today Is More Complex

Source: European Distribution System Operators’ Association for Smart Grids
Main Reason: Rapid Growth in Distributed Energy Resources

US DER and Connected Devices Impact Expected to More Than Double from 46 GW to 104 GW

Source: GTM Research and Department of Energy
DERs Affect System Needs Across All Planning Realms

Transmission needs might be reduced with less reliance on central station power and increased DER penetration

With growth of DER, the amount and type of central station generation needed to balance supply and demand is evolving

Distribution system investment decisions now need to account for the quantity, location, capabilities, and load shapes of resources added to the distribution system

With greater alignment of resource and distribution planning, states & utilities could:

- Improve grid reliability and resilience
- Optimize use of distributed and existing energy resources
- Avoid unnecessary costs to ratepayers
- Support state policy priorities
- Increase the transparency of grid-related investments decisions
Other Key Drivers for Changes to Planning Processes

✓ Growth in variable generation (utility scale)
✓ Competition in electricity services & procurement
✓ New reliability challenges (climate, cyber, etc.)
✓ New emphasis on resilience
✓ Climate and environmental goals
✓ Equity and environmental justice concerns
Need to Change *and Align* the Various Planning Processes
How State Regulators and Intervenors See Utility Planning

Resource Planning

Distribution Planning
Regulators are Realizing They Need Visibility into the Black Box
Distribution System Costs are Rising Steadily

Reliability & Resilience are Primarily Distribution System Problems

- Graph shows average minutes of outage per customer in 2017
- Most MI utilities > 200 minutes
- Resource adequacy standard = 2.4 hours
Where is Alignment between IRP and DSP Most Needed or Helpful?

- Goals and objectives
- DER forecasts
- Load/net load forecasts
- Resource capabilities and costs
- Decision making criteria
- Non-wires solutions
Two Common Barriers to Treating DERs as Resources

1) Inconsistent valuation/compensation across DERs

- States/utilities often use different cost tests for each type of DER
- May also apply the tests differently (e.g., different assumptions about inputs)
Two Common Barriers to Treating DERs as Resources

2) Inconsistent consideration of DERs versus utility infrastructure
   - Least-cost/best-fit procurement for utility investments
   - Cost-effectiveness tests for DER decisions

Both types of flaws can lead to suboptimal allocations of ratepayer resources – a more consistent approach is desirable
Transmission/Bulk Power System Planning Challenges

- Jurisdictional challenges
  - Regional planning by RTOs/ISOs (MISO and PJM) is FERC regulated
  - Investment/siting is state regulated
- Coordination challenges
  - Timelines not synchronized
  - Visibility/data availability
  - Seams issues
MISO’s Take on the Challenges

PLANNING: Bulk electric system planners do not have good data on the amount and location of DERs

MODELING: Current models do not accurately reflect the impacts of DERs

MARKETS: Current design may need modifications to enhance participation options and capture benefits of DERs

VISIBILITY: Bulk electric system operators do not have visibility into how DERs behave and affect conditions on the distribution or transmission system

OPERATIONS: DER variable hourly profiles impacts on system unit commitment and ramping needs are uncertain

COORDINATION: Bulk electric system operators lack methods to coordinate with DER owners/aggregators and with distribution operators controlling DERs

Source: MISO
PJM Gets It, Too

- DER Ride Through Task Force created by Planning Committee (November 2018)
- Guideline for Ride Through Performance of Distribution-Connected Generators (Q4 2019)
- DER and Inverter-based Resources Subcommittee created (July 2020)
And NERC Also

Distributed Energy Resources
Connection Modeling and Reliability Considerations
February 2017

Reliability Guideline
Bulk Power System Reliability Perspectives on the Adoption of IEEE 1547-2018
March 2020
Recommended Reading

- Integrated Distribution Planning for Electric Utilities: Guidance for Public Utility Commissions
  - https://www.madrionline.org/resources/

- Insights on Planning for Power System Regulators

- Capturing More Value from Combinations of PV and Other Distributed Energy Resources

- National Standard Practice Manual For Benefit-Cost Analysis of Distributed Energy Resources
Any Questions?
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org
Supplemental Slides if Helpful for Q&A
In a Perfect World…

- Electric Utility Planning
- Energy Planning
- Air Quality Planning
- Emergency/Resilience Planning
- Transportation Planning
- Land Use Planning
...Much Faster Than Inflation

![Graph showing selected data for all U.S. IOUs, baseline = 100. The graph compares distribution assets per customer, energy use per customer, peak demand per customer, and U.S. CPI from 2010 to 2017.]


* https://www.bls.gov/data/inflation_calculator.htm
Distribution Share of Retail Bills is Large and Projected to Grow

Data Source: EIA Annual Energy Outlook 2019

2017: 25.8%
2030: 32.7%
2040: 34.0%