Emerging Practices in Distribution Planning and the Roles for DSM

16th Annual Southwest Utility Energy Efficiency Workshop

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

Fort Collins, Colorado  
United States

+1 802 595 1669  
jshenot@raponline.org  
raponline.org
Regulators’ and Stakeholders’ View of Utility Planning

Resource Planning

PNM
2017-2036
Integrated Resource Plan
Balancing cost and reliability while reducing the impact on the environment.
July 3, 2017

Distribution Planning
1 Why are some regulators taking a greater interest in integrated distribution planning (IDP)?
Distribution System Costs are Rising Steadily...

...Much Faster Than Inflation


* 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%
Distributed Energy Resources are Growing Rapidly

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

US DER and Connected Device Impact on Peak Potential, 2017-2023

Source: GTM Research and Department of Energy

Grid Edge Innovation Summit 2018
Regulators are Realizing They Need Visibility into the Black Box
2 What is IDP?
An IDP Process…

- Creates a plan for the maintenance and enhancement of the distribution system
- Does for the distribution system what IRP does for the bulk power system
  - Identifies future system needs and opportunities
  - Evaluates all potential supply-side and demand-side options for meeting needs
  - Determines most valuable/least-cost/least-risk suite of solutions
  - Shines a light into the black box!
Illustrative IDP Process

1. Load and DER Forecasting
2. System and DER Monitoring and Control
3. NWS Acquisition
4. Project Design and Construction
5. Solution Identification including Non-Wires Solutions (NWS)
6. Grid Needs and Locational Value Identification
7. Grid Modernization
8. Hosting Capacity Analysis
9. System Assessment
10. DER Interconnection

Source: GridLAB
Potential Benefits of IDP

1. Minimize T&D costs to protect customers
2. Address growing uncertainties about impacts of new technologies, variable loads, and variable generation
3. Enable customer choices and adoption of clean resources
4. Plan for the future and modernize the grid/better understand utility grid modernization proposals
5. Better inform IRP
Utility Commissions Investigating IDP or Grid Modernization
3. What roles can DSM have in an IDP?
Key Roles for DSM in IDP

1. **Load and DER Forecasting**
2. **System and DER Monitoring and Control**
3. **NWS Acquisition**
4. **Project Design and Construction**
5. **Solution Identification including Non-Wires Solutions (NWS)**
6. **Hosting Capacity Analysis**
7. **Grid Needs and Locational Value Identification**
8. **DER Interconnection**
9. **Grid Modernization**
10. **EE/DR Programs**

Source: GridLAB

Regulatory Assistance Project (RAP)®
Key Benefits for DSM

- Creates a systematic way to pursue non-wires solutions; puts DSM on an equal footing with supply-side resources
- Can recognize the time-varying and location-varying value of DSM
Resources

  Available at https://www.madrionline.org/resources/

- RAP – US Experience with Efficiency as a Transmission and Distribution System Resource

- GridLab – Integrated Distribution Planning: A Path Forward
  Available at https://www.madrionline.org/resources/

- RMI – The Non-Wires Solutions Implementation Playbook
  Available at https://www.madrionline.org/resources/
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