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Integrated Grid Planning: Benefits and State Examples

Presentation to the Indiana Utility Regulatory Commission

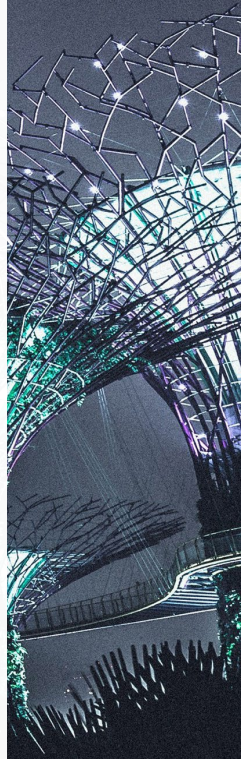
IRP Contemporary Issues Technical Conference

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Agenda



Background and Level-setting



Challenges in Administering Multiple Planning Processes



Benefits of Consolidating Grid Planning



State Examples in Integrating Grid Planning



Key Takeaways

Integrated Resource Plan Requirements



- Describes how each utility will use existing and future resources to meet customer demand
- Considers a broad range of potential future conditions and variables and selects a combination that would provide reliable service in an efficient and cost-effective manner
- Illustrates how utilities plan to deliver safe, reliable, and efficient electricity at just and reasonable rates
- Demonstrates how plan elements serve the public interest and are consistent with state energy and environmental policies
- Undergoes a rigorous stakeholder process

Capabilities of Distribution System Planning Processes



Capability	Description*
Advanced Forecasting and System Modeling	Enhanced forecasting to reflect the uncertainty of distributed energy resource (DER) growth, more detailed system modeling of loads and DER impacts on the distribution system
Hosting Capacity Analysis	Determining how much additional DER each distribution circuit can accommodate without requiring upgrades
Disclosure of Grid Needs and Locational Value	Identification and publication of opportunities for DER to provide grid services as non-wires alternatives; identification and publication of locations on each circuit where DER deployment can provide grid benefits
New Solution Acquisition	Acquiring or sourcing DER from customers and third parties to provide grid services using pricing, programs or procurement — for example, using the peak demand reduction capability of smart thermostats in a targeted way to reduce circuit peak loads and avoid the need for circuit or substation upgrades
Meaningful Stakeholder Engagement	Establishing processes for open dialogue, transparent information sharing, collaboration, and consensus building among stakeholders

Transportation Electrification Plan Elements



- Incentives to facilitate the deployment of charging infrastructure and associated electrical equipment across all customer classes, including residential charging equipment and panel upgrades
- Investments to facilitate the electrification of public transit and publicly-owned vehicle fleets
- Expanded access to the use of electricity as a transportation fuel in historically underserved communities
- Rate designs, programs or management systems that encourage the charging of vehicles in a manner that supports the operation and optimal integration into the electric grid
- Customer education and outreach programs that increase awareness of investments, incentives, and rate designs

Elements of Effective Integrated Grid Plans



- Proposed investments demonstrate a clear value-add for utility customers
- Selected solutions are aligned with or advance state and local policy goals (enhanced resilience, greater system efficiency, lower costs, improved quality of service, etc.)
- Design of customer products and services enabled by proposed investments are detailed and clearly communicated
- Relevant stakeholders are engaged and can inform the scope or direction of grid modernization programs
- Plan outcomes are measured through metrics and allow opportunities for course-correction

Challenges Associated with Administering Multiple Planning Processes



- Multiple processes can be more resource intensive
 - Burden for Commission staff and utilities
 - Strain stakeholder capacity to participate
 - Multiple working groups may be active at the same time
- May be a challenge to identify the most appropriate representatives to include in each discussion
- May be difficult to strike the right balance in setting a meeting / updating cadence over time as process engagement needs ebb and flow
- Without deliberate actions to align assumptions, processes, and outputs across planning efforts, results may be inconsistent and misaligned

Potential Benefits of Consolidating Grid Planning Processes



- ✓ Provides better outcomes for utility customers and the public by improving process and administrative efficiency
- ✓ Enhances the opportunity for knowledge-sharing across internal utility teams
- ✓ Strengthens the Commission's ability to issue guidance across related processes
- ✓ Provides greater confidence for the validity of resulting plans
- ✓ Can lower barriers to participation, improve understanding, and provide greater transparency for interested stakeholders
- ✓ Allows for streamlined discussion and discovery and improved strategic outcomes

Case Study:

Colorado Distribution System Planning

- In October 2021, the Colorado Public Utilities Commission revised its Distribution System Planning procedures to ensure identified investments cost-effectively support various state goals, including building and transportation electrification
- This Order expanded on existing plan requirements of identification of non-wire alternatives opportunities, new solution procurements and other core distribution planning capabilities
- Commission guidance encourages utilities to seek approval for non-wire alternatives applications, including in:
 - Demand-side management planning
 - Renewable energy standard compliance planning
 - Transportation electrification planning
 - Innovative technology pilot programs or demonstrations



Case Study:

Minnesota Integrated Distribution Planning (IDP)

- The Minnesota Public Utilities Commission issued a December 2022 order unifying the planning practices for electric transportation and local distribution systems for regulated electric utilities
- IDPs are required to provide visibility into ongoing and future transportation electrification efforts, such as existing programs and projects in development
- Identified benefits of combining electric transportation and distribution planning processes include improving process / administrative efficiency and more effective use of stakeholder time and resources
- The first plans responsive to this new guidance are expected to be filed by November 1, 2023



Case Study:

Massachusetts Grid Modernization Plans

- A 2022 Massachusetts Law requires each electric distribution company to develop plans to proactively upgrade the distribution system, including planning for transportation and building electrification
- The law standardized grid modernization requirements, including on disclosure of prior system investments and forward-looking proposals
- A Grid Modernization Advisory Council (GMAC), appointed by the Governor for a term of five years, reviews and provides recommendations on Massachusetts' electric-sector modernization plans
- Distribution companies filed their responsive plans in September 2023



Case Study:

Nevada Transportation Electrification Plans

- Nevada law enacted in May 2021 required utilities to develop plans to expand transportation electrification in the state, as part of their distributed resource plans
- Distributed resource plans are also part of the more comprehensive Integrated Resource Plans
- NV Energy amended its IRP in September 2022 with its Transportation Electrification Plan, whose objectives included:
 - Use of electric vehicle load as a flexible grid resource
 - Provision of low cost, clean transportation fuel through reliable electric vehicle infrastructure across customer classes
 - Ensure underserved communities are not left behind in program design
 - Use of electric vehicle load as a flexible grid resource
 - Standardization of electric vehicle infrastructure across the design, permit, build, integrate and operation lifecycles to realize economic and resource efficiencies



Case Study:

Washington Integrated Resource Plans

- Washington state code provides guidance to include DER plans in IRPs and identify:
 - Energy efficiency and conservation potential
 - Demand response potential
 - Opportunities to provide energy assistance
 - Opportunities to expand other DERs, including energy storage, electric vehicles, and solar
- Additional plan requirements called for core IDP capabilities
- Plans are required to identify the most affordable investments for all customers and avoid reactive expenditures to accommodate unanticipated growth in DERs
- A key goal is for utilities to be financially indifferent to the technology that is used to meet a particular resource need



Case Study: Hawaii Integrated Grid Planning

- Integrated Grid Planning process streamlines traditionally disparate planning and procurement activities into a unified process, including:
 - Grid Modernization Plans
 - Electrification of Transportation Plans
 - Demand Management Portfolios
 - Integrated Distribution Plans
 - Integrated Resource Plans
- Appraises the total needs of the system and considers all alternatives from customers, independent providers and the utility
- Coordinates solutions that provide the best value on a consolidated basis, including least cost / best fit
- Establishes transparency through active stakeholder, customer and community engagement



Summary of Examples Discussed

State	Planning Processes Integrated	Description	Source
Colorado	<ul style="list-style-type: none"> Demonstration Programs Transportation Electrification Plan Energy Efficiency Portfolio Integrated Distribution Plan Integrated Resource Plan 	<ul style="list-style-type: none"> The Colorado Public Utilities Commission revised its Distribution System Planning procedures to ensure identified investments cost-effectively support various state goals, including building and transportation electrification Commission guidance encourages utilities to seek approval for non-wire alternatives applications, including in demand-side management planning, renewable energy standard compliance planning, transportation electrification planning, innovative technology pilot programs or demonstrations 	Link
Minnesota	<ul style="list-style-type: none"> Transportation Electrification Plan Integrated Distribution Plan 	<ul style="list-style-type: none"> The Minnesota Public Utilities Commission, the Minnesota Department of Commerce and others have worked together to unify the planning practices for electric transportation and local distribution systems IDPs include visibility into ongoing transportation electrification efforts, such as existing programs and projects in development 	Link Docket No. E-999/CI-17-879
Massachusetts	<ul style="list-style-type: none"> Grid Modernization Plan Transportation Electrification Plan 	<ul style="list-style-type: none"> A 2022 Massachusetts Law requires each electric distribution company to develop plans to proactively upgrade the distribution system, including planning for transportation and building electrification A Grid Modernization Advisory Council, appointed by the Governor for a term of five years, reviews and provides recommendations on Massachusetts' electric-sector modernization plans 	Link
Nevada	<ul style="list-style-type: none"> Transportation Electrification Plan Integrated Distribution Plan Integrated Resource Plan 	<ul style="list-style-type: none"> 2021 Nevada law required utilities to develop plans to expand transportation electrification in the state, as part of their distributed resource plans Distributed resource plans are also part of the more comprehensive Integrated Resource Plans 	Link
Washington	<ul style="list-style-type: none"> Distribution Resource Plan Integrated Resource Plan 	<ul style="list-style-type: none"> Washington state code provides guidance to include DER plans in Integrated Resource Plans and identify energy efficiency and conservation potential, demand response potential, opportunities to provide energy assistance, and opportunities to expand other DERs, including energy storage, electric vehicles, and solar Plans are required to identify the most affordable investments for all customers and avoid reactive expenditures to accommodate unanticipated growth in DERs 	Link
Hawaii	<ul style="list-style-type: none"> Grid Modernization Plan Transportation Electrification Plan Energy Efficiency Portfolios Integrated Distribution Plan Integrated Resource Plan 	<ul style="list-style-type: none"> Integrated Grid Planning appraises the total needs of the system and considers all alternatives from customers, independent providers and the utility Streamlines traditionally disparate planning and procurement activities into a unified process, including Grid Modernization Plans, Electrification of Transportation Plans, Demand Management Portfolios, Integrated Distribution Plans, and Integrated Resource Plans 	Link

Key Takeaways

- Administering multiple planning processes can be challenging due to resource commitments and coordination required
- Some states are beginning to explore opportunities for consolidating these processes and maximizing potential benefits, including lowering barriers to stakeholder participation, improving plan alignment, and increasing confidence in plan outcomes
- Planning processes that have been integrated to date vary by state
- More experience is needed to assess the implementation impacts and outcomes of efforts to streamline multiple planning processes, but the potential benefits of integrating processes are compelling
- Metrics that reflect desired plan outcomes should be established on the front-end to ensure integration activities deliver the intended value

References and Additional Resources

- Integrated Grid Plan – A Pathway to a Clean Energy Future | Hawaiian Electric | May 2023 | https://hawaiipowered.com/igpreport/03_IGP-Report.pdf
- Order Providing Guidance on the Integrated Grid Planning Process | Hawaii Public Utilities Commission | November 2020 | <https://dms.puc.hawaii.gov/dms/DocumentViewer?pid=A1001001A20K05B61158J00380>
- Content of an Integrated Resource Plan - WAC 480-100-620 | Washington State Legislature | February 2023 | <https://app.leg.wa.gov/WAC/default.aspx?cite=480-100-620>
- Distributed Energy Resources Planning | Washington State Legislature | September 2023 | <https://app.leg.wa.gov/RCW/default.aspx?cite=19.280.100>
- SB448 – Section 14 – Transportation Electrification Plans | Nevada Legislature | May 2021 | <https://www.leg.state.nv.us/App/NELIS/REL/81st2021/Bill/8201/Text>
- Integrated Resource Plan – Third Amendment – Transportation Electrification Plan | NV Energy | September 2022 | https://www.nvenergy.com/publish/content/dam/nvenergy/brochures_arch/about-nvenergy/rates-regulatory/recent-regulatory-filings/nve/irp/2023-irp-filings/3rd-ammendment/6134053.pdf
- In the Matter of a Commission Inquiry into Electric Vehicle Charging and Infrastructure - Docket No. E-999/CI-17-879 | Minnesota Public Utilities Commission | December 2022 | [MN DOC Efiling \(state.mn.us\)](https://www.mn.gov/efiling/state.mn.us)
- Integrated Proposed Rules for Distribution System Planning | Colorado Public Utilities Commission | October 2021 | https://www.dora.state.co.us/pls/efi/EFI_Search_UI.Show_Decision?p_dec=28660&p_session_id=
- Grid Modernization Advisory Council | Massachusetts Department of Energy Resources | Accessed September 25, 2023 | [https://www.mass.gov/info-details/grid-modernization-advisory-council-gmac#electric-sector-modernization-plans-\(esmps\)-information-](https://www.mass.gov/info-details/grid-modernization-advisory-council-gmac#electric-sector-modernization-plans-(esmps)-information-)

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



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