Rhode Island Division of Public Utilities and Carriers &
Office of Energy Resources

Power Sector Transformation

Initial Proposals for Distribution System Planning Improvements and Request for Stakeholder Comment

August 15, 2017

Following the Distribution System Planning Stakeholder Meeting held on August 16, 2017, stakeholders are invited to submit comments in response to the initial proposals and additional questions provided in this document to inform the ongoing inquiry into distribution system planning. Comments should be submitted by **September 1, 2017**.

Review of the Importance of Distribution System Planning

The electric utility is charged with the complex task of maintaining the safe and reliable operation of the electric distribution system. To achieve this objective, the utility performs distribution system planning ("DSP") – a set of activities to assess the grid's performance under changing future conditions and recommend solutions to proactively address identified needs. Because the utility uses DSP to inform investment decisions in the grid, the results of the planning process impact the costs we incur on our bills for delivery service and the value we receive from our electric grid.

Traditional utility infrastructure – substations, feeders, transformers, etc. – form the conventional set of solutions in the utility toolbox to address system requirements. In today's changing technology landscape, new resources and strategies – such as energy efficiency, renewable energy, storage, and even dynamic electric rates – offer the potential to substitute for conventional infrastructure solutions. In many instances, these solutions may be implemented by customers at their own place of residence or business, as opposed to being owned by the utility. For example, under Rhode Island's System Reliability Procurement planning process, pilots have tested the ability for geotargeted customer offerings of energy efficiency, demand response, and solar PV to defer the need for a substation feeder upgrade by providing load reductions coincident with periods of peak demand.

In other words, not only are customers impacting the system in new – and potentially significant – ways, but they are also now able to become part of the solution set to address grid needs through their own investment choices. DSP, a process which identifies and characterizes areas of need on the grid, will adapt to the changing marketplace and become a valuable tool for guiding not only utility investment, but also customer and marketplace activity, which can provide value to the grid and the system.

Summary of Stakeholder Comments in response to the June 2, 2017 Notice of Inquiry

Following the Distribution System Planning Technical Session held on May 26, 2017, OER and the DPUC invited stakeholders to submit comments in response to a Notice of Inquiry into distribution system planning.[1] The Notice of Inquiry posed the following questions:

- How do key elements of DSP evolve?
    - I.e., forecasting demand, power flow analysis, solution identification, hosting capacity analysis
- How transparent should DSP be?
    - Who might use DSP (system and customer) data? What data is needed and in what format? What are data access and security considerations?
- What should the DSP process look like?
    - How should users gain insight into DSP and how should DSP be coordinated with existing filings?

Nine stakeholders submitted comments in response to the Notice of Inquiry[2]:

- Bloom Energy
- Acadia Center
- Seth Handy
- City of Providence
- Environmental Defense Fund
- National Grid
- Northeast Clean Energy Council and the Advanced Energy Economy Institute
- The Utility Reform Network
- Sunrun

Responses to the NOI revealed general agreement among stakeholders regarding the questions posed on DSP. Stakeholders agreed that elements of DSP will need to evolve in response to the growth of DER and the changing needs of the distribution system. Stakeholders agreed that increased access to system and customer data – with the proper privacy and security protections in place – is necessary to facilitate better investment decision-making on the grid by the utility and third parties. Finally, stakeholders agreed on the need for increased DSP transparency and opportunities for stakeholder feedback in the DSP process. Stakeholders did not appear to see a clear need at this time for a separate DSP docket process, but rather that opportunities for engagement and input could be integrated into existing dockets and processes.

Initial Proposals on Distribution System Planning

Based on stakeholder feedback and internal policy deliberation the current leaning of the Power Sector Transformation team is to propose the following improvements to the DSP process:

1. Establish specifications for and a process to update a **Rhode Island System Data Portal**, which will enable public access to key datasets

[1] http://www.ripuc.ri.gov/utilityinfo/electric/PST_DSP_NOI.pdf
[2] http://www.ripuc.ri.gov/utilityinfo/electric/DSP.html

2. Develop a **Data Access and Governance Policy**, establishing guidelines for data access, sharing procedures, data requests, dispute settlement, and privacy/security protections
3. Create an **Implementation Road Map for Heat Maps and Hosting Capacity Maps**, which will provide the utility and third parties with insight into locational impact and benefit of DER on the system
4. Establish a process to integrate **inclusion and review of DSP Forecasts** into applicable existing dockets
5. Further **align and integrate planning processes** for the distribution system, capital projects, and non-wires alternatives (NWA) to comprehensively consider DER opportunities

OER and the DPUC envision vetting these initial proposals with stakeholders, modifying and refining the proposals, and finally, identifying a regulatory path for implementation. Potential regulatory vehicles include, but are not limited to, the upcoming National Grid rate case, the Annual System Reliability Procurement Plan (SRP), and the Annual Infrastructure, Safety, and Reliability Plan (ISR).[3] In some instances, potential regulatory vehicles are identified in the sections below for certain DSP outputs.

Each section below provides context for each initial proposal, describes the intended outcome, and poses questions to stakeholders on key considerations for how to refine the proposal.

1. Rhode Island System Data Portal

Importance of the Issue

Access to data – system data and customer data – could help customers contribute towards meeting grid needs and maximizing the net benefits of their investments in clean energy technologies. For example, clean energy companies might be able to use information on the location and characteristics of grid needs to target offerings to customers located in beneficial areas. The ability to retrieve customer data – with the proper privacy and security protections in place – could allow clean energy companies to tailor offerings to customers or for customers themselves to take action on their energy use.

In New York, National Grid developed a publicly-accessible System Data Portal, which allows third-parties to access key information, such as peak/load forecasts, capital plans, distribution system planning process descriptions, heat maps, and hosting capacity maps.[4] A similar portal in Rhode Island would provide a valuable resource for guiding marketplace activity and investment in this state.

[3] SRP: http://www.ripuc.org/eventsactions/docket/4655page.html; ISR: http://www.ripuc.org/eventsactions/docket/4682page.html

[4] http://ngrid.maps.arcgis.com/apps/MapSeries/index.html?appid=4c8cfd75800b469abb8febca4d5dab59&folderid=8ffa8a74bf834613a04c19a68eefb43b

Initial Proposals

- Through its upcoming rate case, the utility should provide a plan to develop a RI System Data Portal, using the New York System Data Portal as a starting point. Peak/load forecasts, capital plans, distribution system planning process descriptions, heat maps, hosting capacity maps, and other key data should be made available through the portal. For data not yet developed, such as hosting capacity maps, the utility, regulators, and stakeholders should work together on reasonable timelines and specificity.
- The Power Sector Transformation team should provide guidance relative to design criteria and an ongoing process for review, input, and update of the portal.

Questions

- What key information, data, or tools would stakeholders like to see on a RI System Data Portal?
- The Power Sector Transformation team current vision is a modular portal that could be developed in an iterative fashion over time. What initial content or features should be prioritized for a portal?

2. Data Access and Governance Policy

Importance of the Issue[5]

The ongoing modernization of the electric grid includes deployment of devices that yield significant amounts of data about the time, location, and magnitude of electricity consumption and flow. Data pertaining to the electric grid may include customer-specific data emanating from a customer meter or system data emanating from devices located on the distribution utility's electric grid to monitor the reliability and operation of the electric distribution system.

Access to customer and system data – with the proper privacy and security protections in place – may allow customers and market participants to better address their own needs as well as contribute value to the system (e.g. reducing costs, helping to achieve policy objectives at lower cost). For example, DER providers can use customer data to develop and offer tailored products and services. Customers could use this data to identify savings opportunities. DER providers could use system data to identify opportunities to provide infrastructure deferral or avoidance benefits.

In other words, today, data guides utility planning, operations, and infrastructure plans. Looking ahead, the abundance of customer and system data offers an opportunity to guide investment decision-making by customers and third parties in addition to utilities. As a prerequisite, the Power Sector Transformation team proposes to develop a clear set of established protocols to govern access to data by customers and third parties.

Initial Proposals

- The utility should include a "Data Access and Governance Policy" as part of its upcoming rate case that contains the following elements:

[5] For a good overview of the policy and market benefits of data access, see the following report, starting on page 4: http://scholarship.law.berkeley.edu/cleepubs/17/

    - Customers should have the right to access their own usage and billing data in an easily-organized and standard format (e.g. display of consumption during peak-time events, display of consumption data used for billing on the monthly statement).
    - Customers should be able to authorize third party access to their data
    - The utility should make certain system data and aggregated/anonymized customer data available to the public
    - The utility should be able to charge market rates in exchange for developing and providing "value-added" data
- The policy should propose a standard process by which users can make data requests to the utility, request the provision of additional datasets over time, and establish procedures for how to settle disputes
- The utility should propose adequate security protections for data sharing that should be reviewed by stakeholders and regulators

Questions

- In its Supplemental DSIP Filing in New York, National Grid provides a list of datasets in publicly-available filings.[6] Should any additional datasets be provided initially by the utility?
- How should a dataset be determined to be "value-added" and subject to payment by a user to access the data. Is this determined by the utility? By regulators? Other?
- Aggregation standards can be used to preserve customer privacy. Aggregated data is data that has been summed or combined across a group of multiple accounts in order to preserve individual customer privacy. In New York, the utilities proposed a 15/15 privacy standard for aggregated data, which would require data to be drawn from a minimum of 15 accounts and limits the load of any single account to 15% of the total load for the dataset. What is appropriate for Rhode Island?

3. Hosting Capacity and Heat Maps

Importance of the Issue

Hosting capacity analysis determines the maximum amount of DER that a substation feeder can support without additional upgrades. Heat maps show where DER can help address system needs such as load growth or voltage regulation in areas such as highly-utilized feeders in order to prolong the useful lifetime of existing systems. Hosting capacity maps provide a complementary benefit to heat maps: whereas heat maps reveal where DER can help address problems (e.g., by reducing congestion or peak loads on an overloaded feeder), hosting capacity maps show where DER can avoid creating problems (e.g., by indicating where there is sufficient "headroom" for DER to interconnect without spurring the need for incremental system investment).

Hosting capacity maps can help streamline interconnection processes and create an environment that encourages the addition of DER to the grid, in line with Rhode Island's state policy objectives. There are different technical approaches to computing hosting capacity, with tradeoffs between options with simpler computational requirements (allowing for more frequent updates) and

[6] http://jointutilitiesofny.org/wp-content/uploads/2016/10/3A80BFC9-CBD4-4DFD-AE62-831271013816.pdf

options that are more complex, require more time for analysis, but yield more accurate information to inform interconnection decisions, for example.[7]

Heat maps could help direct third-party investment toward areas on the grid where DER can help reduce, defer, or avoid conventional utility infrastructure projects. Implementation of a heat map will raise questions relative to the processes for sourcing DER in identified locations, either through existing programs such as SRP or the Renewable Energy Growth (REG) Program, through local pricing mechanisms, or through market solicitations (or some combination of these options). For example, if a heat map identifies an area of need, how will the utility identify or solicit DER solutions through REG, Energy Efficiency, SRP, or otherwise?

Initial Proposals

- Based on input from stakeholders, the utility should propose an implementation roadmap within ISR/SRP for developing and updating hosting capacity maps that meet the needs of the utility and stakeholders
- Based on input from stakeholders, the utility should propose an implementation roadmap within ISR/SRP for developing and updating heat maps, as well as consistent integration of heat map implementation across all DER and infrastructure planning processes

Questions

- What are the uses and objectives for hosting capacity analyses that are most important to Rhode Island stakeholders (e.g., indicative information for feeder capacity for DER, fast-track interconnection approvals, annual distribution system studies)? What are the granularity, frequency, and accuracy requirements for each use and appropriate industry method?
- How should the utility ensure consistent integration of heat map implementation across all DER and infrastructure planning processes?
- How often can/should heat and hosting capacity maps be updated now and in the future?

4. Forecasts

Importance of the Issue

National Grid develops a peak load forecast for its Rhode Island territory on an annual basis. This forecast is important because distribution planners assess current and future system needs based on models which incorporate this forecast as an assumption. This in turn affects capital planning decisions, recommended levels of investment on the system, and finally, costs borne by ratepayers.

The current model of a statewide forecast of peak hour net demand is not sufficient for future distribution system planning with high levels of DER. With more DER on the system, forecasts will need to become increasingly granular. While the Company currently takes into account some forecasted DER (e.g. energy efficiency and expected amounts of distributed generation from renewable programs), there may be a need to more fully account for the impacts of state policies

[7] See for example page 8: https://energy.gov/sites/prod/files/2016/09/f33/DOE%20MPUC%20Integrated%20Distribution%20Planning%208312016.pdf

and goals in forecasting (e.g., increasing electrification of heating and transportation due to GHG reduction goals).

Initial Proposals

- Detailed information on National Grid's forecasts that are used for distribution system planning should be made public through a centralized RI System Data Portal and through relevant dockets, namely the ISR and SRP
- Stakeholders – including policymakers and third parties – should have the opportunity to review and provide input into National Grid's forecasting assumptions and methodology
- The utility should describe its process for reassessing forecasting as technologies and data-gathering improves

Questions

- Would making forecasting assumptions and methodologies available through ISR/SRP filings meet the needs of stakeholders to provide meaningful input into forecasting while balancing the Company's internal needs to meet their timelines and general obligations for distribution planning?

5. Alignment of DSP, Capital Project, and Non-Wires Alternatives (NWA) Planning

Importance of the Issue

New technologies on the customer and utility side of the meter are increasingly having an impact on utility planning and investment. In certain instances, these technology investments by third parties are viable, cost-effective options to substitute for traditional utility infrastructure solutions. National Grid's System Reliability Procurement (SRP) Plans established the first process in Rhode Island by which capital projects are screened for potential NWA solutions.

In 2017, the most recent triennial update to the SRP Standards included several key revisions including: (1) the use of NWA to address new types of distribution system needs beyond load-growth related issues (e.g., voltage performance); (2) the use of NWA to proactively target "highly-utilized" areas of the distribution system with NWA to extend the life of existing equipment; and (3) consideration of "partial NWA" that reduce the scope of infrastructure projects (rather than defer the entire project).[8]

Additionally, in the Company's Infrastructure, Safety, and Reliability (ISR) Plans, the utility is in the process of conducting area studies that inform distribution planning more broadly, and subsequent identification of NWA and capital solutions. These studies are intended to inform and/or support infrastructure planning, NWA opportunity identification, and development of heat maps.

Initial Proposals

- The Power Sector Transformation team should work with the utility and other stakeholders to ensure that the utility's internal protocol for DSP fully integrates evaluation of partial

[8] See page 14 for NWA screening criteria and process: http://www.ripuc.org/eventsactions/docket/4684-LCP-Standards_7-27-17.pdf; See pages 2-4: http://www.ripuc.org/eventsactions/docket/4684-OER-DPU-JointCommnents_3-6-17.pdf

NWA into the NWA screening process, provides further opportunities to engage DER providers earlier in and throughout the distribution planning process, and that all DSP regulatory processes are informed by the Company's increasing analytic capabilities

Questions

- How can DSP fully integrate partial NWA opportunities in a way that allows DER providers to provide incremental value to the system where opportunities exist?
- How and when should DER providers and/or other stakeholders be engaged through the distribution planning process?