September 1, 2017

Macky McCleary	Carol J. Grant
Administrator	Commissioner
Division of Public Utilities and Carriers	Office of Energy Resources
89 Jefferson Boulevard	One Capitol Hill
Warwick, RI 02888	Providence, RI 02908

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

Dear Administrator McCleary and Commissioner Grant:

Enclosed, please find comments from the Northeast Clean Energy Council (NECEC) and Advanced Energy Economy Institute (AEE Institute) in response to your agencies' August 15 Initial Proposals for Distribution System Planning Improvements and Request for Stakeholder Comment.

Our organizations are available as a resource to you as efforts within the Power Sector Transformation Initiative continue to develop and progress. Please let us know if we can be of any assistance.

Sincerely,

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NECEC

Janet Gail Besser, *Executive Vice President*
NECEC

Lisa Frantzis, *Senior Vice President*
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Initial Proposals for Distribution System Planning Improvements and Request for Stakeholder Comment

Introduction

The Northeast Clean Energy Council (NECEC) and Advanced Energy Economy Institute (AEE Institute) commend the Rhode Island Division of Public Utilities and Carriers (DPUC), the Office of Energy Resources (OER), and the Public Utilities Commission (PUC or Commission) for their work within the Power Sector Transformation initiative. We greatly appreciate the opportunity to respond to the *Initial Proposals for Distribution System Planning Improvements and Request for Stakeholder Comment* issued by the DPUC and OER and to participate in support of your agencies' ongoing efforts.

NECEC is a clean energy business, policy and innovation organization. Our mission is to create a world-class clean energy hub in the Northeast delivering global impact with economic, energy and environmental solutions. NECEC is the only organization in the Northeast that covers all of the clean energy market segments, representing the business perspectives of investors and clean energy companies across every stage of development. Our members span the broad spectrum of the clean energy industry, including energy efficiency, demand response, wind, solar, combined heat and power, energy storage, fuel cells, and advanced and "smart" technologies. Many of our members are doing business and investing in Rhode Island, and many more are interested in doing so in the future.

AEE Institute is a charitable and educational organization whose mission is to raise awareness of the public benefits and opportunities of advanced energy. AEE Institute is affiliated with Advanced Energy Economy (AEE), a national business association representing leaders in the advanced energy industry. AEE supports a broad portfolio of technologies, products and services that enhances U.S. competiveness and economic growth through an efficient, high-performing energy system that is clean, secure and affordable.

NECEC and AEE Institute submit these comments on the proposals for distribution system planning improvements in Rhode Island in response to the August 15 Notice. In these comments, NECEC and AEE Institute will be referenced collectively as "the advanced energy community," "we," and "our."

NECEC and AEE Institute have substantial experience participating in grid modernization proceedings across the country. As organizations with stakeholders that provide a range of technologies and services, we balance a wide variety of interests and address issues with a technology-neutral perspective. Every state has different goals, legal requirements, and market conditions, and so therefore takes a different approach to grid modernization and potential distribution system planning reforms. In these comments, we have based our responses to the questions posed in the August 15 Notice on NECEC's extensive experience in regulatory, policymaking, and legislative processes in Rhode Island, as well as the experience of both of our organizations in other states, while keeping in mind the unique characteristics of Rhode Island.

Initial Proposals on Distribution System Planning

In the August 15 notice, your agencies laid out five proposals designed to improve the distribution system planning (DSP) process in the state. These proposals include:

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

Our organizations were very pleased to read these initial proposals, and we congratulate the agency teams for developing a set of thoughtful proposals to improve distribution system planning in a comprehensive and holistic manner. They succeed in identifying the central importance of access to data and information in the 21st Century Electric System, and they lay out improvements that are not only concrete but attainable in the near future.

Third-party innovation, including new products, services, and business models, stands to benefit tremendously from increased access to energy usage data and system data and information. A well-designed data portal, developed iteratively with increasing automation, can provide a valuable conduit for information – making it available to solution providers and customers, and enabling the utility to incorporate third party solutions and customer choices into distribution system planning. Coupled with a process that works collaboratively with stakeholders and cultivates increased customer engagement, greater access to relevant data can improve distribution system planning, enhance system efficiency, reduce costs, and enable more efficient integration of DERs.

Both historical (heat maps,[1] hosting capacity, etc.) and forward-looking (forecasts for load, DER penetration, transportation and building electrification, etc.) data will shape how National Grid and regulators plan for the grid of the future, and integrating these data into existing dockets and processes will ensure stakeholders are afforded the opportunity to provide regular review and input. This stakeholder input will be critical to ensure that the assumptions and methodologies used to compile and present data conform with the values and principles the have been adopted in consensus-driven efforts like Docket 4600.

In the following sections, we address the specific questions posed by agencies for each of the five proposals and offer additional thoughts and recommendations.

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[1] As defined by agencies in the August 15 proposals: "Heat maps show areas of system needs, where DERs could provide a high benefit value."

1. Rhode Island System Data Portal ("Portal")

As stated above, our organizations believe that a well-designed data portal, developed iteratively with increasing automation, can provide a valuable conduit for information – making it available to solution providers and customers, and enabling the utility to incorporate third-party solutions and customer choices into distribution system planning. As the Portal is completed and updated, it can become a primary resource for customer and third-party engagement alike. By providing critical data to both customers looking to take control of their energy consumption and to advanced energy companies looking to develop projects and offer solutions to those customers and the distribution utility, the Portal has the potential to facilitate development of a distribution system platform that can become a marketplace for value-added advanced energy solutions to the mutual benefit of customers and the system as a whole. In addition, the Portal could also host utility requests for information, expressions of interest, and formal requests for proposals, serving as the platform for proposals and responses to be submitted to utility-identified areas of need. The portal could ultimately help to accelerate collaboration between utilities and solutions providers to address areas of greatest interest and economic value.

Data access takes three basic forms: (i) customer-specific data that can be securely accessed in a timely manner by such customers, their electricity suppliers, and their designated third-party service providers, (ii) aggregated, anonymized customer data that can be accessed directly by third-party providers, and (iii) utility system data made available to third-party providers. Each has its place in a modern electricity system.

Timely and granular customer usage data that customers can access, or authorize third parties to access on their behalf, will facilitate the development of new DER products and services that, in turn, will be able to reach more customers. While many customers may use the portal to retrieve data and pursue products and services on their own, third party DER providers, competitive retail suppliers, and National Grid will also be able to leverage the Portal either to spur action and engagement by customers who might otherwise remain passive energy consumers or provide solutions for those who choose not to engage. By providing a destination for actionable insights and opportunities to help customers save on their bills, increase the efficiency of their homes or businesses, or self-generate their electricity, National Grid can empower customers to take control of their energy consumption or take advantage or products and services offered by third parties who will do this for them. Making aggregated, anonymized customer data and appropriate system-wide data available to third-party companies in a timely manner can also help DER providers determine the best places to locate DER and respond to system needs with cost-effective DER solutions. And, aggregated customer data can also help third-party companies develop new and innovative products and services that apply broadly to targeted customer classes or locations. All of these outcomes will benefit customers and the system as a whole, and they can be facilitated and indeed made possible by a well-designed data portal.

A scalable way to provide customer data to third parties is by using a data exchange standard such as Green Button. **Green Button Download My Data** provides a standardized format for customers to digitally download usage data. Once downloaded, the data can be analyzed or shared with a third party. **Green Button Connect My Data** provides an easy way for end users to grant authorization to a third party to retrieve customer data directly from the utility's website.

Any Green Button implementation should adhere to the following principles to optimize data access while ensuring privacy, security, and auditability:

1. **Ensure bill-quality data:** Require interval data provided by the utility to customers, electricity suppliers, and third parties is the same data the utility will use to bill the customer.[2]
2. **Provide full data sets:** Standardize the availability of a requisite set of usage, billing, and location data for historical and ongoing data access.
3. **Provide synchronous data**: Once a data request is authorized and authenticated by a customer, data should be delivered on-demand.
4. **Adopt strong security protocols:** Data security must accommodate cloud-based systems.
5. **Ensure quality of service and transparency:** Web services and Green Button Connect platforms must be provided at a sufficiently high level of service, with performance metrics reported publicly.
6. **Provide testing environment:** Utilities should provide a testing environment and a production environment of Green Button Connect for third-party use.

A customer's authorized release of data to a third party (and similarly, the process of the customer simply accessing their data) must be a simple and seamless experience. If not, the customer will likely abandon the process of releasing data, and programs dependent on the use of the data will not achieve their full potential. General principles for the customer experience in authorizing release of data include:

1. **Authentication credentials**: Information asked of the customer for release of data must be easily accessible and knowable without being sensitive. For instance, customers should not be asked to provide their social security number or more information than the utility itself uses to authenticate customer identities.
2. **Accept instant, digital authorization:** A digital signature (including click-through) should be valid for authorization.
3. **Ensure seamless click-through:** A utility account holder should be allowed to begin and end the click-through process on the third-party website. The third party may lead the customer request for the types of data and the time frame of data sharing, and the customer may approve or reject such a request at its sole discretion.
4. **Standardized language**: Standardized language should be presented to the customer to support informed consent. This language should include, but not be limited to, description of data, length of authorization, purpose specification, and revocation.
5. **Reduce customer effort:** The authentication process should require no more than four screens and no more than two clicks to reach completion.

We envision the Data Portal as a central hub for customers and third parties seeking to engage with and shape the way they consume and produce electricity. As such, portions of the data portal can and should be identical for all customers and third parties who visit the data portal (e.g., state-level data, interconnection queues, heat and hosting capacity maps). However, other portions of the portal should be individualized for individual customers' and third parties' accounts, which would display user-specific information attached to a unique account/profile/log-in. Of course, many of these functionalities would have to be developed over time, but a Portal will still hold tremendous value in its early stages of basic data provision.

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[2] This does not mean that the meter providing the information of record must be owned by the utility.

What key information, data, or tools would stakeholders like to see on a RI System Data Portal?

Members of our organizations have identified a number of important datasets that will hold significant value if hosted on a System Data Portal for Rhode Island. In compiling and distilling these potential datasets, we have found it helpful to organize the information, data, and tools into three tiers or categories: System Data, Customer Data, and "Grid Mod" Data.

i. System Data[3]

Information, Data, & Tools	Description
Peak load	Statewide load data, both historic, year-to-date, and forecasted
Load profiles	Hourly (8760) distribution system load profiles by customer and rate class and other sub-divisions.
Retail kWh sales	Breakdown of annual and monthly retail electric sales by load-serving entity, customer class, and other categories
Aggregated load/demand	"Anonymized" load and demand data by circuit, transformer, and other levels of grid-granularity, as well as the capacity limits for the identified components.
Physical system attributes	Network topology (radial or mesh network), power quality, voltage limits of distribution lines and transformers, the ratings of individual lines, circuit breakers, and fuses, etc.
Protective devices	Reclosers, sectionalizers, fuses, circuit breakers, and other devices needed to minimize the duration and magnitude of an electrical fault, which may be valuable to DER providers to help identify optimal locations for adding DER

These data sets would largely be identical for all users accessing the Portal, as they offer universal value and potential insights to all customers and third party entities. User-specific views of certain circuit, feeder, or other sub-state data might be made available as well (e.g., "My Neighborhood's Energy Use"). Further discussions are warranted as to whether certain information (system attributes, protective devices, etc.) should be made widely available to all customers accessing the Portal, or if such data should be reserved for eligible third-party entities registering for an account.

ii. Customer Data[4]

Information, Data, & Tools	Description
Individualized accounts	Each customer should be able to log in to the Portal with National Grid account information; third party providers and suppliers should be able to register for the Portal as third parties and gain unique log-in as well.
Customer consumption data	A more sophisticated version of a customer's online/electronic bill, with historic consumption data and more granular usage

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[3] Note: some of these data categories may include sensitive/confidential information about the grid. Any decision to work towards publication of such data on the Portal would obviously need to guarantee robust security protections meeting the standards of National Grid and Rhode Island and federal regulators.
[4] Note: many of the below entries would not be feasible until later iterations of the Data Portal following deployment of AMI/AMF.

	information. The Portal would provide customers with the ability to make their consumption data available to third-party providers via the data-sharing functionality discussed above.
Peak window data	Display of consumption and production during peak-time events, synced with applicable PTR, CPP, and other rate design signals along with demand response calls;
Customer-sited generation and discharge data	System production data for PV, storage, fuel cells, and other DG, including daily/annual generation profiles and synched with applicable tariff enrollment (REG, net metering, community remote net metering, etc.).
Home & business energy toolkit	Recommendations for energy savings and energy management measures; tools for analyzing the impact of alternative, dynamic rate choices by the customer; information and resources for DER products or services, including energy efficiency offerings.

These datasets would largely be individualized by user, displaying unique information for each customer's account. Third-party providers and developers would be able to access a "Customer Data" page on the Portal, but this would house the customer data to which they have gained access (whether through customers who have authorized them to access their energy usage data or through anonymized aggregations, both basic and value-added). Finally, since customer elasticities largely depend upon receipt of information in real-time or near real-time, the Portal should be developed to receive data from AMI (as available) and make said data available to consumers in as close to real-time as possible (experience from solutions providers in the industry demonstrates that latency of one minute or less is both desirable and feasible).

An additional valuable feature would be provision of application program interfaces (APIs) from ISO-NE that include both Day-Ahead and Real-Time spot market prices for the appropriate location.

iii. Grid Mod Data

Information, Data, & Tools	Description
Clean energy deployment / penetration	Historic totals and map of commercially operational and in-development projects across the state; broken down by resource type (solar, wind, storage, etc.), tariff enrollment (REG, DG standard contracts, net metering, etc.), and other metrics.
DER forecasting	National Grid's DER growth forecast(s), to include at a minimum, distributed solar, stationary storage, and electric vehicles, and including predicted impacts regarding power quality, reliability, resiliency, and other related measures
Hosting Capacity maps	Generally as outlined on page 5 of the agency proposal; could also include other components of hosting capacity calculation like circuit models, circuit node loading, and voltage and thermal rating of equipment.
Heat maps	Generally as outlined on page 6 of the agency proposal; map should also have some way of denoting locations undergoing recent 'heat shifts' from green or yellow conditions to red, and vice versa.
Beneficial siting maps	Additional map/GIS-layer denoting parcels predetermined by municipalities, land-owners, and other entities as opportunities

	for optimal or beneficial siting, including for dual agricultural use. This could take into account public/private development interest, local zoning rules, state conservation and environmental categorizations, and other applicable siting considerations.
Directory of proposed distribution system projects and estimated costs	In conjunction with heat mapping efforts, this would involve identification of all known and proposed distribution system projects with a focus on highlighting areas for greatest DER impact. This directory should include information, including cost, on all forward-looking capital investments on the distribution system (ISR, SRP, other), along with the identified need driving the particular investment. Estimated costs of upgrades are especially important to enable third-party providers to determine whether their solutions are viable for any bidding processes.
Interconnection status and queues	Regularly updated queue of interconnection applications submitted and relevant status information; identification of opportunities for group proposals for system upgrades and/or recent system upgrades with boosted hosting capacity
Program enrollment queues	Qualification/enrollment queues for net metering, annual REG open enrollment periods, and other programs
VVO and Voltage Support	Voltage profile information at the feeder level, which may be valuable to DER and VVO providers interested in providing voltage support.

These datasets would largely be identical for all users accessing the Portal. Regarding the various maps, the Portal should seek to ultimately host a multi-layered map that can help customers and developers swiftly identify projects in locations i) with sufficient hosting capacity, ii) in greatest need of infrastructure deferment/avoidance, iii) lacking substantial interconnection hurdles, and/or iv) with optimal siting characteristics.

> ***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?***

Priorities assigned to the above should be based upon several considerations, including degree of difficulty, cost and timeline required to accomplish, value to participants (for example, there could be DER projects that could help to forestall infrastructure investments in the very near future). Provision of heat maps and a directory of proposed distribution projects could make these opportunities visible to potential vendors. As the Portal is developed, existing working groups in Rhode Island (e.g., SIRI, SRP) could provide an appropriate forum for stakeholders to weigh and consider evolving priorities for and iterations of the Portal. Regular input from such a working group would be important to guide the design and creation of all new Portal modules based on stakeholder priorities and user experience from early iterations.

> ***Additional Considerations***

Our organizations are agnostic as to the ownership and oversight of the Portal. At a minimum, critical aspects for consideration are that the Portal: i) be developed in a timely fashion; ii) include the essential functionality as defined by stakeholders, with a roadmap towards continuous improvement as more information becomes available (with AMI for example), new

use cases are defined, and technologies evolve; and iii) be subject to regulatory oversight to ensure that the above goals are met or exceeded.

2. Data Access and Governance Policy

Our organizations strongly support the agencies' proposal calling for the development of a Data Access and Governance Policy. National Grid could develop the policy and submit it in their rate case as suggested by the agencies, but the Company must be required to engage stakeholders in advance to ensure that the proposal will meet the needs of customers and third parties. The existence of such a Policy will ensure that stakeholders, including National Grid and regulators, will have a consistent rubric to monitor and guide data accessibility into the future. As the agencies articulate well in their treatment of the issue's importance, increasingly abundant customer and system data necessitate protocols and standards to protect customers, identify opportunities for savings and solutions, and generally capture value for planning purposes.

The four elements laid out by agencies as required components of the Policy are each sound and sensible inclusions: right to self access; ability to authorize third party access; basic and aggregated data made public; and appropriate market rates for value-added data. Additionally, the two procedural and security recommendations offered – for a standard process for data requests, and for appropriate security protections for data sharing – represent practical but vital components of the Policy to be developed.

Of these recommended elements, our organizations would first recommend that agencies clarify that customers have the right to access their own usage and billing data *for free* (we believe this is the original intent of the proposal)*. Additionally, we would recommend that agencies stipulate that the utility's ability to charge market rates for value-added data[5] does not in any way inhibit the ability of third parties to market and sell value-added data of their own. With increasing ability for third party vendors to gather data from their own grid-connected hardware and software, and for such parties to add value to basic data provided by the utility, the Policy should state explicitly that the utility's ability to charge market rates does not come at the expense of third parties' ability to do the same.

In addition, we suggest that two other issues related to provision of customer usage data be considered. The first is related to latency (i.e., time elapsed between data creation and delivery to customer and/or vendor). The second is related to the provision of market data from ISO-NE, both Day-Ahead and Real-Time pricing. We believe that the utility should ultimately provide both in its Portal. Markets will become more efficient - with attendant societal benefits - if both pricing and usage data is provided in near real-time. This will allow consumers to readily respond to market signals: the fundamental essence of a functioning and efficient marketplace. National Grid would need to make investments in order to take the information from ISO-NE and make it available with minimal latencies. Similarly, it would have to create new capabilities to provide usage data with minimal delay. These services could be offered to customers and third parties at some reasonable rate approved by regulators.

> ***In its Supplemental DSIP Filing in New York, National Grid provides a list of datasets in publicly-available filings. Should any additional datasets be provided initially by the utility?***

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[5] Until a true market benchmark for value-added data is available, an alternative could be to begin with a cost-of-service rate including a rate of return for the utility for offering the service.

Our organizations understand the available datasets identified[6] by National Grid and the Joint Utilities to encompass the following items:

Historically Available System Data	Recently Developed System Data
Capital Investment Plan	Load data
Load Forecast	Distribution indicator maps for hosting capacity
Reliability statistics	Beneficial location
Planned resiliency/reliability projects	DER already connected
	SIR Pre Application Information
	Circuit Capacity/Design Criteria

We have no additional datasets to identify, other than to simply direct agencies to our response to Proposal 1, Rhode Island System Data Portal, above.

> *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?*

All value-added data charges sought by a utility should be proposed by the utility in an applicable docketed proceeding and must receive approval from the Public Utilities Commission. In said proceeding, the utility should be required to: 1) provide evidence, consistent with regulatory guidance, that the data is in fact "value-added," with illustrative uses that would not be possible with a basic version of the dataset; 2) propose a rate/fee structure for access to the data; 3) provide evidence that the rates sought are reasonable and market-driven, to the extent market data is available. As always, stakeholders should be invited to participate in the docket and offer feedback on the substance of the dataset proposal and the magnitude of the proposed rate(s). Stakeholders should have the opportunity to argue in special circumstances that a compelling public interest warrants the publication of the data.

> *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?*

A 15/15 privacy standard is overly restrictive for Rhode Island. While such a standard was indeed proposed in New York, the 15/15 proposal was rejected by the Public Service Commission (PSC). In response and reconsideration, the Joint Utilities of New York have subsequently filed a 4/50 standard on June 7, 2017.[7] NECEC and AEE Institute recommend that Rhode Island agencies adopt a similar aggregation standard, along the lines of 4 accounts with none more than 50% of load. Given the size and characteristics of the Rhode Island grid, the agencies may find it valuable to consider whether more flexible standards (either by

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[6] http://jointutilitiesofny.org/wp-content/uploads/2016/10/3A80BFC9-CBD4-4DFD-AE62-831271013816.pdf, see p. 127-129.
[7] Available online at http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bD298636C-C085-4538-A39C-C498247652CD%7d.

customer number or percentage of aggregated load) may be appropriate for the state. Additional support for similar standards from around the country is available in the January 2016 Department of Energy report, *Guide to Data Access and Utility Customer Confidentiality*.[8]

3. Hosting Capacity and Heat Maps

Our organizations share the agencies' view that hosting capacity maps and heat maps can offer a number of complementary benefits to the distribution system and entities seeking to integrate resources in a streamlined manner. By directing DERs towards locations where they can help address problems these maps hold great promise as a vehicle for data sharing and analysis.

While tradeoffs invariably exist between technical approaches to these mapping exercises, our members generally place the highest value on computational approaches that meet minimum accuracy requirements in the shortest given time period. Regular and increasingly automated updates to the maps provide the most value to developers and providers, who need consistently refreshed data on a semi-annual, quarterly, monthly, and ever-more granular basis. Accuracy needed for interconnection certainty, program rate-setting, and other formal purposes must be balanced with speed of reproduction/updating.

> *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?*

Hosting Capacity Uses	Objectives and Description	Granularity, Frequency, Accuracy, & Appropriate Method
Fast-track interconnection approvals	Identify locations with ample headroom for interconnection; identify recent system upgrades and/or possible accelerated system upgrades for potential pro-rata cost-sharing (per H.5483[9] passed in 2017)	• Feeder by feeder • Semiannually to quarterly • Sufficiently accurate to support Ix decisions • Automated method (SDG&E, SCE) preferred to streamline approach (PG&E)
Feeder Resource Portfolio Analysis	Provide illustrative feeder capacity for various DER types and combinations thereof (not just PV, but storage, EVs, efficiency, fuel cells, etc.).	• Feeder by feeder • At least semiannually • Need not be as accurate as Ix • Streamlined approach = okay
Existing Policy Refinement	Inform existing policies to reflect locational hosting capacity and	• Varying granularity

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steer incentives towards areas of greatest capacity (e.g., REG, NEM, CRNM, SRP, others). Can also be incorporated into ISR, SRP, and other existing dockets.	• At least once per program year • Must be accurate enough for Commission approval of incentive-payment adders, e.g.[10] • Automated method preferred to streamlined approach

How should the utility ensure consistent integration of heat map implementation across all DER and infrastructure planning processes?

National Grid should work to ensure consistent integration of heat map implementation through a number of core actions. First, it should centrally locate and promote singular heat-mapping data on the RI System Data Portal. Secondly, National Grid – in conjunction and collaboration with all stakeholders – should work to ensure that the map(s) are designed and executed through the lens of the Benefit Cost Framework, recommendations, and principles adopted in Docket 4600 and that same data and maps are used in all proceedings (rate cases, ISR, SRP, etc.).

How often can/should heat and hosting capacity maps be updated now and in the future?

We direct you to the table above for our responses regarding hosting capacity updating needs. Regarding heat-mapping, we propose that fresh statewide heat-mapping be conducted at least twice per year to show variation and characteristics of summer and winter system peaks and load/congestion profiles, and occur more frequently as automation capability is developed and enhanced.

4. Forecasts

Our organizations wholeheartedly support the publication of detailed forecasting information through the RI System Data Portal and in the ISR and SRP dockets. It will be extremely important for all stakeholders to have sufficient opportunity to review and provide input into forecasting assumptions and methodology, and these dockets should be able to serve as the appropriate forums for this input.

As agencies note, the current model of a statewide forecast of peak hour net demand will not be sufficient for future distribution system planning with higher levels of DER deployment. The industry is increasingly cognizant that future DSP dynamics will require net load forecasting on a near real time basis. Therefore, National Grid should develop plan to provide the refinement or granularity of forecast elements to provide data and information that customers and third parties will need to take desired actions such as reducing peak loads. The ramifications of increasingly granular forecasting needs extend well beyond Rhode Island's borders too, with regional transmission and capacity planning relying to a greater extent on more sophisticated and up-to-date forecasting inputs.

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[10] See, for example, existing authority under Renewable Energy Growth (REG) program for Zonal and Other Incentive Payments (§ 39-26.6-22). Available online at http://webserver.rilin.state.ri.us/Statutes/TITLE39/39-26.6/39-26.6-22.HTM.

Since recent history abundantly demonstrates that adoption of DERs occurs on a cluster basis – that is, the greatest determinant for adoption of solar installations and electric vehicles (and soon to be storage as well) is whether one's neighbor or colleague has one – there are forecast implications on regional and sub-regional bases. The granularity of future forecasts should take these factors into account, since such forecasts may also influence future investment as well as opportunities for third-party solutions providers.

> ***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?***

From a timing and procedural perspective, initially using the annual ISR and SRP filings should provide sufficient opportunity for meaningful input into forecasting. For ease of access, however, we would reiterate the recommendation (made elsewhere in agencies' proposal) that all forecasts and detailed supporting information should be made available on the RI System Data Portal.

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

NECEC and AEE Institute fully support further work by the PST agency teams and other stakeholders to ensure internal utility protocols integrate full- and partial-NWA evaluation in a comprehensive manner. National Grid should continue striving to engage DER providers earlier in and throughout the distribution planning process, to ensure that third parties' and customers' input and potential solutions are taken into account in the process. They should also marshal increasing analytic capabilities to overcome what in the past may have been lengthy planning runways and expenditure requirements for traditional infrastructure investment options (e.g. infrastructure upgrade lead-time and capital investment thresholds).

> ***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?***

National Grid can take several actions to more fully integrate partial NWA opportunities into DSP efforts. First, as described above, the Company might make location-specific considerations a part of all existing programs, such as REG and others. National Grid can also look to expand on SRP efforts with regular solicitations for a set of most promising opportunities for full or partial NWA solutions across the state, perhaps over a two or three year time horizon. Finally, we would note that National Grid and regulators must ensure that there is still sufficient focus on full NWA opportunities, even in the absence of many true "hot-spots" for full load-growth deferment or avoidance in the state.

> ***How and when should DER providers and/or other stakeholders be engaged through the distribution planning process?***

Following Rhode Island's already-strong precedent, DER providers and other related industry stakeholders should be engaged throughout the DSP process at all critical junctures, before all formal dockets are opened and in all relevant proceedings (ISR, SRP, load forecasting, etc.). In general, engagement should include opportunity to provide input on draft versions of Company proposals – especially some of the early proposals emerging from the Power Sector Transformation effort – to allow National Grid to adapt and refine proposals prior to formal filing.

Conclusion

NECEC and AEE Institute reiterate our view that Rhode Island is in a unique position to transform its electric grid to meet the needs of the advanced energy future we and our members envision. The five distribution system planning proposals put forth by your agencies have the potential to aid in achievement of this goal, helping to control the long-term costs of the electric system, giving customers more energy choices, reducing environmental impact and building a smarter and more flexible grid. Moving forward with the proposals outlined, incorporating the modifications that we propose, will contribute to ensuring that distribution system planning improves and remains consistent with evolving electric utility business models.

NECEC and AEE Institute appreciate the opportunity to provide your agencies with these comments, and we look forward to our continued involvement in this process.