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September 12, 2017

VIA ELECTRONIC MAIL

Rhode Island Power Sector Transformation Initiative
c/o Rhode Island Division of Public Utilities and Carriers and Office of Energy Resources
DPUC.powertransformation@dpuc.ri.gov

RE: Rhode Island Power Sector Transformation Initiative
Request for Stakeholder Comments on Advanced Grid Capabilities
National Grid's Comments

Dear Members:

On behalf of National Grid,[1] I enclose the Company's comments in response to the additional questions relating to Advanced Grid Capabilities outlined in the Division of Public Utilities and Carriers and the Office of Energy Resources request dated August 20, 2017 to inform the ongoing inquiry into distribution system planning.

The Company looks forward to future discussions on this important topic. If you have any questions, please contact Kayte O'Neill at 781-907-1790, Tim Roughan at 781-907-1628, or me at 401-784-7288.

Very truly yours,

Jennifer Brooks Hutchinson

Enclosure

[1] The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

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Public Utilities Commission, Division of Public Utilities and Carriers, and Office of Energy Resources
Power Sector Transformation
Advanced Grid Capabilities and Questions for Stakeholders

National Grid's Comments in Response to Advanced Grid Capabilities

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National Grid appreciates the opportunity to submit comments in reply to the stakeholder comments submitted in response to Advanced Grid Capabilities and Questions for Stakeholders under the Power Sector Transformation's Grid Connectivity and Capabilities Work Stream.

1) **Utility proposals for advanced meter functionality and distribution automation should seek to achieve a defined list of capabilities. Please review the accompanying list of capabilities and provide any comment on the completeness of the chart, the accuracy of the definitions, and the relative importance of each goal and capability within each goal.**

National Grid considers the list of capabilities prepared the Division of Public Utilities and Carriers (DPUC) to be robust and consistent with the capabilities that the Company has considered in filings addressing advanced meter functionality (AMF) in Massachusetts and New York. The Company suggests that, rather than a defined list of capabilities, utility proposals for AMF and distribution automation should seek to advance clearly-defined objectives. Clear definition of objectives will support prioritization of key capabilities that are likely to include some, and potentially all, of those listed. The capabilities of any grid modernization plan should evolve over time, as warranted. Initial proposals may focus on foundational investments that enable new or more advanced capabilities in the future. For example, a function such as real time network monitoring must exist in advance of using automated power flow control. In addition, a capability such as dynamic electricity production forecasting may not be necessary until there is sufficient distributed energy resource (DER) penetration and market mechanisms driving their operations.

2) **Advanced meter functionality can enable a wide range of system and customer benefits. Please provide any information you may have to help us evaluate the qualitative system and customer benefits from each capability.**

The Company believes an AMF proposal should be supported by a strong business case with clear evidence of system and customer benefits. This business case should recognize that some important benefits are unable to be quantified, and develop as detailed an understanding as possible of benefits that can be described only qualitatively.

Depending on the scope of an AMF proposal, the Company suggests that the primary quantifiable system benefits would include avoided wholesale energy and capacity market costs, improved reliability and the possibility of deferred capital and O&M costs.

AMF deployment is likely to provide a number of additional system benefits that for the time being are best described qualitatively, including but not limited to the following. First, the ability of AMF to empower customers to take an active role in managing their energy use will contribute to additional reductions of greenhouse gas emissions. Second, AMF will support improvements to system

efficiency and resiliency, ensuring energy security. Third, AMF can support more accurate system planning, particularly in the presence of increasing DERs, by supporting improved understanding of system loads, customer-driven demands, and locational load management capabilities. Fourth, AMF can enhance safety by allowing the Company to remotely control a meter service. Remote operation can enable operators to respond more effectively to local and system emergencies, reducing the risk of a workplace injury. Finally, AMF can enhance data privacy and security by providing for encrypted communication of meter data to the utility.

AMF deployment will also provide additional benefits to customers that similarly, for the time being, are best described qualitatively. For example, AMF will enable enhance customer satisfaction through greater engagement and customer choice. Today's utility customers are likely to desire opportunities to increase choices, control and convenience, in a manner similar to what they have experienced in other sectors (e.g. wireless phones, banking). The ability of AMF to enable new offerings for customers to manage their usage and costs is likely to increase overall satisfaction while providing the potential for customers to lower their monthly bills. AMF facilitates a better engagement platform for demand response, rate design and choices, and the opportunity to maximize program rebates and incentives. Such opportunities may be particularly valuable for low-income or other economically disadvantaged customers.

Finally, AMF deployment is likely to provide additional customer benefits associated with some of the standard interactions customers perform with the utility. AMF will enhance outage notification, creating the ability to contact customers when an outage occurs, and update them on response and restoration times. Similarly, customers' experiences associated with the move-in/move-out process are likely to be simplified due to the ability to remotely disconnect and reconnect customer meters.

3) Advanced meters, like any technology, carry risks of becoming obsolete. Please describe ownership and operating models for advanced meters that address the risk of obsolescence.

The Company and other utilities have long managed complex technology systems, dating back to original mechanical devices that managed the system, and later to microprocessor-based equipment and larger computational platforms. Examples of these complex systems include Customer Billing, Meter Data Management Systems, Energy Management Systems, Geographic Information Systems, and Maintenance Management Systems. The Company also manages a complex and ever-growing portfolio of equipment that has varying levels of both mechanical and technical complexity.

To mitigate obsolescence risk in its technology investment decisions, the Company pursues solutions that support the use of industry-accepted and open integration standards, have a reasonable maintenance and support plan, and provide cost-effective approaches for the efficient upgrade or replacement of components that have the shortest useful life. This requires careful consideration, planning, design and classification of assets and components. In addition to having open standards and protocols, the ability to remotely connect and update firmware and software allows for timely maintenance and upgrades to extend the life of the component, and/or introduce new capabilities.

In today's world, technological systems and solutions are not only purpose-built complex hybrid systems, but they often are multi-purpose platforms that enable a broad host of functions and services for varying applications and needs. The latest technologies in revenue metering, for example, are, essentially, hardware solutions employing modern computing platforms and operating systems. Moving forward, metering kWh for billing purposes may be a meter's primary function; however, applications running on the same device can allow it to be multi-purposed for other automated distribution system management systems as well as provide real-time outage management functions.

In this example, the same hardware is now used by different, isolated, systems for high-accuracy voltage monitoring and outage notification. The traditional concept of a simple metering asset that will now become an advanced integrated component of the system quickly transforms it into a complex component for supporting advanced grid management systems such as Volt/VAr optimization, and outage and restoration notification, which may facilitate future automated feeder reconfiguration. From a utility perspective, this type of technology allows a single piece of equipment to serve separate roles for secure and isolated integration to different back-office applications. From a customer perspective, this same technology can further enhance offerings through integration capability to home area networks and intelligent appliances within the home. Aside from the various applications and services that such a hardware platform can support, it also becomes a node for extension of a complex, hybrid communication system. When considered from a comprehensive, holistic, technological solution perspective, it becomes clear that the risk of obsolescence quickly diminishes to margins well-managed through proper maintenance over the equipment's life (noting that well-managed and proper maintenance activities may be required more often than for more traditional asset classes for which the pace of technology change was much slower).

From a regulatory perspective, it is critical that the utility can invest to sustain complex solutions, to extend the life and introduce incremental value, understanding that the depreciation lives of utility equipment reflects the actual planned useful lives of the asset to mitigate or prevent stranded costs and their impacts on the Company and its customers. The Company has, in some areas, employed Software-as-a-Service (SaaS) approaches to deliver complex solutions and in doing so, de-risked the investment. While approaches such as SaaS result in a different cost profile (operating expense versus capital expense), the Company is committed to seeking out innovative/alternative solutions that are in the best interests of customers. Some utilities have pursued customer opt-in advanced metering programs where customers pay for the meter, removing it as a rate base investment. While this removes the stranded asset risk, it introduces challenges regarding customer payment plans, customer move-in/outs, and the ongoing maintenance and support of this model. Given some of the longer term considerations a customer needs to make, this model may not encourage a high level of enrollment and is unlikely to support a cost-effective system-wide AMF deployment.

4) **Please describe any complementary measures necessary to ensure that the benefits of advanced meter applications are accessible to all customer classes, especially income eligible.**

National Grid has a long history of designing outreach programs to educate customers on the benefits of energy saving technologies and offer incentives to make these technologies more affordable through its award winning energy efficiency programs. The Company expects to build off of these practices to ensure that the benefits of AMF are accessible to all customers within future energy efficiency marketing plans, including income-eligible customers. The Company is committed to helping customers achieve savings opportunities enabled by the combination of AMF and DER deployment, and recognizes that the ability for customers to act upon these opportunities requires that customers understand how to use the data being made available to them as a result of AMF.

The Company also notes that the system benefits described in the Company's response to question 1 would be broadly shared across all customer classes.

5) **Advanced meters offer a platform on which the utility, or a third party, can provide software services, such as demand response or energy efficiency. Please provide any information to help design such a platform, including how accessible it should be to multiple providers.**

Through its Worcester Smart Energy Solutions pilot program in Massachusetts, the Company has developed a wealth of experience in delivering such services to customers across a portfolio of vendors, products, and varying levels of accessibility. The Company expects to apply lessons learned from this program in Rhode Island. Platform development in Rhode Island will benefit from considerations around customer privacy, data and cyber security, vendor capabilities, overall cost structures, and product strategies and platforms that were addressed in the program's development

As DPUC notes, AMF, coupled with data management systems and customer engagement portals, will provide a platform to enable an array of future utility and third-party offerings. In addition to collecting high-quality, granular usage data, meters allow communication between the utility and the consumer in a bi-directional manner, and serve as a common sensor on which the utility and third-parties could build new offerings. Underlying all of this new ability will be a robust security layer ensuring customers have a clear choice as to how and how much communication and data they exchange.

Customers will be able to easily share their AMF interval data with qualifying third-parties, perhaps through protocols such as Green Button Connect, enabling these parties to market their own offerings directly to our customers. Meter data management systems should be designed with the ability to support these types of programs and other types of industry-standard protocols, with secure and controlled access allowed to qualifying third-parties, upon customers' individual authorization. New and enhanced programs provided by the utility can engage third-party providers in many different ways. Indeed, the Company believes that customer benefits are likely to be greatest when third parties have the ability to innovate and compete to provide customers with new opportunities. The Company's existing energy efficiency and demand response programs are already designed to enable multiple providers – from energy efficiency programs offering incentives for any qualifying devices to demand response (DR) programs allowing customers to "Bring Your Own Thermostat."

New and enhanced programs will follow the same design principles, such as open standards and recurring qualification processes, to ensure that customers have their choice of a range of qualifying technologies and vendors. New customer engagement portals established by the Company to leverage AMF could include an "e-commerce marketplace" wherein the Company could offer third-party energy efficient products and services directly to customers, and an expanded "connected device" portal that enables customers to enroll third-party qualifying devices in Company or third party DR programs.

AMF also provides a pathway for two-way communication from the utility to a customer's home or business, enabling the utility to relay real-time usage data, event alerts, and control signals to devices inside a customer's premise. Qualifying third-parties could leverage this communication pathway to provide new services to customers, under appropriate terms for security, confidentiality, and customer protection. As an example, the device could offer an early warning of potential problems with customer's appliances and connected devices using energy consumption information, as well as alert on anomalies detected within the premise.

6) **Development of a shared communications network among existing wireless network operators, the electric utility, and other infrastructure providers can significantly reduce capital costs for ratepayers. Please provide any considerations to inform formation of a shared communications network.**

National Grid is actively researching opportunities and challenges associated with a multi-user shared network operation model through three different venues: 1) research from a major telecommunications provider; 2) a venture capitalist that has reached out to the Company; and 3) a collaborative forum being established by Power Sector Transformation leadership.

Based on the Company's thinking thus far, there are four important challenges to the development of a multi-user network operating model that must be addressed. The first is finding a model or development model that can be successfully deployed while demonstrating lower communication costs for the end-user.

The second challenge is the allocation of administrative and technical ownership and accountabilities. For example, which party should administrate service levels, costing, security, the network operation center, system configuration, and other relevant factors? Should it be the party with the biggest risk? Should this party be a regulated entity?

The third challenge is any restrictions posed by utility regulation or the Telecommunications Act of 1996. The Act was the first comprehensive rewrite of the Communications Act of 193, and dramatically changed the ground rules for competition and regulation in virtually all sectors of the communications industry, from local and long-distance telephone services, to cable television, broadcasting, and equipment manufacturing.

The fourth challenge that must be addressed is cybersecurity. A shared network must support the Company's obligation to provide for a safe, secure and reliable energy delivery system. Introducing a multi-user network could pose additional cybersecurity risks that could impact distribution and transmission utility operations. There will be mission-critical aspects of distribution and transmission utility operations where it may not be prudent to use a shared network if cyber security issues cannot be clearly and efficiently addressed.