STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

IN RE: THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID'S ELECTRIC INFRASTRUCTURE, SAFETY, AND RELIABILITY PLAN FY 2019 PROPOSAL	:	**DOCKET NO. 4783**

REPORT AND ORDER

I. National Grid's Filing

On December 21, 2017, The Narragansett Electric Company d/b/a National Grid (National Grid or Company) filed with the Public Utilities Commission (PUC or Commission) its proposed Electric Infrastructure, Safety, and Reliability Plan (Electric ISR Plan) for FY 2019.[1] National Grid indicated that the Division of Public Utilities and Carriers (Division) had reviewed the proposed Electric ISR Plan and the Electric ISR Plan reflected a consensus between National Grid and the Division.[2] On February 22, 2018, National Grid

[1] R.I. Gen. Laws § 39-1-27.7.1 states, in relevant part, that National Grid shall file proposals with the Public Utilities Commission that contain:

> An annual infrastructure, safety and reliability spending plan for each fiscal year and an annual rate reconciliation mechanism that includes a reconcilable allowance for the anticipated capital investments and other spending pursuant to the annual pre-approved budget as developed in accordance with [the following:] Prior to the beginning of each fiscal year, gas and electric distribution companies shall consult with the division of public utilities and carriers regarding its infrastructure, safety, and reliability spending plan for the following fiscal year, addressing the following categories: (1) Capital spending on utility infrastructure; (2) For electric distribution companies, operation and maintenance expenses on vegetation management; (3) For electric distribution companies, operation and maintenance expenses on system inspection, including expenses from expected resulting repairs; and (4) Any other costs relating to maintaining safety and reliability that are mutually agreed upon by the division and the company. The distribution company shall submit a plan to the division and the division shall cooperate in good faith to reach an agreement on a proposed plan for these categories of costs for the prospective fiscal year within sixty (60) days. To the extent that the company and the division mutually agree on a plan, such plan shall be filed with the commission for review and approval within ninety (90) days. If the company and the division cannot agree on a plan, the company shall file a proposed plan with the commission and the commission shall review and, if the investments and spending are found to be reasonably needed to maintain safe and reliable distribution service over the short and long-term, approve the plan within ninety (90) days.

The FY 2019 Electric ISR Plan and all of the documents referenced herein can be found on the PUC's website at: http://www.ripuc.org/eventsactions/docket/4783page.html.

[2] Filing Letter at 1 (Dec. 21, 2017).

filed an updated revenue requirement to reflect the effect of the federal Tax Cuts and Jobs Act of 2017, signed into law after the filing of the Electric ISR Plan.[3]

On March 20, 2018, after conducting discovery and a hearing, the PUC approved the Electric ISR Plan, with modification. Specifically, the PUC denied funding for the Advanced Metering Infrastructure/Volt Var Optimization Pilot (AMI Pilot) because the proposal failed to meet the standard of review, failed to meet the standard of prudent expenditure of ratepayer funds, and failed to meet the statutory framework of funding for ISR. The PUC accepted all the recommendations made by Division witness Gregory L. Booth. On March 27, 2018, National Grid submitted a compliance filing reflecting a revised revenue requirement resulting from the PUC's March 20, 2018 decision. The overall revised revenue requirement was $30,667,736, resulting in an incremental fiscal year upward rate adjustment of $3,830,556.[4] This will support a FY 2019 Electric ISR Plan capital budget of $19,895,485, a vegetation management budget of $9,800,000, and an infrastructure and maintenance (I&M) budget of $867,000.[5]

A. Electric ISR Plan

In support of the Electric ISR Plan, National Grid submitted the direct testimony of National Grid Service Company employees Prabhjot S. Anand, Director, Strategy and Performance, and Ryan A. Moe, Senior Specialist in Vegetation Strategy (collectively, the plan witnesses). In support of the development of the revenue requirement and to explain the reconciliation process, National Grid Service Company submitted the direct testimony of its

[3] Revised Revenue Requirement; http://www.ripuc.org/eventsactions/docket/4783-NGrid-Rev-ISR-FY2019_2-22-18.pdf.
[4] Compliance Filing; http://www.ripuc.org/eventsactions/docket/4783-NGrid-RevRR-Compliance(3-27-18).pdf.
[5] *Id.*

employee William R. Richer, Director of Revenue Requirements. In support of the new tariffs and to explain the calculation of the factors and provide customer bill impacts, National Grid Service Company submitted the direct testimony of its employee Adam S. Crary, Senior Analyst for Electric Pricing.

The plan witnesses indicated that the proposed Electric ISR Plan covered three budget categories for the fiscal year ending March 31, 2019: capital spending on infrastructure projects, operation and maintenance expenses (O&M) for vegetation management, and O&M expenses for an I&M program.[6] They explained that the Electric ISR Plan included a spending plan and proposed an annual reconciliation mechanism to "provide for recovery related to capital investments and other spending undertaken pursuant to the annual pre-approved budget for the Electric ISR Plan."[7]

The proposed capital spending plan for FY 2019 was $108.8 million.[8] According to the plan witnesses, the Electric ISR Plan addressed the capital investment needed for five specific purposes: to meet state and federal regulatory requirements applicable to the electric system (Customer Request/Public Requirement); to repair failed or damaged equipment (Damage Failure); to address load growth/migration; to maintain reliable service (System Capacity and Performance); and to sustain asset viability through targeted investments driven primarily by condition (Asset Condition).[9] Of these, the Company considers Customer Request/Public Requirements and Damage Failure to be non-discretionary "in terms of scope

[6] Anand and Moe Test. at 7.
[7] *Id.*
[8] *Id.* at 6.
[9] *Id.* at 7.

and timing" and "subject to necessary and unavoidable deviations."[10] These items, totaling $32,679,000, account for 30% of the proposed capital outlays in FY 2019.[11]

The remaining categories, System Capacity and Performance, Asset Condition, and Non-Infrastructure, are meant to reduce the degradation of the service life of equipment, allow for more flexibility in the system for purposes of meeting various contingencies such as load growth and migration, and address poor condition of aged assets.[12] These items together comprised the other 70% of the FY 2019 budget. Specifically, the System Capacity costs of $45,764,000 made up 42%, almost twice the amount and percentage as the FY 2018 Electric ISR Plan; Asset Condition costs of $26,048,000 made up 23.9%, $10 million more than the FY 2018 Electric ISR Plan; and Non-Infrastructure spending of $556,000 made up the remaining 0.5%.[13] A single large project, the South Street Station asset condition project, had a budget of $3,720,000, or 3.4% of the total FY 2019 Electric ISR budget, compared to the prior year when the project made up 25.6% of the entire ISR budget. The plan witnesses explained that, per the PUC Order approving the FY 2017 Electric ISR Plan, the Company will continue to manage that South Street project budget separately from the overall discretionary budget.[14]

The increase in the System Capacity and Performance category was largely the result of the AMI Pilot which was to deploy approximately 8,000 advanced meters (AMI) and associated communications infrastructure on six of ten feeders served by the Washington substation. The deployment of the metering infrastructure was to be in conjunction with the

[10] *Id.*
[11] *Id.*
[12] *Id.* at 7, 9.
[13] *Id.* at 8.
[14] *Id.* at 7, 10; Docket No. 4592 (Order No. 22471) (July 11, 2016).

expansion of the previously approved volt/VAR optimization and conservation voltage reduction (VVO/CVR) program to the ten feeders served by the Washington and Staples substations in the towns of Lincoln and Cumberland and in the city of Woonsocket in advance of a planned full deployment proposed in a different docket pending before the PUC. Where the VVO/CVR project has shown results of up to 3% reduction in energy consumption and peak demand, the purpose of the proposal, according to National Grid, was to test whether the addition of AMI to CCO/CVR would result in an additional 1% reduction.[15] Based on its conceptual cost estimate, the Company included $1.1 million in O&M costs on top of the $6.0 million in capital. The costs included replacement of the automated meter reading units with AMIs, creation of a field area network to support the AMI and VVO devices, establishing a third-party backhaul to connect the field area network with National Grid Business Systems, back office integrations with billing, and software-as-a-service to support these items.[16]

National Grid posited that the benefits would include energy and capacity savings, operational learnings relative to AMI deployment, customer behavior insights, and the ability to review interval metering data.[17] National Grid stated that this was a proposal for a pilot program that would not result in stranded investments because the proposal was designed with future interoperability standards in mind.[18] Using a societal cost test, the proposal had a benefit/cost ratio for the entire project of 1.75. The expansion of just the VVO program at the Washington substation had a benefit/cost ratio of 4.86 while the AMI alone had a benefit/cost ratio of 0.54.[19] According to the Company, the AMI Pilot Proposal could not exist without

[15] 2019 Electric ISR Plan, Section 2: Electric Capital Investment Plan at 66.
[16] *Id*. at 67.
[17] *Id*. at 68-69.
[18] *Id*. at 70.
[19] National Grid Response to PUC-2-16; http://www.ripuc.org/eventsactions/docket/4783-NGrid-DR-PUC2_2-7-18.pdf.

the proposed VVO/CVR expansion on the Washington Substation. However, the VVO/CVR expansion plan did not depend on the AMI Pilot being deployed. The AMI Pilot portion was entirely incremental to the VVO/CVR proposal for the Washington Substation.[20]

For the first time, the Company also proposed a proactive 3V0 program, the intent of which was to install 3V0 protective devices in Rhode Island on a priority basis. According to National Grid, the proactive approach is necessary to meet an expected increase in complex distributed generation on distribution feeders in a timely manner to comply with recent changes to the statute governing the interconnection of distributed energy resources. The Company stated that as distributed generation penetration levels continue to increase, the need for 3V0 has become more frequent. According to National Grid witness Ryan Constable, Acting Director for Distribution and Planning, new substations are currently designed to include 3V0 protections.[21]

According to Mr. Constable, while the installation of 3V0 has typically been treated as a system modification cost for which the distributed generation customer would be responsible, the Company believed that a shift in cost allocation was appropriate at this time to support the State's energy policy goals and the large growth in both the number and size of distributed generation projects. He explained that as more distributed generation has accumulated on the distribution system, the need for 3V0 has become more prevalent and more difficult to assign to any one specific generator. Moreover, simple system reconfigurations with existing distributed generation can trigger the need for 3V0. Under normal circumstances not associated with a distributed generation application, when

[20] *Id.*
[21] 2019 Electric ISR Plan at 64; National Grid's Responses to PUC-2-50, PUC-2-51.

customer accumulation or system reconfiguration triggers an issue, the utility typically considers these characteristics of a system cost, or as system improvements that would be recovered from all customers.[22] At the hearing, Mr. Constable testified that the 3V0 installation is the best option. Division witness Gregory Booth, P.E., testified that "it's the most widely applied option across all of the utilities because it's basically a substation-relaying application that is fairly easy" and allows the utility to avoid installation of other more costly equipment around the distribution system.[23]

The Electric ISR Plan also included the proposed FY 2019 spending levels for the Company's Vegetation Management Program of approximately $9.8 million. Finally, the I&M spending included capital amounts already accounted for above plus $0.9 million for O&M costs related to the I&M program.[24] The Company agreed to provide the PUC with quarterly reports on the progress of executing the ISR Plan as well as an annual report at the time the Company files its annual reconciliation. Additionally, the Company and the Division agreed that, if circumstances required, National Grid would be allowed reasonable deviations from the plan, with explanation of significant deviations to be included in its quarterly and year-end reports.[25]

B. Development of the ISR Factor

Mr. Crary explained that the overall ISR Factor embedded in distribution rates contains two mechanisms: (1) an Infrastructure Investment Mechanism to recover costs associated with incremental capital investment and (2) an O&M Mechanism to recover O&M expenses related to inspection and maintenance and vegetation management activities. To

[22] National Grid's Responses to PUC-2-50 and PUC-2-51.
[23] Hr'g Tr. at 108-09, 154-55.
[24] Patterson and Moe Test. at 12-13.
[25] *Id*. at 11-12.

design the Infrastructure Investment Mechanism and develop the incremental capital investment, following Commission review of a cumulative revenue requirement, National Grid applies a rate base allocator which was developed in the most recently approved cost-of-service study. These become the Capital Expenditure Factors included in each rate class' respective overall ISR Factor. Similarly, the O&M mechanism is designed to allocate the inspection and maintenance and vegetation management expenses to rate classes based on the percentage of total distribution O&M expense allocated to each rate class in the most recent cost-of-service study. Within each rate class, National Grid calculates a per unit charge based on kilowatt hour (kWh) usage for non-demand classes and on a kilowatt (kW) basis for demand classes.[26]

Each year, by August 1, the Company proposes Capital Expenditure reconciling factors and an O&M reconciling factor to become effective on October 1 for the following twelve-month period. The reconciliation compares the actual cumulative revenue requirement to actual billed revenue generated from the Capital Expenditure Factors included in the prior year's overall ISR Factor. Any over- or under-recovery is refunded to or collected from customers through the Capital Expenditure Reconciling Factors. The O&M reconciling factor will compare the actual I&M and vegetation management O&M expense to actual billed revenue generated from the O&M factors. Any over- or under-collection of actual

[26] Crary Test. at 3-7; Section 6: Rate Design, Revised. For G-02 and G-32/B-32 customers, whose charges include both demand and usage, the Capital Expenditure Factors and O&M Factors are designed "to not significantly change the relationship between the existing charges and will ensure that customers within the class that have differing usage characteristics will not experience significantly different bill impacts." *Id*. at 7. Furthermore, as a result of two tariffs approved by the PUC for effect February 1, 2013, the Back-Up retail delivery rates were recalculated to reflect a discounted distribution kW charge. The methodology in this filing is different from the prior year, but the result is the same under both methodologies. *Id*. at 9-12.

expense is refunded to or collected from customers through a uniform per kWh charge applicable to all rate classes.[27]

On February 22, 2018, National Grid filed supplemental testimony of Mr. Richer and Pamela Bushmich, Director of Income Taxes in Massachusetts to reflect the changes to the revenue requirement resulting from the federal Tax Cuts and Jobs Act, enacted shortly after the Company filed the 2019 Electric ISR Plan. These witnesses explained that there were two particularly relevant aspects of the new law impacting the FY 2019 Electric ISR revenue requirement. The first was the reduction of the federal income tax rate from 35% to 21% commencing January 1, 2018. This change decreased the 2019 Electric ISR revenue requirement. The second element was changes to the bonus depreciation rules eliminating bonus depreciation for certain capital investments, including ISR-eligible investments, effective September 28, 2017. The change in the bonus depreciation rules specifically impacted the tax depreciation that the Company calculated in the December 2017 ISR filing for the FY 2018 and 2019 revenue requirement calculations. Unlike the reduction to the Company's revenue requirement for the decrease in the federal income tax rate, the change to the bonus depreciation rules had an opposite effect of increasing the Electric ISR revenue requirement. These updates resulted in a revised total FY 2019 Electric ISR revenue requirement of $32,056,404, which was a $697,981 decrease from the revenue requirement reflected in the Initial ISR Filing.[28]

The entire decrease is associated with the capital portion of the revenue requirement resulting in a reduction from $20,882,134 to $20,184,153 attributable to incremental capital

[27] *Id*. at 5, 7-8.
[28] Richer and Bushmich Supp. Test. at 3-4.s

investments through the end of FY 2019.[29] The cumulative revenue requirement is allocated to the various rate classes as determined by the total rate base allocator that was included in the Commission-approved Amended Settlement Agreement filed in Docket No. 4323.[30] Mr. Crary explained that the O&M Factors are designed to collect the $11,872,251 in forecasted FY 2019 I&M and vegetation management O&M activities.[31]

II. Division's Filing

On February 22, 2018, the Division submitted the testimony and report of its consultant Gregory L. Booth, P.E. on the proposals related to capital, I&M, and Vegetation Management; the testimony of its consultants Tim Woolf and Melissa Whited on the AMI Pilot; and a memorandum from its consultant David J. Effron on the revenue requirement. The Division generally supported the FY 2019 Electric ISR Plan budget. Mr. Booth, however, as in years past, expressed concern related to the Company's long range plan process.[32] Mr. Effron concluded that the revised revenue requirement had been reasonably calculated.[33]

Mr. Booth specifically expressed concern with National Grid's delay in completing the area studies as part of the Company's long range planning process.[34] He continued to discourage advancement of any project without the support of an area study.[35] He cautioned that National Grid's overall planning process lacked a certain transparency and cohesiveness regarding the relationship between the Company's design criteria, System Reliability Procurement, and Area Studies.[36] He recommended National Grid align the various planning

[29] FY 2019 Electric ISR Plan, Section 5, Attachment 1 at 1 of 27 (Bates 115); FY 2019 Electric ISR Plan, Revised Section 5, Attachment 1 at 1 of 29.
[30] Crary Revised Test. at 8.
[31] FY 2019 Electric ISR Plan, Section 5: Attachment 1 at 1 of 27 (Bates 115).
[32] Booth Test. and Report at 9; http://www.ripuc.org/eventsactions/docket/4783-DIV-Booth(2-22-18).pdf.
[33] Effron Mem. at 1.
[34] Booth Report at 8-9.
[35] *Id.*
[36] Booth Report at 9.

and project evaluation processes. He also suggested the Company revise future and current study documents to consider non-wires alternatives where applicable.[37] Mr. Booth made several specific recommendations for the Commission to consider.[38] The recommendations built on prior years' recommendations and focused on areas of distribution system planning, appropriate cost allocations, additional transparency in the planning and budgeting process, and various cost benefit analyses.

Mr. Woolf and Ms. Whited testified in favor of the AMI Pilot proposal. They concluded that advanced metering functionality can offer time-varying rates, enable distributed energy resources, provide customers and third parties with consumption pattern information, reduce O&M costs, increase the efficiency of VVO programs, and improve storm management.[39] The witnesses highlighted the potential benefits of company-wide advanced metering functionality and suggested the AMI Pilot proposal was a critical step toward realization of that goal.[40] They maintained that the proposed AMI Pilot proposal would provide information about whether, when, and how to rollout such company-wide advanced metering functionality.[41] Recognizing that the AMI portion of the proposal was not cost-effective, the witnesses nonetheless supported the proposal noting that the PUC's Docket No. 4600 Guidance Document allows pilots to move forward even if not cost-effective as long as they provide value that is not included in the benefit-cost analysis.[42] The witnesses argued that the value of lessons learned prior to a full advanced metering functionality roll-out together with the information about whether AMI could increase the effectiveness of the

[37] Booth Test. at 10-11.
[38] Booth Test. at 12-17; Booth Report at 54-57.
[39] Woolf and Whited Test. at 4.
[40] *Id.*
[41] *Id.*
[42] *Id.* at 13-15.

VVO/CVR program were enough to overcome the lack of cost-effectiveness in the AMI Pilot proposal.[43]

III. Hearing

On March 8, 2018, the PUC heard evidence on the proposed FY 2019 Electric ISR Plan, as revised, at its Offices at 89 Jefferson Boulevard, Warwick, Rhode Island.[44] National Grid presented Messrs. Anand, Moe, and Crary in support of the Electric ISR Plan.[45] The Company also called on James Perkinson, National Grid New Energy Solutions, to discuss the expansion of the Volt/Var pilot program previously approved by the PUC; Jacqueline Bean, Principal Project Manager, responsible for coordination of cross-functional teams on the AMI proposal; and Mr. Constable to update the PUC on consideration of distributed generation in the planning process as well as to respond to some of Mr. Booth's testimony.[46] The Division called Mr. Booth, Mr. Woolf, and Mr. Bell, the Division's Assistant to the Chief Accountant, to testify on its behalf.

Mr. Anand testified that National Grid generally accepted all of Mr. Booth's recommendations, noting that the Company would work collaboratively with the Division on the issues raised. He further indicated that the recommendations were similar to those made last year.[47] Mr. Constable added that there were general themes upon which he wished to

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[43] *Id.* at 15-16.
[44] Attorneys Raquel Webster and Jennifer Brooks Hutchinson appeared on behalf of National Grid. Attorney Andrew Marcaccio represented Office of Energy Resources. Assistant Attorney General Leo Wold represented the Division and Attorney Cynthia G. Wilson-Frias represented the PUC.
[45] The Company also presented Mr. Richer and Ms. Bushmich for questionng.
[46] On December 19, 2016, the PUC held a Technical Record Session at which Mr. Perkinson provided the preliminary results of the Volt/Var pilot. A copy of the presentation can be found at: http://www.ripuc.org/eventsactions/docket/4592-NGrid-Volt-VarUpdate(12-12-16).pdf. On that same day, the Company provided an update of its consideration of distributed generation in system planning. A copy of that presentation can be found at: http://www.ripuc.org/eventsactions/docket/4682-NGrid-Overview-DPlanningPresentation(12-19-16).pdf.
[47] Hr'g Tr. at 43-44 (Mar. 8, 2018).

comment. He agreed that improvements and non-wires alternative technical analysis were necessary and that better communication documentation was needed. He also stated that the Company agreed a clearer grid modernization strategy was required. He recognized that better coordination between dockets was important. Finally, Mr. Constable agreed to work with the Office of Energy Resources and the Division on improved forecasting, coordination of distribution system planning activities, and availability of various data points that might be useful to these activities.[48]

Addressing Mr. Booth's continued concern over the progress of the long range plans, Mr. Constable testified that the Company may not have done as many areas studies as expected, but those that have been completed account for 50% of the Company's load. He maintained that the other areas are facing no load or asset challenges and the Company had not requested funding for capital projects in those areas. He stated that the Company does not want to rush through the studies, indicating, for example, that the South County area may be better suited for consideration of how the Company might incorporate a market-based request for proposal for a non-wires alternative.[49]

Mr. Perkinson explained that the Company's proposed spending on VVO/CVR for FY 2019 on the Washington and Staples substations is part of a plan to expand the previously approved VVO/CVR pilot into a program for inclusion in other areas of the distribution system. The Company expected to get the same 3% benefit seen in the Tower Hill and Putnam Pike pilot areas. In preparation for the expansion, National Grid worked on upgrades with its

[48] *Id*. at 46-48.
[49] *Id*. at 98-100.

vendor and experienced technical difficulties that needed to be addressed. As a result, Mr. Perkinson did not have updated benefits measures from the two pilot areas.[50]

IV. Commission Findings

At an Open Meeting held on March 20, 2018, the PUC considered the evidence and approved a modified revised FY 2019 Electric ISR Plan. The modified plan reflected the Commission's decision to reject funding for the proposed AMI Pilot, finding that the proposal failed to meet the standard of review, the standard of proof required for a prudent expenditure of ratepayer funds, and failed to meet the statutory framework of funding for ISR. As a result, the PUC reduced the Capital Spending budget by $6.0 million and the I&M budget by $1.1 million.

In rejecting funding for the AMI Pilot, the PUC discussed the application of the PUC's Guidance on Goals, Principles, and Values for Matters Involving The Narragansett Electric Company d/b/a National Grid (Guidance Document) to the proposed pilot. In the Guidance Document, the PUC stated:

> A pilot is a small scale, targeted program that is limited in scope, time, and spending and is designed to test the feasibility of a future program or rate design. It is incumbent upon the proponent of a pilot to define these limits in a proposal for PUC review. Ideally, a pilot can provide net benefits and achieve goals, but the primary design and value of a pilot is to test rather than to achieve. As such, the PUC recognizes that it is reasonable for pilots to face a lower, but not less formal, standard than programs, so long as that standard is aligned with the elements adopted above.
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> If a pilot does not yield net benefits per the Benefit-Cost Framework it still could be approved if the proponent can show that the pilot nevertheless provides value. For example, a pilot that is not net beneficial can be approved if the proponent can show that the pilot is designed to demonstrate how to overcome specific barriers to achieving one or more of the goals for the system. Similarly, a pilot that is not net beneficial can be approved if the proponent can show that the pilot is designed to demonstrate how to overcome specific barriers to fair application of specific rate

[50] *Id*. at 89-94.

design principles. Finally, the proponent can prove value if the pilot addresses a specific barrier to achieving specific benefits in the Benefit-Cost Framework.[51]

Applying these factors from the Guidance Document on the review of pilots, the PUC found that the primary purpose of the proposed pilot was to verify whether the addition of advanced metering data to the existing VVO/CVR deployment could deliver an incremental 1% of energy savings and the secondary purpose was focused on learning about communicating advanced metering data over a Field Area Network to the operation and control devices over a 120-day period.[52] A third purpose was related to workforce training. While these purposes may have been limited in scope and time, the proposal, itself, failed to be small in scale and limited in spending. Moreover, the spending on the pilot would exceed the total spending on all other Company pilots combined.[53]

While the purported purposes appeared to be for testing and learning, the record showed that National Grid had not presented evidence that there was insufficient data or experience in the industry or at the Company to inform future planning. The evidence showed that Utilidata had tested the combination of AMI and VVO in a laboratory setting as well as with other utilities and, based on its results, predicted that National Grid would realize up to 1% additional savings. While pilots are often used to test and verify the application of new technologies, the Company failed to demonstrate how the results of its proposed deployment would differ significantly from those of the other Utilidata tests.[54]

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[51] Public Utilities Commission's Guidance on Goals, Principles and Values for Matters Involving The Narragansett Electric Company d/b/a National Grid, 8-9 (Oct. 27, 2017); http://www.ripuc.org/eventsactions/docket/4600A-GuidanceDocument-Final-Clean.pdf.

[52] National Grid's Response to PUC-1-1 (R-I-21, R-I-35), National Grid's Responses to PUC-2-24, PUC-2-25, PUC-2-29, PUC-2-37, PUC-2-38.

[53] National Grid's Responses to PUC-2-9, PUC-2-10, PUC-2-17; *See* Docket No. 4755 (Amended 2018 Energy Efficiency Program) at Plan Revised Table E-4; Docket No. 4756 (2018 System Reliability Procurement Report) at Table 10.

[54] National Grid's Response to PUC-1-1 (R-I-3, R-I-5, R-I-8, R-I-37, R-I-38), National Grid's Responses to PUC-2-15, PUC-2-24, PUC-2-29, PUC-2-32.

Additionally, Company witness Mr. Perkinson testified that National Grid had proposed to test the combination of AMI data and Utildata's volt/VAR controls in Clifton Park, New York. Specifically, National Grid planned to analyze the impact of AMI data on the controls.[55] There was insufficient information on the record to explain why the learning from New York could not inform Rhode Island's planning processes.

Furthermore, National Grid has prior experience with both cellular and radio frequency mesh networks in both New York and Massachusetts. National Grid has tested AMI with radio mesh and cellular networks with a cellular backhaul in Massachusetts. National Grid has also tested AMI and cellular network with a cellular backhaul in New York. The proposed pilot here included the development and testing of a single field area network to integrate AMI meters within the VVO/CVR optimization control algorithms to achieve improved savings. While this may be a different application for the Company, it does not justify the pilot.[56]

National Grid also suggested that the AMI Pilot would provide opportunities for training the local workforce.[57] However, there is a lack of evidence in the record to support this as the most prudent, ratepayer-funded training of National Grid's workforce. It was unclear whether National Grid explored other, potentially less costly, ways to train its workers. National Grid has deployed a radio-frequency mesh communications network and advanced metering infrastructure in Worchester, Massachusetts. As the record does not indicate whether National Grid analyzed the possibility of conducting workforce training on its Worcester system, that should be explored before this Commission will consider a pilot

[55] Hr'g Tr. at 116-19 (Mar. 8, 2018).
[56] National Grid's Responses to PUC-2-25, PUC-2-29, PUC-2-32.
[57] 2018 Electric ISR Plan at Bates 68; National Grid's Response to PUC-1-37.

based on workforce training benefits. It is reasonable to assume that the Company had a plan and options for workforce training prior to devising this pilot. The Company has not demonstrated that workforce training through this pilot is a better value for ratepayers than other training options.

Next, turning to the benefit-cost analysis of the proposal, the PUC again referenced the Guidance Document wherein it stated:

> A proposal can pass the benefit-cost test even if all the components are not beneficial, as long as the overall proposal is net beneficial. The components, however, all need to be integral to the overall proposal. If a component is not critically linked to other measures in the proposed program, funding for it can be denied separately from the overall proposal. Example: A proposed beneficial electrification proposal might include 90% of funding for an electric heating measure with a 2.0 benefit cost ratio and 10% of funding for an electric vehicle measure with a benefit cost ratio of 0.5. The proposal can combine those if there is some important connection or synergy between the two measures, presenting a program with a benefit cost ratio of 1.85 (i.e., 2.0*0.9 + 0.5*0.1). But, the PUC will review that overall proposal and the two measures to determine if they are critically linked to each other. If not, then funding for the combined electric vehicle and heating proposal may be denied, while funding for only to the heating measure may be provided.[58]

In assessing whether the pilot proposal meets the standard articulated in the Guidance Document, the PUC first must review the entire proposal to determine if it is cost beneficial. Second, if any of the component of the proposal is not cost beneficial, the PUC must determine whether the component that fails to achieve a benefit cost ratio above one is critically linked to the cost beneficial component(s). In other words, the PUC must determine whether the Company has proven that the beneficial component requires the non-beneficial component to provide the benefit. If the answer is in the negative, the PUC must then determine whether the value of the expected learnings overcomes the failure of a positive benefit cost ratio.

[58] Guidance at 7-8.

In the Company's pilot proposal, when both components of the AMI Pilot are considered together, the result was a 1.75 benefit-cost ratio. The VVO expansion for the Washington Substation had an estimated benefit-cost ratio of 4.86. The incremental benefit-cost ratio of the AMI component of the pilot was 0.54.[59] Thus, the PUC has been asked to consider approving a proposal that, while providing a positive benefit-cost ratio, includes two components, one that has a positive benefit cost ratio and one that does not. According to the Company, the VVO/CVR expansion was not dependent on the additional AMI proposal. The AMI pilot is entirely incremental to the VVO/CVR expansion for the Washington Substation and could not exist without the VVO/CVR project.[60] Thus, while the cost beneficial VVO/CVR component was critically linked to the AMI proposal, the converse is not true. The AMI component was not critically linked to the VVO/CVR proposal because the VVO/CVR proposal can exist without the AMI component.[61] Therefore, because the cost-effective component is not dependent upon the non-cost-effective component, the proposal does not pass the benefit cost analysis in the Guidance Document.

The next issue is whether there are other benefits that would outweigh the results of the benefit cost analysis. For example, as noted above, National Grid indicated that the proposal would provide opportunities to train the local workforce.[62] However, the PUC has already found that there was insufficient evidence to show it was a cost effective means of

[59] National Grid's Response to PUC-2-16.
[60] *Id*.
[61] Furthermore, the AMI component is not the only way to provide secondary voltage monitoring that may enhance performance of the Volt/Var Optimization system. The Company stated that "[i]f a system-wide AMI deployment were not planned, the Company would consider other alternatives for granular voltage monitoring that would provide secondary voltage monitoring that may enhance performance of the VVO/CVR system." National Grid Response to PUC-1-1 (R-I-32).
[62] 2018 Electric ISR Plan at 68; National Grid's Response to PUC-1-37.

training workers. As such, the benefits of the workforce training do not override the lack of cost-effectiveness.

National Grid also suggested that the proposed pilot could inform a statewide roll-out of advanced metering functionality as proposed in the Company's Power Sector Transformation Filing (Docket No. 4780). If that were the case, the next step would be to consider whether results of the proposal would likely be critical to the PUC's decision on a statewide deployment of advanced metering functionality. The PUC found neither of these considerations to be compelling.

The results of the AMI Pilot could not realistically inform a proposed January 2019 statewide deployment proposal in a meaningful and confident way. The Company stated that a "fully costed deployment proposal" for statewide advanced metering functionality would be filed with the PUC in January 2019. The AMI Pilot measurement and verification report, however, was not anticipated to be available until twelve months after the statewide roll-out proposal was expected to be filed. National Grid has also indicated that its advanced metering functionality plan included a multi-jurisdictional deployment of advanced metering functionality with New York expecting a plan by October 2018. Thus, it is unrealistic to expect that the results of a 2018 summer pilot, available at the end of 2019, would inform either the New York filing or a January 2019 filing with the PUC.[63]

Similarly, the learnings from the proposal are not critical to a future Commission decision regarding funding of a statewide advanced metering functionality roll-out. While National Grid's proposal would provide information on benefits from secondary voltage monitoring, those are a small, though not insignificant, part of the total potential benefits

[63] National Grid's Response to PUC-1-1(R-I-30); National Grid's Responses to PUC-2-31, PUC-2-34; *See* National Grid's Power Sector Transformation filing (Docket No. 4780) at Book 1 at 73.

from advanced metering functionality. Other functionalities, such as the implementation of time varying rates, have the potential to deliver much greater benefits. Additionally, in response to data requests, National Grid stated that there are other tools for secondary voltage management that do not require AMI. This means that the Commission will not forgo the benefits of secondary voltage management if the Commission rejects funding of a future advanced metering functionality proposal.[64] Therefore, the evidence was not sufficient to overcome the results of the benefit-cost analysis as set forth in the Guidance.

Finally, the ISR Plans are infrastructure plans that are necessary to provide safe and reliable service. The question for the PUC was whether the AMI Pilot would provide necessary, additional safety and reliability benefits. The Company provided that the AMI Pilot was primarily focused on quantifying the benefit of utilizing service voltage readings to enhance VVO/CVR optimization and would have minimal measurable impacts on safety and reliability.[65] Therefore, given the fact that the AMI Pilot neither passes a benefit cost analysis, does not produce other benefits that outweigh that fact, and does not provide significant safety and reliability benefits, the evidence overwhelmingly supported denial of funding for the proposal.

With regard to the remainder of the 2019 Electric ISR Plan, the PUC accepted all the Division's recommendations set forth in Mr. Booth's testimony. In approving the shift of recovery of 3V0 costs from distributed generation customers to all ratepayers through the ISR, the PUC found that this shift is reasonable in light of Mr. Booth's testimony that this is a cost-effective approach to the problems 3V0 addresses. The PUC also found National Grid's

[64] National Grid's Responses to PUC-1-1 (R-I-29, R-I-32, R-I-38).
[65] National Grid's Response to PUC-2-12, A full AMI deployment, if properly configured, could have other safety and reliability benefits. *Id.*

testimony compelling that without this shift, it would have a more difficult time meeting statutory interconnection deadlines.

The PUC also ordered National Grid to work with PUC staff to develop a template document or cross program summary that would be provided with each proposal for rate recovery that included spending in more than one recovery factor or for programs that are related in scope. The PUC explained that it is not enough to simply state to the Commission that the proposals are aligned; there also needs to be an explanation to the Commission how they are aligned. National Grid shall also provide a cost-benefit analysis by complying with the Docket No. 4600 Framework analysis in future ISR filings.

Accordingly, it is hereby

(23349) ORDERED:

1. The Narragansett Electric Company d/b/a National Grid's revised Electric Infrastructure, Safety, and Reliability Plan FY 2019 Proposal, filed on December 21, 2017, and revised on February 21, 2018, is approved with the exception of the proposed funding of the proposed AMI Pilot program which is specifically denied.
2. The Narragansett Electric Company d/b/a National Grid's compliance filing, made on March 27, 2018, is hereby approved for electric consumption on and after April 1, 2018.
3. The Narragansett Electric Company d/b/a National Grid shall provide, thirty days from the date of the Open Meeting decision in this matter, information on the gypsy moth related damage from FY 2018 and, in the quarterly reports for FY 2019, the results of gypsy moth and other pest related damage that has already been tracked.

4. The Narragansett Electric Company d/b/a National Grid shall provide, as part of its FY 2020 filing, more detail to support the purported need for investments, particularly for multi-year projects or those classified as "major programs" within a category.

5. The Narragansett Electric Company d/b/a National Grid shall provide, as part of its FY 2020 filing, details on individual projects where the costs differ from budget by more than 10%, whether that difference resulted from over- or under-spending or timing.

6. The Narragansett Electric Company d/b/a National Grid shall follow the Division of Public Utilities and Carriers' recommendations that were filed on February 16, 2017, specifically:

   a. National Grid shall develop an alignment between various planning and project evaluation processes, with consideration as to how a grid modernization strategy may be incorporated. This includes, but is not limited to, the System Reliability Procurement, Area Studies, ISR Plan, Non-Wires Alternative options, and internal Design Criteria.

   b. National Grid shall propose a methodology to revise current and future study documents supporting Asset Replacement and System Capacity programs or projects, as applicable, to include, at minimum:

      i. The traditional elements included in the Company's current studies including, but not limited to, purpose and problem statement, scope and program description, condition assessment/criticality rankings, alternatives considered, solution, cost, and timeline.

ii. Discussion on the impact to related Company initiatives, PUC programs, the various pilot projects, or other requirements driven by System Reliability Procurement, Distribution System Planning, Heat Maps, and emerging initiatives. A detailed comparison of recommendations to Area Studies to determine if solutions are aligned with study outcomes, noting adjustments required to avoid redundancy in planning. An evaluation of potential incremental investments that support the Company's long term grid modernization strategy, including description of technology or infrastructure investment, cost benefit to traditional safety and reliability objectives, and additional operational benefits achieved if implemented.

iii. A robust Non-Wires Alternatives evaluation for projects passing initial screening that clearly identifies alternatives considered, costs, and benefits.

c. National Grid shall continue to develop a System Capacity Load Study and a 10-year Long Range Plan in order to increase the level of support and transparency for the capital budget. The Company shall submit and present the outcome of Area Studies to the Division and its consultant at the time of completion. These studies shall include a separate Non-Wire Alternative analysis of the projects consistent with the requirements of other program commitments. The Company shall submit a report with updates on modeling activities and Area Study status at least 120 days prior to filing its

FY 2020 Infrastructure, Safety, and Reliability Plan Proposal, but in any event no later than August 31, 2018.

d. National Grid shall manage major Asset Replacement and System Capacity and Performance project budgets separate from other discretionary projects, such that any budget variances (underspend) will not be utilized in other areas of the Infrastructure, Safety, and Reliability Plan. The Company shall provide quarterly budget and project management reports.

e. National Grid will continue to manage (underspend/overspend management) individual project costs within the Infrastructure, Safety, and Reliability Plan discretionary category (comprised of Asset Condition and System Capacity and Performance projects), such that total portfolio costs are aligned within a discretionary budget target that excludes major substation projects.

f. National Grid shall continue to provide quarterly reporting on Damage/Failure expenditures to include the details of completed projects by operating region. The Company will separately identify Level I projects repaired as a result of the Infrastructure and Maintenance program.

g. National Grid shall continue to provide a detailed budget for System Capacity & Performance and Asset Condition in order to provide transparency on a project level basis for the current and future four-year period. The budget shall be provided in advance of the FY 2020 Infrastructure, Safety, and Reliability Plan Proposal filing, but in any event no later than August 31, 2018.

h. National Grid shall submit an evaluation of future proposed Asset Condition projects as compared to the Company's Long Range Plan in advance of the FY 2020 Infrastructure, Safety, and Reliability Plan Proposal filing, but in any event no later than August 31, 2018.

i. National Grid shall continue to submit its detailed substation capacity expansion plans and load projections, and include an evaluation of proposed projects against the Company's Long Range Plan, in advance of the FY 2020 Infrastructure, Safety, and Reliability Plan Proposal filing, but in any event no later than August 31, 2018.

j. National Grid shall continue to submit a cost-benefit analysis on the Vegetation Management Cycle Clearing Program and a separate cost-benefit analysis on the Enhanced Hazard Tree Management program for the Division's review prior to submitting the Company's FY 2020 ISR Plan Proposal, but in any event no later than August 31, 2018.

k. National Grid shall continue to submit its Metal-Clad Switchgear replacement program cost benefit analysis to the Division prior to submitting the Company's FY 2020 ISR Plan Proposal to the extent any Metal-Clad Switchgear replacements or major upgrades are proposed, but in any event no later than August 31, 2018.

7. The Narragansett Electric Company d/b/a National Grid shall consider distributed generation resources as part of its long-range planning studies.

8. In its quarterly periodic reports, The Narragansett Electric Company d/b/a National Grid shall include an explanation of all new technologies the Company

is exploring to assist in distribution system planning, particularly as they relate to the integration of distributed energy resources or provide additional visibility on the distribution grid.

9. Contemporaneous with its filing of the FY 2020 Electric Infrastructure, Safety, and Reliability Plan, The Narragansett Electric Company d/b/a National Grid shall file a cost benefit analysis consistent with the Guidance Document issued in Docket No. 4600-A.

10. The Narragansett Electric Company d/b/a National Grid shall work with Public Utilities Commission staff to develop a template document or cross program summary that will thereafter be provided with each proposal for rate recovery that includes spending in more than one recovery factor or for programs that are related in scope.

11. After the filing of The Narragansett Electric Company d/b/a National Grid's FY 2020 Electric Infrastructure, Safety, and Reliability Plan, the Company shall update the revenue requirement following the filing of the Company's income taxes for 2018.

12. The Narragansett Electric Company d/b/a National Grid shall comply with all other instructions contained in this Order.

EFFECTIVE AT WARWICK, RHODE ISLAND, ON APRIL 1, 2018, PURSUANT TO OPEN MEETING DECISIONS ON MARCH 20, 2018 AND MARCH 30, 2018. WRITTEN ORDER ISSUED DECEMBER 18, 2018.

PUBLIC UTILITIES COMMISSION

Margaret E. Curran, Chairperson

Marion S. Gold, Commissioner

Abigail Anthony, Commissioner

Notice of Right of Appeal: Pursuant to R.I. Gen. Laws § 39-5-1, any person aggrieved by a decision or order of the PUC may, within 7 days from the date of the Order, petition the Supreme Court for a Writ of Certiorari to review the legality and reasonableness of the decision or Order.