STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

The Narragansett Electric Company
d/b/a National Grid

Docket No. 4995

RE: FY 2021 Electric Infrastructure,
Safety, and Reliability Plan

PREFILED DIRECT TESTIMONY OF

Gregory L. Booth, PE
President, Gregory L. Booth, PLLC
On Behalf of Rhode Island Division of Public Utilities and Carriers

February 7, 2020

Prepared by:
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Prefiled Direct Testimony of

Gregory L. Booth, PE, President
Gregory L. Booth, PLLC

On Behalf of Rhode Island Division of Public Utilities and Carriers
Docket No. 4995

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DIRECT TESTIMONY OF GREGORY L. BOOTH, PE

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND THE BUSINESS ADDRESS OF YOUR EMPLOYER.

A. My name is Gregory L. Booth. My company is Gregory L. Booth, PLLC ("Booth, PLLC"), mailing address Falls of Neuse Road, Suite 149-110, Raleigh, North Carolina 27614.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS MATTER?

A. I am testifying on behalf of the Rhode Island Division of Public Utilities and Carriers ("Division").

Q. WOULD YOU PLEASE OUTLINE YOUR EDUCATIONAL BACKGROUND?

A. I graduated from North Carolina State University in Raleigh, North Carolina in 1969 with a Bachelor of Science Degree in Electrical Engineering, and was inducted into the North Carolina State University Department of Electrical and Computer Engineering Alumni Hall of Fame in November 2016. I am a registered professional engineer in twenty-three (23) states, including Rhode Island, as well as the District of Columbia. I am a registered land surveyor in North Carolina. I am also registered under the National Council of Examiners for Engineering and Surveying.

Q. ARE YOU A MEMBER OF ANY PROFESSIONAL SOCIETIES?

A. I am an active member of the National Society of Professional Engineers ("NSPE"), the Professional Engineers of North Carolina ("PENC"), the Institute of Electrical and Electronics Engineers ("IEEE"), American Public Power Association ("APPA"), American Standards and Testing Materials Association ("ASTM"), the National Fire Protection Association ("NFPA"), and Professional Engineers in Private Practice

("PEPP"). I have also served as a member of the IEEE Distribution Subcommittee on Reliability and as an advisory member of the National Rural Electric Cooperative Association ("NRECA)"-Cooperative Research Network, which is an organization similar to EPRI.

Q. PLEASE BRIEFLY DESCRIBE YOUR EXPERIENCE WITH ELECTRIC UTILITIES.

A. I have worked in the area of electric utility and telecommunication engineering and management services since 1963. I have been actively involved in all aspects of electric utility planning, design and construction, including generation and transmission systems, and North American Electric Reliability Corporation ("NERC") compliance.

Q. HAVE YOU PREVIOUSLY TESTIFIED AS AN EXPERT BEFORE THE RHODE ISLAND PUBLIC UTILITIES COMMISSION?

A. Yes. I have testified before the Rhode Island Public Utilities Commission on numerous matters, including Docket Nos. 2489, 2509, 2930, 3564, 3732, 4029, 4218, 4237, 4307, 4360, 4382, 4770/4780, 4473, 4483, 4513, 4539, 4592, 4614, 4682, 4783, 4857, 4915, D-11-94, and D-17-45. My testimony in Rhode Island has included filed and live testimony on previous Electric Infrastructure, Safety and Reliability Plan Fiscal Year Proposal filings by National Grid in Docket Nos. 4218, 4307, 4382, 4473, 4539, 4592, 4682, 4783, and 4915.

Q. HAVE YOU PREVIOUSLY TESTIFIED AS AN EXPERT IN OTHER JURISDICTIONS?

A. I have testified before the Federal Energy Regulatory Commission ("FERC") and numerous state commissions, including in Connecticut, Delaware, Florida, Maine,

Maryland, Massachusetts, Minnesota, New Jersey, North Carolina, Pennsylvania, and Virginia.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. The purpose of my testimony is to introduce *Exhibit GLB-1*, Report of Gregory L. Booth, PE on the review of National Grid's Proposed FY 2021 Electric Infrastructure, Safety and Reliability Plan provided to the Division September 30, 2019 ("ISR Plan"). My testimony will briefly summarize the collaborative process between the Division and National Grid, which resulted in preliminary consensus of the final Electric Infrastructure, Safety, and Reliability Plan FY 2021 Proposal filed with the Commission by National Grid on December 20, 2019. My testimony also summarizes the details of *Exhibit GLB-1* and my recommendations.

III. ISR PLAN EVALUATION PROCESS

Q. WOULD YOU BRIEFLY OUTLINE THE PROCESS WHICH LEADS TO THE DIVISION'S SUPPORT OF THE NATIONAL GRID ISR PLAN FILED ON DECEMBER 20, 2019 IN THIS DOCKET?

A. Yes. An evaluation and analysis process was performed, including the following actions and procedures:

1. On August 2, 2019, National Grid provided its FY 2021 ISR Proposal Pre-filing Planning Information to the Division, and Division consultant, excluding the Inspection and Maintenance Program Cost Benefit Study.

2. An August 14, 2019, a conference call was held between the Division, Division consultants, and the Company, to discuss the Pre-filing Planning Information and reports provided by National Grid in advance of the FY 2021 ISR Plan filing;

3. On August 30, 2019, National Grid provided the FY 2021 Inspection and Maintenance Program Cost Benefit Study as part of its Pre-filing documents.

4. On September 30, 2019, National Grid filed its initial proposed FY 2021 Electric Infrastructure, Safety, and Reliability Plan ("Electric ISR Plan" or "ISR Plan").

5. On October 17, 2019, the Division provided the First Set of Data Requests to the Company.

6. On October 24, 2019, the Division provided the Second Set of Data Requests to the Company.

7. On November 1, 2019, a conference call was held between the Division, Division consultants, and the Company, to discuss proposed DER enabling technologies, strategy and budget.

8. On November 7, 2019, a conference call was held between the Division, Division consultants, and the Company, to discuss the vegetation management program components and budget.

9. On November 7, 2019, National Grid provided responses to the First Set of Data Requests.

10. On November 14, 2019, National Grid provided responses to the Second Set of Data Requests, excluding a response to R-II-5. Also, National Grid, the Division and the Division consultants held a conference call for ISR discussions.

11. On November 22, 2019, the Division provided a memorandum to National Grid outlining major areas of concern with the proposed FY 2021 ISR Plan, accompanied

by a spreadsheet documenting each spending rationale, National Grid's proposed budget, and the Division's initial proposed adjustments.

12. On November 22, 2019, National Grid provided response to R-II-5 of the Second Set of Data Requests.

13. On November 26, 2019, National Grid, the Division and the Division consultants held a conference call to discuss the Division's memorandum and initial proposed areas of adjustment.

14. On December 2, 2019, the Division Consultant provided a summary of areas of outstanding adjustments and discussion points for the call scheduled on December 5, 2019. The primary areas included UG/URD program reductions, Damage/Failure and I&M program efficiencies, optimizing the newly proposed DER enabling investment category, major Areas Study projects delays, and the accelerated Franklin Square breaker projects in FY 2019. The Division also requested an update on Areas Studies due by the end of 2019, and consideration for restructuring the ISR Plan filing to, among other items, create a more concise document presenting the Plan objectives, problems identified, proposed solutions, and alternatives considered.

15. On December 4, 2019, National Grid provided FY 2021 ISR Plan preliminary adjustments for the major areas of concern identified by the Division consultants, accompanied by a spreadsheet supporting reductions to the Damage/Failure non-discretionary category.

16. On December 5, 2019, National Grid, the Division and the Division consultants held a conference call to discuss National Grid's preliminary adjustments and outstanding items.

17. On December 5, 2019, National Grid provided updated adjustments to the FY 2021 ISR Plan proposal.

18. On December 6, 2019, the Division consultant participated in the NWA quarterly meeting hosted by National Grid. The Company provided an updated schedule for remaining Area Studies.

19. On December 10, 2019, the Division and Division consultant recommended areas of minor adjustments, which the Company accepted then provided a final proposed FY 2021 ISR Plan budget. As customary with previous filings, the Division's acceptance was contingent on a satisfactory review of the final filing, to include the Company's White Paper on DER enabling investments. The Division and Company reached an understanding that, if the DER enabling investments were not to advance, the Company would propose adjustments to related ISR Plan reliability projects for FY 2021.

20. On December 13, 2019, the Company held a conference call with the Division and Division consultant to discuss ISR capital investment Benefit/Cost Analysis ("BCA") proposed under Docket 4600. Areas of discussion included the categories of projects suitable for BCA, applicable benefits, methodologies to consider alternatives, and

potential analysis refinement based on engineering principles and regional cost allocation.

21. On December 16, 2019, the Company provided its DER enabling White Paper and a final proposed FY 2021 ISR Plan budget file.

22. On December 20, 2019, the Division provided the Third Set of Data Requests to the Company.

23. On December 20, 2019, National Grid filed the proposed Electric Infrastructure, Safety, and Reliability Plan (Plan) for fiscal year 2021.

24. On December 31, 2019, the Division consultant prepared discussion points on the DER enabling White Paper, and a conference call was held with the Division and Company on January 9, 2020.

25. On January 10, 2020, National Grid provided responses to the Third Set of Data Requests.

The following charts summarize the adjustments by category and the preliminary agreement reached between the Division and National Grid, which are represented in National Grid's December 20, 2019 filing:

PROPOSED BUDGET by Spending Rationale	NG Initial Proposed Budget (9-30-19)	Adjustments	National Grid Proposed Budget (12-16-19)	% of Total Budget
Customer Request/Public Requirements	$ 25,040,000	$ (500,000)	$ 24,540,000	24%
Damage/Failure Total	$ 13,365,000	$ (1,000,000)	$ 12,365,000	12%
Subtotal	***$ 38,405,000***	***$ (1,500,000)***	***$ 36,905,000***	***36%***
Asset Condition	$ 44,970,000	$ (3,850,000)	$ 41,120,000	40%
Non-Infrastructure	$ 580,000		$ 580,000	1%
System Capacity and Performance	$ 31,248,000	$ (6,103,000)	$ 25,145,000	24%
Subtotal	***$ 76,798,000***	***$ (9,953,000)***	***$ 66,845,000***	***64%***
Grand Total	**$ 115,203,000**	**$ (11,453,000)**	**$ 103,750,000**	

FY 2021 Proposed Budget	NG Initial Proposed Budget (9-30-19)	Adjustments	National Grid Proposed Budget (12-16-19)
Vegetation Management			
Cycle Pruning	$ 6,100,000	$ -	$ 6,100,000
Hazard Tree	$ 1,750,000		$ 1,750,000
Sub-T	$ 550,000		$ 550,000
Police/Flagman Detail	$ 775,000		$ 775,000
All Other Activities	$ 1,425,000		$ 1,425,000
Program Total	**$ 10,600,000**	**$ -**	**$ 10,600,000**

IV. REPORT SUMMARY

Q. PLEASE BRIEFLY SUMMARIZE YOUR REPORT ATTACHED AS *EXHIBIT GLB-1* ("REPORT").

A. The Report contains an Introduction describing the overall process and summarizing the adjustments, which resulted in a preliminary consensus for the FY 2021 ISR Plan Proposed Budget of $103.8 million for capital items, and proposed Vegetation Management Program expense budget of $10.6 million. The Report section on the Capital Investment Plan discusses in detail each major category: Customer Request/Public Requirements; Damage/Failure; Asset Condition; Non-Infrastructure; and System Capacity and Performance, outlining the issues considered, the adjustments proposed, and the reasoning for the adjustments as accepted by National Grid. A detailed summary chart contained in *Exhibit GLB-1* as Appendix-2 shows each Spending Rationale and Budget Class with the September 30, 2019 initial proposed budget, net adjustments, and the resulting final proposed budget filed by the Company on December 20, 2019.

The Report discusses a newly proposed Strategic Distributed Energy Resource ("DER") Advancement category, and how the collaborative process between the Division and the Company resulted in agreement that many of the infrastructure projects and programs were closely interrelated with existing ISR Plan projects and programs. The Report explains our support for the DER enabling programs, while outlining cautions concerning overly aggressive advancement of 3VO in substations and premature installation of DER projects in advance of a fully developed Grid Modernization Plan ("GMP") with Commission approval.

The Report contains a conclusion which addresses the FY 2021 ISR Plan Proposal Budget as filed by National Grid on December 20, 2019. The conclusion includes eleven (11) recommendations related to the capital investment, O&M, and vegetation management portions of the ISR Plan. Many of these recommendations are a continuation of previous ISR Plan recommendations. Emphasis remains on the need for the Company to complete all Area Studies to create a single Long-Range Plan that supports major System Capacity and Asset Condition projects. These studies should take into account robust evaluation metrics that include Non-Wires Alternatives ("NWA"), where applicable. In addition, there is a continued need to develop an alignment between ISR Plan core programs and those arising from external initiatives as the Company, Commission Staff, Division, and stakeholders work to develop a more holistic, transparent, and forward-looking planning process, including, but not limited to, the GMP. I continue to recommend that the Company and Division address potential overlap between non-discretionary spend in the Damage/Failure category, and discretionary spend in the Inspection & Maintenance ("I&M") and Asset Replacement programs. This includes my ongoing support for I&M capital funding that results in an I&M repair cycle of 10 or more years. The Company has been successfully implementing the I&M repair program at this level since FY 2015 without compromising safety or reliability.

V. CONCLUSION

Q. DO YOU AND THE DIVISION SUPPORT THE NATIONAL GRID FY 2021 ELECTRIC ISR PLAN PROPOSAL FOR $103.8 MILLION IN BUDGETED CAPITAL EXPENDITURES, WITH $10.6 MILLION IN VEGETATION MANAGEMENT EXPENSES?

A. Preliminary agreement was reached on several cost components, but the Division reserved its right for additional adjustments or conditions pending further evaluation. A nearly ten percent (10%) decrease in the Company's initially proposed capital budget was proposed.

Q. WHAT ARE THE RECOMMENDATIONS YOU HAVE MADE IN YOUR REPORT *EXHIBIT GLB-1*?

A. The eleven (11) recommendations related to capital investment and vegetation management I have provided in my *Exhibit GLB-1* are summarized in the following list, and are provided with additional discussion in the Summary and Recommendations section of my Report.

1. National Grid shall coordinate with the Division to monitor and report on work performed under Damage/Failure, I&M, and related Asset Replacement blanket programs to validate proper classifications. The Company shall put forth program adjustments in the FY 2022 ISR Plan that include advancing Damage/Failure to a "fix on failure" strategy.

2. 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 SRP, Area Studies, ISR Plan, NWA options and internal Design Criteria.

3. 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:
   - 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.
   - Discussion on the impact to related Company initiatives, Commission programs, the various pilot projects, or other requirements driven by SRP, DSP, 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. This includes description of technology or infrastructure investment, cost-benefit to traditional safety and reliability objectives, and additional operational benefits achieved, if implemented. The GMP should be closely correlated with all ISR Plan investments, including both recurring and newly proposed programs.
   - A robust NWA evaluation for projects passing initial screening that clearly identifies alternatives considered, costs, and benefits.

4. 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 2022 ISR Plan Proposal, but in any event no later than August 31, 2020.

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

6. National Grid will continue to manage (underspend/overspend management) individual project costs within the ISR 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.

7. 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 I&M program.

8. 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 4-year period. The budget shall be provided in advance of the FY 2022 ISR Plan Proposal filing, and in any event no later than August 31, 2020.

9. 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 2022 ISR Plan Proposal filing, and in any event no later than August 31, 2020.

10. 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 2022 ISR Plan Proposal filing, and in any event no later than August 31, 2020.

11. 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 2022 ISR Plan Proposal, and in any event no later than August 31, 2020.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

AFFIDAVIT OF GREGORY L. BOOTH, PE

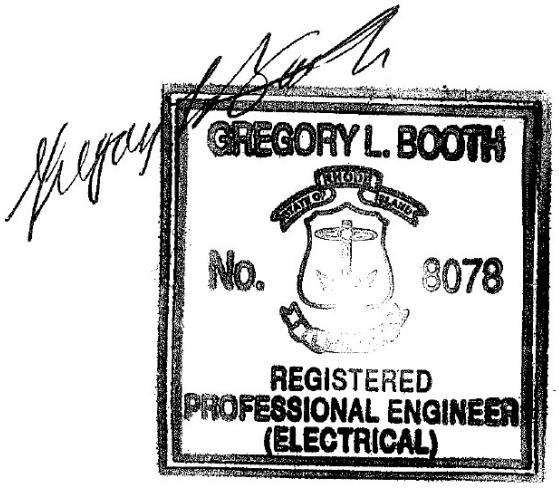
Gregory L. Booth, does hereby depose and say as follows:

I, Gregory L. Booth, on behalf of the Rhode Island Division of Public Utilities and Carriers, certify that testimony, including information responses, which bear my name was prepared by me or under my supervision and is true and accurate to the best of my knowledge and belief.

Signed under the penalties of perjury this the 7th day of February, 2020.

Gregory L. Booth

I hereby certify this document was prepared by me or under my direct supervision. I also certify I am a duly registered professional engineer under the laws of the State of Rhode Island, Registration No. 8078.



Gregory L. Booth, PE

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

REPORT OF

Gregory L. Booth, PE
President, Gregory L. Booth, PLLC
On Behalf of Rhode Island Division of Public Utilities and Carriers
Concerning
The Narragansett Electric Company d/b/a National Grid's Proposed
FY 2021 Electric Infrastructure, Safety, and Reliability Plan
Docket No. 4995

February 7, 2020

Prepared by:
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PREFACE

Gregory L. Booth, PLLC was engaged by the State of Rhode Island Division of Public Utilities and Carriers ("RIDPUC") to evaluate the Electric Infrastructure, Safety and Reliability ("ISR Plan" or "Plan") Plan FY 2021 Proposal submitted by National Grid. As part of the review of the plan, numerous data requests were submitted and responses provided by National Grid. Additionally, meetings and conferences were held with National Grid and their key personnel involved in the development of the Plan. The Legislative Act amending Chapter 39-1 "Revenue decoupling", 39-1-27.7.1, provided National Grid the right to file an ISR Plan and receive considerations for the Plan. The statute provides for evaluation by the Division, and for National Grid and the Division to attempt to reach an agreement on a proposed plan and submit a mutually agreed upon Plan. The following report describes the process and position reached between the Division and National Grid.

REPORT OF

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President, Gregory L. Booth, PLLC
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I. INTRODUCTION

Gregory L. Booth, PLLC ("Division Consultant"[1])was engaged by the Rhode Island Division of Public Utilities and Carriers ("Division") to assist in the evaluation of the initial National Grid Electric Infrastructure, Safety, and Reliability Plan FY 2021 Proposal (the "ISR Plan" or "Plan") dated September 30, 2019, and the final Electric Infrastructure, Safety, and Reliability Plan FY 2021 Proposal dated December 20, 2019 and filed in Docket 4995. The evaluation followed the same process of analysis completed for each ISR Plan filed from FY 2012 through FY 2020. This Report will include an explanation of the process for the initial FY 2021 ISR Plan proposal evaluations and collaborative efforts, resulting in a preliminary reduction of proposed FY 2021 capital spending in several areas, including Customer Request/Public Requirements, capital expenses for asset replacement and load relief projects, and for a newly proposed Strategic DER Advancement. The reductions were applied to the proposed spending levels initially presented as part of the Company's pre-file documents on August 2, 2019, further revised in the Company's initial FY 2021 ISR Plan Proposal submitted to the Division on September 30, 2019, and are finalized in the subsequent ISR Plan Proposal dated December 20, 2019.

This process, as provided for in Chapter 39-1-27.7.1 of the General Laws entitled "Revenue Decoupling", is for the Company, prior to the start of each fiscal year, to submit its ISR spending plan and consult with the Division regarding said Plan. The Division is also bound by statute to "cooperate in good faith to reach an agreement on a proposed plan." Through this process, the Division and the Company ultimately reached agreement on select adjustments. In this report, I will discuss the areas of consensus between the Division and the Company. This

[1] For the purposes of this report, reference to "Division Consultant", "I" and "my" are interchangeable.

involves an in-depth assessment of all spending categories that includes a detailed review of each project, proposed level of spend, and justification for inclusion in the ISR Plan. My evaluation considers the alignment of both non-discretionary and discretionary budgets with the Company's reliability and safety objectives, while promoting efficiencies that could reduce overall spend without compromising those critical objectives. In addition to individual program and project review with recommended adjustments, I address the Division's ongoing concern with ISR Plan costs that are reaching unacceptable levels considering the increasing capital needs to support other Company initiatives. I discuss changes to the Company's Complex Capital Delivery process and the growing complexity of the ISR Plan process over the past ten years, and the Division's desire for a more transparent and cohesive Plan presentation. I also address the Company's actions taken outside the ISR Plan process to achieve a more holistic planning process, taking into account multiple external initiatives and the Company's associated steps to apply Docket 4600 Goals to new ISR Plan projects and programs for which it seeks funding for the first time.

The Company's initial proposed September 30, 2019, FY 2021 ISR Plan followed very closely the format and principals agreed to in previous Plans. Most of the Company's budget line items were structurally similar to the previous Plans with modifications in the cost structure. The Division Consultant performed its evaluations by reviewing the Company's pre-file planning information, along with the proposed ISR Plan. The pre-file planning information is guided by Division recommendations, and the Rhode Island Public Utilities Commission ("Commission") Report and Order from prior ISR proceedings. The materials evaluated included reliability reports, budget variance explanations, program cost benefit analysis, detailed budgets for major projects, completed Area Studies, and other supplemental information. The Company's quarterly

updates for the FY 2020 ISR Plan were also utilized to provide trending analysis and benchmarks for proposed levels of spending. An in-depth analysis of the pre-file planning information and each component of the proposed FY 2021 ISR Plan was undertaken. The evaluation and analysis included the following actions and procedures:

1. On August 2, 2019, National Grid provided its FY 2021 ISR Proposal Pre-filing Planning Information to the Division, and Division consultant, excluding the Inspection and Maintenance Program Cost Benefit Study.

2. An August 14, 2019, a conference call was held between the Division, Division consultants, and the Company, to discuss the Pre-filing Planning Information and reports provided by National Grid in advance of the FY 2021 ISR Plan filing;

3. On August 30, 2019, National Grid provided the FY 2021 Inspection and Maintenance Program Cost Benefit Study as part of its Pre-filing documents.

4. On September 30, 2019, National Grid filed its initial proposed FY 2021 Electric Infrastructure, Safety, and Reliability Plan ("Electric ISR Plan" or "ISR Plan").

5. On October 17, 2019, the Division provided the First Set of Data Requests to the Company.

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15. On December 4, 2019, National Grid provided FY 2021 ISR Plan preliminary adjustments for the major areas of concern identified by the Division consultants, accompanied by a spreadsheet supporting reductions to the Damage/Failure non-discretionary category.

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18. On December 6, 2019, the Division consultant participated in the NWA quarterly meeting hosted by National Grid. The Company provided an updated schedule for remaining Area Studies.

19. On December 10, 2019, the Division and Division consultant recommended areas of minor adjustments, which the Company accepted then provided a final proposed FY 2021 ISR Plan budget. As customary with previous filings, the Division's acceptance was contingent on a satisfactory review of the final filing, to include the Company's White Paper on DER enabling investments. The Division and Company reached an understanding that, if the DER enabling investments were not to advance, the Company would propose adjustments to related ISR Plan reliability projects for FY 2021.

20. On December 13, 2019, the Company held a conference call with the Division and Division consultant to discuss ISR capital investment Benefit/Cost Analysis ("BCA") proposed under Docket 4600. Areas of discussion included the categories of projects suitable for BCA, applicable benefits, methodologies to consider alternatives, and potential analysis refinement based on engineering principles and regional cost allocation.

21. On December 16, 2019, the Company provided its DER enabling White Paper and a final proposed FY 2021 ISR Plan budget file.

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24. On December 31, 2019, the Division consultant prepared discussion points on the DER enabling White Paper, and a conference call was held with the Division and Company on January 9, 2020.

25. On January 10, 2020, National Grid provided responses to the Third Set of Data Requests.

The overall analysis was an iterative process, which included detailed discussions of each ISR Plan spending rationale category, including Capital Expenditures, the Vegetation Management ("VM") Plan, and the Inspection and Maintenance ("I&M") Plan. The Company included each of its area experts in the discussions as we worked toward preliminary adjustments in the proposed FY 2021 Plan. This series of meetings, telephone conferences and data requests were utilized in discussions with various individuals in the Company to provide full assessment and to gain clarification in each area. The formal data requests and responses referred to above, excluding those that are considered confidential or critical energy infrastructure information, are to be submitted to the Commission by National Grid.

The structure of the FY 2021 ISR Plan filing closely followed the FY 2020 ISR Plan to the extent that the Company has included several of its historic annual programs. The Company continued to incorporate key changes noted in the prior filings, including migration of substation flood mitigation programs to an overall substation capacity enhancement and reliability program, and incorporation of an Inspection & Maintenance Program to replace the phased-out Feeder Hardening Program. The FY 2021 Plan continued the trend of significant discretionary spending levels for major construction, including Southeast substation and Aquidneck Island related

projects. The FY 2021 Plan includes a blend of residual capital projects previously identified by the Company, and a series of new projects emanating from completed Area Studies. As the residual capital projects are completed, the Plan should only include those new major substation projects or large programs that have been demonstrated as necessary for a completed and fully presented Area Study. In addition, the Company is proposing a new reliability-based program, Strategic Distributed Energy Resources ("DER") Advancement, for targeted system investments that enable DER integration.

Through the analysis and assessment process, consensus on the rationale for adjustments and the preliminary dollar levels was reached between the Division and the Company, although the Division reserved its right for additional adjustments or conditions pending further evaluation. National Grid's proposed multi-year project list and capital spending estimates, along with quarterly reports[2], were among the items utilized by the Company, the Division, and the Division consultant in reaching a consensus on the preliminary adjustments. This data was used to compare the prior fiscal year ISR Plan proposed budgets to forecasted expenditures, as reflected in Appendix-1, along with historical budgets by spending category. Non-discretionary programs were examined to confirm that anticipated expenses were appropriately categorized and aligned with respective budget categories. There was continued discussion concerning correlations between the Damage/Failure category and the I&M Asset Replacement program costs, along with the Company's proposed budget realignment in both categories. Budget trends for non-discretionary categories were assessed against historical data. Planned work under recurring discretionary programs was examined to determine if the proposed level of spend was reasonable and cost effective when compared to alternatives. The Strategic DER Advancement

[2] This report references capital spend in National Grid's FY 2021 Electric ISR Plan Proposal Filing, Attachment 4 (Docket 4995), and FY 2020 ISR Plan - Second Quarter Update Ending September 30, 2019 (Docket 4915)

program was evaluated independently and against current discretionary programs to identify efficiencies. Additionally, discussions addressed major System Capacity and Asset Condition projects, and correlation with completed Area Studies.

For the FY 2021 Plan, agreement was reached on adjustments, resulting in a proposed capital investment budget of $103.8 million. Appendix-2 lists a Summary of the Capital Outlays by key driver category and budget classification as originally proposed by the Company on September 30, 2019, with adjustments and the resulting final proposed budget filed by the Company on December 20, 2019. Following is a detailed discussion of the categories and preliminary adjustments included in the Company's ISR Plan filing, in addition to observations and conditions recommended by the Division.

II. CAPITAL INVESTMENT PLAN

A. Overview

I have evaluated the $103.8 million FY 2021 Capital Spending Plan proposed by the Company, along with its supporting testimony and exhibits as contained in its filing dated December 20, 2019. I first reviewed the August 2, 2019 pre-file ISR budget proposal submitted to the Division in the amount of $115.6 million, and the initial September 30, 2019 proposed ISR Plan submitted to the Division in the amount of $115.2 million. Over a period of approximately eleven (11) weeks, there was an iterative process in which modifications to the Company's initial proposed Capital Spending Plan were discussed. Adjustments were accepted for each of the Spending Rationales and the five major categories. Following is a comparison of the Company's September 30, 2019 initial proposal, net adjustments, and the Company's proposed budget as shown in Chart 8 of the FY 2021 ISR Plan as filed on December 20, 2019 in Docket No. 4995. $103.8 million is the level reached through the evaluation process.

Table 1: Proposed FY 2021 ISR Capital Outlays by Key Driver Category

PROPOSED BUDGET by Spending Rationale	NG Initial Proposed Budget (9-30-19)	Adjustments	National Grid Proposed Budget (12-16-19)	% of Total Budget
Customer Request/Public Requirements	$ 25,040,000	$ (500,000)	$ 24,540,000	24%
Damage/Failure Total	$ 13,365,000	$ (1,000,000)	$ 12,365,000	12%
Subtotal	***$ 38,405,000***	***$ (1,500,000)***	***$ 36,905,000***	***36%***
Asset Condition	$ 44,970,000	$ (3,850,000)	$ 41,120,000	40%
Non-Infrastructure	$ 580,000		$ 580,000	1%
System Capacity and Performance	$ 31,248,000	$ (6,103,000)	$ 25,145,000	24%
Subtotal	***$ 76,798,000***	***$ (9,953,000)***	***$ 66,845,000***	***64%***
Grand Total	**$ 115,203,000**	**$ (11,453,000)**	**$ 103,750,000**	

The Company projects the need for non-discretionary expenditures of $24.5 million in Customer Request/Public Requirements spending, and $12.4 million in Damage/Failure spending. Except for known major projects, the majority of projects in the Customer Request/Public Requirements category are not precisely defined, but are based on the Company's best forecast since specific customer requests have not been made. The Damage/Failure category covers costs to replace equipment that unexpectedly fails or becomes damaged. Historical spending levels tend to serve as the primary method to develop a budget. Additionally, economic conditions are a factor considered in adjusting historical costs. There are both upward and downward trends in new construction activity, combined with the effects of inflation on the cost of raw materials, transportation, and labor. The Company is also experiencing increasing distributed generation ("DG") interconnection requests, which are unpredictable and have varying cost requirements. It is customary for costs to be reimbursed by generator owners, which may not occur in the same fiscal year of construction spend. For these reasons, it is reasonable that the overall Customer Request/Public Requirements will trend upward over time, but with some volatility due to economic cycles and DG reimbursements.

It is anticipated that the Damage/Failure category will be similarly influenced by inflation costs, but that total spend would eventually taper once the system is fully inspected and major system projects and asset replacements under the I&M program are completed. This expectation has not fully materialized. In fact, spending in the Damage/Failure category, excluding major storms, has achieved a steep incline, rising from $7.8 million in FY 2013 to a forecasted spending level of $15.5 million in FY 2020. The upward trend in costs is influencing the overall non-discretionary category, which has historically exceeded annual

targets. I continue to closely evaluate this trend, and individual projects, to ensure that the Company is not incorporating work in the Damage/Failure category that is normally captured under I&M expenses. For the FY 2021 ISR Plan proposal, the Company is proposing to spend a total of $36.9 million for all non-discretionary projects, or thirty-six percent (36%) of the proposed capital budget. I will discuss the Damage/Failure category, non-discretionary cost trends, and correlation with discretionary spend in more detail in Sections C and D.

The remaining three major categories of spending rationale for the FY 2021 budget are Asset Condition, Non-Infrastructure, and System Capacity and Performance. These categories, which are discretionary in the sense they are based on engineering, safety, reliability and economic analyses, are budgeted at $66.9 million for the remaining sixty-four percent (64%) of the proposed capital budget. Two major multi-year projects, Aquidneck Island/Newport Area and the new Southeast Substation, are in construction phase and budgeted at $13.5 million and $10 million, respectively. The Company is managing major capital projects separately from other discretionary projects in accordance with recommendations in the FY 2017 ISR proceeding. The Company is also continuing to perform individual Area Studies as part of a Long-Range Plan, which was first recommended in the FY 2015 proceeding. The studies produce recommended projects through FY 2030, which are ultimately phased into the ISR Plan. Projects in various phases from the East Bay Area, South County East, and Providence Area Studies are included in the FY 2021 ISR Plan. The Area Study projects are in various stages of early engineering, permitting and procurement, and have not reached project grade cost estimates (+/- 10%). Delivery of the studies continues to fall short of the Division's expected schedule. Only four Area Studies representing forty seven percent (47%) of the total system load have been completed. My overall evaluation considers the delays in

Areas Studies and the Company's prior commitment to include in the ISR Plan only those future projects that are supported by system studies.

For the three categories (Asset Condition, Non-Infrastructure, and System Capacity and Performance), the initial proposed budget was $76.8 million, which has been adjusted down to $66.9 million in the FY 2021 ISR Plan Proposal filing based on the agreement between the Division, the Division Consultant, and the Company. In Sections D, E, and F, I will discuss each of these categories separately, explaining the overall reduction and budget management conditions expected of the Company.

B. Customer Request/Public Requirements Category

The initial proposed FY 2021 ISR Plan included $25 million of Customer Request/Public Requirements cost, which the Company ultimately adjusted to $24.5 million. This compares to a FY 2020 ISR budget and forecast of $27 million and $29 million, respectively.

FY 2021 Proposed Budget	NG Initial Proposed Budget (9-30-19)	Adjustments	National Grid Proposed Budget (12-16-19)
Customer Request/Public Requirements	$ 25,040,000	$ (500,000)	$ 24,540,000

FY 2020 Budget Variance	Filed FY 2020	Over/(Under) Budget	FY 2020 Forecast (as of 12/16/18)
Customer Request/Public Requirements	$ 27,025,000	$ 2,123,000	$ 29,148,000

The Company expects overspend in FY 2020 by $2 million, of which $1 million is attributed to DG interconnection. There are uncertainties in forecasting a DG budget each fiscal year, since investment depends on the number of interconnection requests, the type, and the requirements, which the Company does not control. Budget variations due to DG can be either costs incurred by the Company to manage the interconnection process and construct

facilities, or credits received by the Company when the DG owner submits a Contribution in Aid of Construction ("CIAC") prior to commencement of construction. When a CIAC is received, the contribution is applied to construction costs which may occur in future budget cycles. The net effect creates volatility in budgeting, along with reconciliation challenges. For FY 2021, the Company will implement an accounting procedure where CIAC will offset actual DG spend instead of being reflected when received. The resulting annual ISR Plan category for DG interconnection will reflect only costs incurred by the Company to manage the interconnection process and any actual construction costs that exceed CIAC payments. The Company's accounting adjustment, which I find reasonable, should alleviate budget distortions and the need for multi-year reconciliation.

I also reviewed the Company's proposed $4.7 million for Transformers and Related Equipment in the Customer Request/Public Requirements category. The Company relies on this budget for distribution regulators, capacitors, and overhead and underground transformer installations and replacements. The amount of spend in this category was initially proposed at $4.7 million in FY 2021, which is consistent with levels achieved in FY 2019 ($4.5 million) but is significantly higher than previous ISR plans of less than $3 million. The Company provided data on actual equipment purchases and installations and, upon further evaluation, decreased the proposed budget to $4.2 million. As part of a Division data request response[3], the Company also reviewed FY 2019 costs which resulted in lower units and costs. The Division anticipates that any adjustments to FY 2019 costs that result from the review will be formally presented by the Company.

[3] Docket 4995, FY 2021 ISR Plan Proposal, Division R-III-5

The Company included $250,000 in a new category of required spend to replace analog meters that collect interval data for commercial and industrial customers. The meters currently rely on a landline application which will no longer be supported by the vendor. The Company proposes replacing 386 meters with wireless technology over four years, and confirmed that the replacements are not part of their pending AMI/Grid Modernization Plan.

I found the remaining categories of proposed spend to be reasonable and consistent with historical levels. Overall, consensus was reached on a proposed budget of $24.5 million for Customer Requests/Public Requirements. As DG activity and resulting expenditures increase, I will continue to examine projects to ensure that those performed for customers receive the appropriate CIAC, and that the Company does not incur expenses that are otherwise the responsibility of a third party. To the extent that the Company does not reasonably incur expenses, I will recommend against recovery from ratepayers.

C. Damage Failure Category

The initial proposed FY 2021 ISR Plan included $13.4 million in the Damage/Failure category for non-discretionary costs to replace equipment that unexpectedly fails or becomes damaged. Of this, $10.7 million was proposed for asset replacement, with the remainder for major storms and reserves. This compares to a FY 2020 ISR Plan budget and forecast of $13.5 million and $15.5 million, respectively.

FY 2021 Proposed Budget	NG Initial Proposed Budget (9-30-19)	Adjustments	National Grid Proposed Budget (12-16-19)
Damage/ Failure	$ 10,740,000	$ (1,000,000)	$ 9,740,000
Major Storms – Dist	$ 1,725,000		$ 1,725,000
Reserves	$ 900,000		$ 900,000
Damage/Failure Total	$ 13,365,000	$ (1,000,000)	$ 12,365,000

FY 2020 Budget Variance	Filed FY 2020	Over/(Under) Budget	FY 2020 Forecast (as of 12/16/18)
Damage/ Failure	$ 11,036,000	$ 2,511,000	$ 13,547,000
Major Storms – Dist	$ 1,650,000	$ 165,000	$ 1,815,000
Reserves	$ 820,000	$ (719,000)	$ 101,000
Damage/Failure Total	$ 13,506,000	$ 1,957,000	$ 15,463,000

The Company continues to incur expenses over budget in this category with an overall FY 2020 variance projected at $2 million, primarily due to transformer failures. The Company considers work in this category unplanned but necessary, which may be impacted by large, single equipment failures, such as a substation transformer. The derivation of the budget is somewhat subjective, as equipment damage is unforeseen and levels of failure are generally based on historical trends.

There are, however, elements of Damage Failure which are unrelated to storms or clear equipment failures where work is more subjective. These projects and their associated costs have been steadily increasing and contributing to overspend in the Damage Failure category. This trend has been recognized for several years and I continue to have areas of concern, including: a) whether the Company is accurately reflecting the type and level of work performed under Damage/Failure which should be non-discretionary as opposed to discretionary work captured under the I&M Program or Asset Replacement program, and b) whether the Company uses appropriate methodologies to estimate the Damage/Failure budget. In my FY 2020 ISR Plan report, I performed a comprehensive review of projects completed under Damage/Failure and I&M, and I recommended that the Company and Division explore the option of retaining a portion of the budget in the non-discretionary category to address only failed equipment, and collapsing the remaining Damage/Failure and I&M budget under the discretionary category. The Commission adopted the recommendation

and, for this upcoming ISR Plan, the Company responded by reviewing its processes related to the Damage/Failure blanket. Their review resulted in updated definitions for Damage/Failure and Asset Replacement work "meant to create more clarity around how to charge work in the field for damaged assets."[4]

Next the Company reviewed work orders for six months of FY 2019 and determined that $230,000 of charges would not meet the new Damage/Failure definition. This amount was rounded to $1 million, which the Company reflected as a reduction in its original proposed FY 2021 Damage/Failure budget of $10.7 million. In the FY 2021 ISR Plan proposal, the $1 million reduction was offset by $700,000 to replace failed transformers.

Additional discussions with the Company focused on the Damage/Failure budget level and whether the revised definition would drive proper work classification. The Company's proposed Damage/Failure budget was ultimately reduced by an additional $1 million to $9.7 million. This amount was offset by increasing the discretionary spend by $1 million for targeted asset replacement work, which I address in Section D. The Company also highlighted internal coordination efforts to improve how crews charge work in the field for failed or damaged assets, recognizing that training would be needed over time as crews adapt.

I also reviewed and compared detailed Damage/Failure work orders[5] that met the Company's updated definition, actual I&M repairs[6], and Asset Replacement work[7]. Across these three

[4] Docket 4995, FY 2021 ISR Plan proposal, DIV R-I-16
[5] For Damage/Failure Work Orders: see Docket 4783, DIV 4-5

data sets, I continued to note similar descriptions of work, such as leaking transformer, rotted poles, and guy and anchor replacements. Projects related to joint ownership work, which would be assumed mandatory under contractual agreements, were included in both the non-discretionary Damage/Failure category and discretionary Asset Replacement category. Although I reference historical information, my evaluation suggests that the Company's revised definition of Damage/Failure will not immediately solve the global issue of improper classifications going forward. This is an important process, since the classification guides eligible projects and collective costs which inform future budgets.

Overall, I found that the Company's proposed Damage/Failure budget reduction and revised definition were reasonable as a first step in meeting my recommendation, but did not fully address my concerns. Although the Company has proposed a revised definition of Damage/Failure, some work may still be performed at the discretion of field personnel. Since Damage/Failure is a non-discretionary category, the definition should be further refined to include only that work performed due to failures. Until then, there remains ample opportunity for discretionary work to be performed under a non-discretionary category, as well as for the same type of work to be performed under multiple classifications. The Division desires a clearer line of demarcation between Damage/Failure and I&M expenditures.

In response, the Company committed to further review the Damage/Failure definition to determine if it could more narrowly define a mandatory or a "fix on failure" asset replacement strategy. The Company also proposed monitoring the work performed in FY

[6] For I&M repairs: see Docket 4682, DIV I-11
[7] For Asset Replacement-Distribution and Substation: see Docket 4783, DIV V-5

2021 for Damage/Failure and related discretionary Asset Replacement categories to validate proper classification. Based on FY 2021 results, the Company would put forth additional program adjustments in the FY 2022 ISR Plan. Discussions culminated in approval of the Company's proposed $12.4 million budget in the Damage/Failure category comprised of $9.74 million for asset replacements, $900,000 in reserves, and $1.73 million for major storms. As discussed in Section D, the Division expects that FY 2021 ISR Plan reports will include updates on asset replacement monitoring.

This brings the total non-discretionary categories of Customer Request/Public Requirements and Damage/Failure to $36.9 million, which is thirty-six percent (36%) of the total Capital Investment Budget by Key Driver Category.

D. Asset Condition Category

The Asset Condition category, with an initial proposed budget of $44.1 million, represents a combination of strategies and programs targeting equipment replacement to maintain reliability performance. Spending is further divided into Asset Replacement and Inspection and Maintenance components, which are generally a combination of multi-year major substation upgrade projects and programs designed to replace groups of equipment throughout the system. Projects and programs in the Asset Replacement category have become increasingly significant in scope and budget. The Company continues to track major projects separately, which provides transparency and enables the Division to monitor budget estimates, scope, and actual construction spend from inception to completion. It also mitigates the Company's tendency to shift budgets between discretionary projects in order to meet an overall target, rather than managing independent projects based on need.

Evaluation of the Asset Condition category separately considers major projects from remaining budget areas. Within the major projects category, Southeast and Dyer St. substations are the currently the most significant projects. A new category of spend, Asset Replacement-Damage, has been created in the Plan and funded at $1 million to capture blanket work previously categorized under Damage/Failure. Discussions with the Company regarding Asset Replacement (major projects and recurring programs), Asset Replacement-Damage, and the I&M program resulted in adjustments of $3.9 million, and a final proposed budget of $41.1 million, which is forty percent (40%) of the overall ISR Plan budget. This compares to the FY 2020 budget and forecasted actuals of $38.8 million and $35 million respectively. A detailed evaluation of each category follows.

FY 2021 Proposed Budget	NG Initial Proposed Budget (9-30-19)	Net Adjustments	National Grid Proposed Budget (12-16-19)
Asset Condition - Major Projects			
Southeast	$ 10,080,000		$ 10,080,000
Flood - Hope Substation	$ 220,000	$ -	$ 220,000
Dyer Street-Indoor Substation	$ 7,160,000	$ -	$ 7,160,000
Providence LT Study	$ 4,240,000	$ -	$ 4,240,000
Major Projects Total	**$ 21,700,000**	**$ -**	**$ 21,700,000**
Asset Replacement - Recurring Programs	$ 18,370,000	$ (2,850,000)	$ 15,520,000
Asset Replacement - I&M (NE)	$ 4,900,000	$ (2,000,000)	$ 2,900,000
Asset Replacement - Damage*	$ -	$ 1,000,000	$ 1,000,000
Asset Replacement/I&M Total	**$ 23,270,000**	**$ (3,850,000)**	**$ 19,420,000**
Total Asset Condition	**$ 44,970,000**	**$ (3,850,000)**	**$ 41,120,000**

* New program to manage asset replacements previously performed under Damage/Failure (non-discretionary)

FY 2020 Budget Variance	Filed FY 2020	Over/Under Budget	FY 2020 Forecast (as of 12-16-19)
South Street	$ 1,800,000	$ (833,779)	$ 966,221
Southeast	$ 6,250,000	$ 81,220	$ 6,331,220
Remaining Major Projects	$ 8,600,000	$ (4,317,305)	$ 4,282,695
Asset Replacement - Recurring Programs	$ 20,475,000	$ 1,209,055	$ 21,684,055
Asset Replacement - I&M (NE)	$ 1,700,000	$ 476	$ 1,700,476
Total Asset Condition	**$ 38,825,000**	**$ (3,860,333)**	**$ 34,964,667**

Asset Condition spend has steadily increased due to aging equipment throughout the service territory and the need for significant upgrades in highly loaded corridors. The South Street substation rebuild is scheduled for completion in FY 2020, with an overall projected spend of nearly $53 million, and will no longer be tracked by the Company in the ISR Plan. Major multi-year investments, including the Southeast substation and projects emanating from the Providence Area Study, are now included in the ISR Plan. As legacy projects are completed, new projects such as the East Bay and Providence Area are naturally phased in alignment with previously performed Area Studies. It should be emphasized that portfolios of projects associated with Area Studies will be categorized in either the Asset Replacement budget category or System Capacity budget category, and both are projected to drive future discretionary spend.

1. Asset Replacement - Major Projects

The Company is proposing continued work on multi-year major projects driven by asset condition. The projects and the respective planning Area Study are as follows:

Project	Respective Planning Area Sudy
Southeast	Legacy Project - Blackstone Valley North
Dyer Street-Indoor Substation	Legacy Project -Providence System Area Study
Providence LT Study	Providence

Projects in construction or final engineering that were included in the FY 2020 ISR Plan include Southeast and Dyer St., budgeted at $10 million and $7.1 million, respectively, in FY 2021. These are legacy projects that I have reviewed for inclusion in prior ISR Plans and continue to support. The Company's quarterly budget and project management update for Southeast[8] indicates that the FY 2020 forecast is close to budget, which

[8] Docket 4915, FY 2020 ISR Plan Second Quarter Update, page 4 and Attachment G

continues to be a positive trend. The update also shows an overall project cost of $25.4 million (+/-10% tolerance) as compared to the initial sanctioned amount of $18.6 million (+50%/-25% tolerance), or a thirty-seven percent (37%) increase. Although the increase was within the Company's expected tolerances, I continue to have concerns with the estimating process. This topic has been addressed at length in previous reports, noting that initial project estimates could increase as much as 200% under the Company's procedures. The Division has expected, for some time, enhancements in both the Company's budgeting and project execution.

As part of the Company' improvement efforts, it has implemented a new estimating process to supporting its Complex Capital Delivery ("CCD") process. The Company presented the CCD during discussions with the Division. The CCD was launched in April 2018 with the goal to "significantly improve [the Company's] complex capital project management capabilities to be best in class within 3 years by delivering complex capital projects fit for purpose at a lower unit cost, on time and within budget."[9] The CCD guides the development of all new, complex projects, or essentially the Company's internal project development and sanctioning process. The CCD relies on various phases of project cost estimates to determine the optimal investment and establish budgets. As a project advances, the Company now applies a risk-based estimating process. Some of the estimating enhancements include early and comprehensive stakeholder feedback to determine project requirements, applying common cost information based on actual projects, and probabilistic modeling. The Company is striving to achieve an estimate of

[9] Docket 4857, Adoption of Performance Incentives, Joint PUC 1-2, page 2

+50%/-25% for complex projects coming out of Area Studies[10], and has been working towards this target for several years, as opposed to the previous system that applied a +200%/-50% threshold to an initial estimate.

The collective efforts of the Company should result in a more refined complex project sanctioning and budget estimating process that would be expected to produce greater accuracy earlier in the process. However, the new estimating process has not been applied to current projects within the ISR, so the effectiveness cannot be gauged at this time. In addition, the Company states, when asked to describe the anticipated impacts to ISR budget estimates due to any changes in the sanctioning process, that "(t)here are no major anticipated impacts as to how the ISR budget estimates are set due to the timing of the Project Sanction Paper. The new Complex Capital Delivery process will improve the visibility and reasons for changes in projects cost."[11] This statement introduces some confusion and is further evidence that ISR Plan impacts due to the new CCD and project estimating processes will not be evident until applied. I will continue to monitor the progress and evaluate future projects to determine if the Company is realizing the budgeting and project management improvements expected by the Division.

The Asset Replacement category of the ISR Plan also includes condition-based projects identified in the Providence Area Study, which was completed in 2017. The study considered the Providence urban region consisting of older, underground distribution facilities and indoor substations dating back to when the system was originally installed

[10] Docket 4995, FY 2021 ISR Plan Proposal, Section 2, page 16, footnote 8
[11] Docket 4995, R-I-15 page 3

in the 1920's. The FY 2021 proposed budget of $4.2 million is designated for engineering costs as the Company moves through its sanctioning process and prepares to launch a series of multi-year projects. Applying the Area Study as a forecasting metric indicates that the Company will spend over $120 million over twelve years for planned Providence Area projects. I have previously evaluated the Providence Area study and have concurred with the resulting solutions that will ultimately be completed as part of the ISR Plan. However, I caution that the cost estimates were not derived under the new CCD process, which would have been expected to produce more accurate initial budgets. As it stands, the cost for Providence Area projects could rise by as much as 200%, which is significant considering a base estimate of $120 million. A potential cost increase does not change the rationale or support for the system improvements, but will require the Company to methodically advance Providence Area projects while phasing other Area Study projects to maintain the overall discretionary budget at a reasonable level. The criticality of this cannot be overstated, particularly with the Company's potentially significant investments in future AMI/GMP initiatives. I will monitor sanctioned projects emanating from the Providence Area Studies to ensure that scopes and costs are reasonable and aligned with the outcome of the study. As the projects advance through construction, I will also examine actual expenditures against budgeted amounts to determine the Company's success at managing multi-year projects to budgets while maintaining reasonable discretionary investment levels.

In summary, the major projects within the Asset Replacement category are a combination of legacy and Area Study projects. Southeast and Dyer St. substations are the predominant projects in the near term, with Providence Area projects expected to drive

significant capital needs going forward. As the Providence Area projects are sanctioned, detailed reviews will be performed to confirm that scope and cost estimates align with solutions identified in the Company's previously performed Area Studies. Additionally, cost estimates will be monitored to determine if the Company has improved its internal processes to mitigate significant variances between initially budgeted amounts and actual expenditures. Over the course of this ISR review, the Company's initial proposal of $21.7 million was accepted.

2. Asset Replacement – Recurring Programs

The Asset Replacement category contains recurring programs that have been included and reviewed in prior ISR Plan filings. Proposed budgets in this discretionary category are generally based on equipment age, condition, criticality rankings, and the Company's planned level of work. For FY 2021, the Company proposed a $15.5 million budget for customarily recurring programs to replace infrastructure such as substation batteries, substation breakers and reclosers, URD cable, underground cable, line reclosers, and miscellaneous blanket projects.

To evaluate the need and support for projects within this category, the Company was requested to provide studies, condition assessments, criticality rankings, or other planning documents containing updated information. While the Company has provided much of this information in the past, it has become apparent that many legacy programs previously supported have not advanced. The pace of completion has been controlled by the Company's decision to regulate discretionary spending, and projects are often deferred to accommodate more emergent work while meeting an overall budget target.

This creates a lag time in project completion, but is a prudent strategy when more critical projects within the ISR Plan require capital investment. The Company, however, deviated from this strategy in FY 2019 when accelerating a substation breaker replacement project at Franklin Street that resulted in $1.14 million of additional spend in the Asset Replacement category. The decision to advance this previously unbudgeted project was but one contributing factor in the Company exceeding its total FY 2019 ISR Plan budget by $8 million. The Division performed an in-depth analysis of the Company's decision to incorporate the project in the third quarter of the ISR Plan, at a time when the Plan was tracking close to budget but projected to exceed the overall budget by the end of the fiscal year[12]. The Division concluded that accelerating the Franklin Street breaker project was not reasonable and that, going forward, the Company should inform the Division prior to advancing significant (greater than $1 million) unbudgeted projects during implementation of an ISR Plan.

Over the past five years, the Company has also been performing several system Area Studies. The outcome of Area Studies tends to impact major projects in the Asset Replacement category more so than recurring programs, but the study status must be considered when evaluating condition-based programs. My evaluation of the proposed spend for various programs first determines if work is aligned with an Area Study. This ensures that equipment replacement considers broader area needs, is sufficiently sized for load growth, and includes compatible technology for future grid modernization. Next, I evaluate projects in terms of level of spend and criticality. Unless there is an emerging need, the Company relies on historical work completed and associated spend as a metric

[12] Docket 4783, FY 2019 ISR Plan Third Quarter Update, Attachment A

for current budgets. As each year progresses, the Company methodically replaces the most critical assets, which is practical given that system reliability has not been sacrificed under this strategy.

My review of the FY 2021 ISR Plan found that the Company's proposed infrastructure replacements and associated budgets were reasonable, with the exception of underground cable replacements. For the URD program that replaces or rehabilitates residential cable, the Company originally proposed $5 million, which was reduced to $4 million, or a level aligned with the most recent historical spending levels. A similar reduction was agreed to in the UG Cable Replacements category where the originally proposed budget of $5.5 million was reduced to $4.5 million. The Company's concurrence was based on its internal review of resources which recognized that new customer demands would require engineering normally used to design underground cable replacements. Furthermore, the Company indicated it needs to reassess the UG Cable replacements in coordination with the planning. The Company expects this evaluation will properly reprioritize the projects, which may eliminate some projects based on abandonment of some UG cable sections. This should result in avoiding unnecessary capital expenditures and early obsolescence of upgrades. Discussion with the Company resulted in a total reduction of $2 million, for a total budget of $15.5 million for Asset Condition recurring programs.

3. Asset Replacement-Damage

The new Asset Replacement-Damage category captures distribution repairs performed at the discretion of field crews, which is work similar to that performed under the I&M program. This category arose after extensive analysis and discussions with the Company.

Expanding on my evaluation from Section C, there are three primary spending categories that the Company uses to capture small scale asset repair or replacement on its system (1) Damage/Failure (non-discretionary) (2) I&M Program (discretionary) and (3) Asset Replacement-Distribution and Substation (discretionary). In previous ISR Plan reports, and again in this FY 2021 ISR Plan, I have commented on the correlation between these programs, particularly I&M and Damage/Failure. The program objectives are the same, which is small scale, proactive infrastructure replacement to maintain safety and reliability. My analysis has indicated that similar work is performed in each category, such as repair or replacement of poles, guys, anchors, cross arms, insulators, and transformers. To eliminate crossover, I previously recommended that the Company allocate funds in the non-discretionary Damage/Failure category to address only Level I[13] I&M repairs and failed equipment, while adjusting discretionary categories to manage proactive reliability work. The Company made steps toward my recommendation, as I discussed in Section C, which includes revised definitions to guide work under budget categories and an initial $1 million reduction to the Damage/Failure budget. During discussions regarding the FY 2021 Plan, the Company agreed to an additional $1 million reduction in Damage/Failure in the non-discretionary category offset by the addition of this Asset Replacement-Damage discretionary category funded at the same $1 million level. The Company explained that the new category was necessary, as opposed to increasing the I&M program budget, since the I&M program was designed for systematic repairs on specific feeders as opposed to unplanned work directed by field personnel across the system. I agree with the Company's proposed $1 million budget in the new

[13] The Company categorizes deficiencies found during I&M inspections as Level I, II and III. Costs for Level I repairs, requiring immediate attention, are captured under the Damage/Failure category.

Asset Replacement-Damage category as a starting point. Going forward and consistent with recommendations in Section C, the Company should monitor, summarize, and report on the work performed in FY 2021 for Damage/Failure and related discretionary Asset Replacement categories (I&M Program, Asset Replacement-Distribution and Substation, and Asset Replacement-Damage) to validate proper classification. The results of this analysis will enable the Company to further advance Damage/Failure towards a "fix on failure" strategy, and properly establish future Asset Replacement budgets. Based on FY 2021 results, the Company would put forth additional program adjustments in the FY 2022 ISR Plan.

4. Inspection & Maintenance Program and other O&M

The I&M Program addresses deteriorated assets to ensure that the distribution and sub-transmission system is safe, reliable and environmentally sound. The program has both capital and O&M components. I have consistently recommended reductions in the I&M capital spending dating back to FY 2015. The Company, in its filed FY 2016 ISR plan in Section 4, page 2 of 5, stated: "The goal of the I&M Program is to achieve a ten-year cycle in which all feeders are inspected and repaired." The Company started repair work in FY 2013 and has completed 158 of the 370 total feeders[14] in the overall electric system in Rhode Island, or forty-three (43%) of feeders. The initial proposed FY 2021 ISR Plan included $4.9 million for I&M capital costs to address repairs. In addition, the Company anticipates O&M expenses for the I&M Program, a Volt-VAR Optimization and Conservation Voltage Reduction ("VVO/CVR") expansion program, continuation of

[14] National Grid's Inspection & Maintenance Program Cost/Benefit Study – Pre- Planning Working Document dated August 30, 2019, page 1.

mobile elevated voltage testing, and Long-Range planning study costs. The initial proposed Plan budget included $2.3 million for all O&M expenses. In total, the Company proposed a program budget of $7.2 million. This compares to a total FY 2020 ISR budget of $2.9 million ($1.7 million for I&M capital and $1.2 million for O&M expenses), with forecasted actual spend showing no variance to budget. Discussions with the Company resulted in significant reductions to the FY 2021 capital component and a moderate refinement to the O&M category, totaling $2.5 million, for a final proposed program budget of $4.7 million.

FY 2021 Proposed Budget I&M Capital and O&M	NG Initial Proposed Budget (9-30-19)	Adjustments	National Grid Proposed Budget (12-16-19)
Capital Costs (included in capital budget)	$ 4,900,000	$ (2,000,000)	$ 2,900,000
Opex Related Capex	$ 735,000	$ (300,000)	$ 435,000
Inspections and Repair Related Costs	$ 600,000		$ 600,000
Removal Costs	$ 491,000	$ (200,000)	$ 291,000
Long Range Plan Study	$ 25,000		$ 25,000
VVO/CVR Program O&M	$ 431,633		$ 431,633
Total Operation and Maintenance Expenses	**$ 2,282,633**	**$ (500,000)**	**$ 1,782,633**
Total Program Costs	**$ 7,182,633**	**$ (2,500,000)**	**$ 4,682,633**

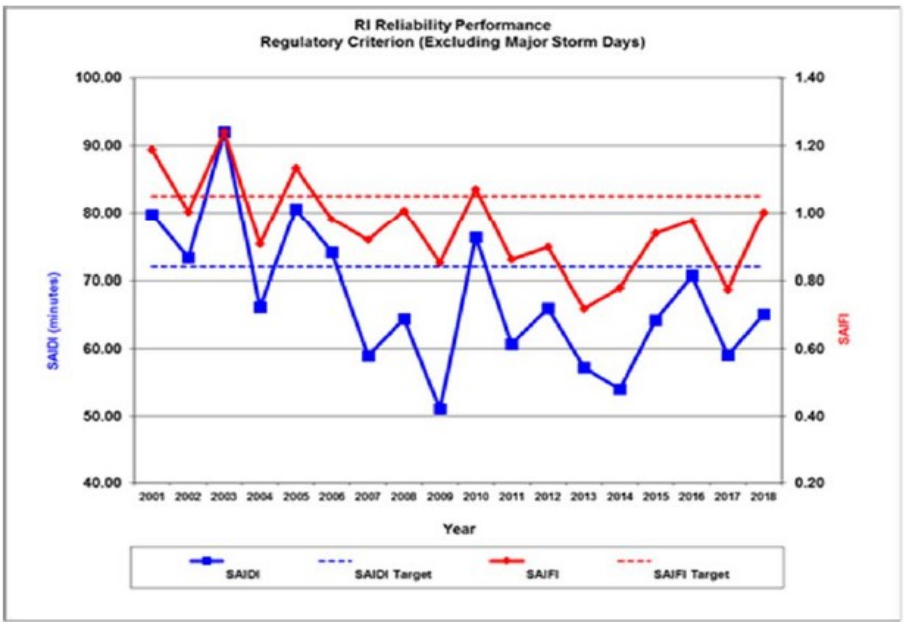
FY 2020 Budget Variance I&M Capital and O&M	Filed FY 2020	Over/(Under) Budget	FY 2020 Forecast (as of 12/16/18)
Capital Costs (included in capital budget)	$ 1,700,000	$ -	$ 1,700,000
Opex Related to Capex	$ 256,000	$ -	$ 256,000
Inspections and Repair Related Costs	$ 515,000	$ -	$ 515,000
Removal Costs	$ 136,000	N/A	$ 136,000
Long Range Plan Study	$ 25,000	$ -	$ 25,000
VVO/CVR Program	$ 311,000	$ -	$ 311,000
Total O&M Expenses	$ 1,243,000	$ -	$ 1,243,000
Total Program Costs	**$ 2,943,000**	**$ -**	**$ 2,943,000**

For the FY 2021 I&M capital budget, the Company requested $4.9 million, which is $3.2 million above the FY 2020 forecasted spending level. The Company has indicated to the Division that the repair cycle currently exceeds even the ten-year goal. This is primarily

due to budget reductions in previous years that were suggested by the Division, and implemented by the Company, in order to meet overall discretionary spending needs driven by major projects. The Company's request for higher funding this year is consistent with the FY 2020 ISR. In my previous report, I noted the Company calculates that an 11-year repair cycle can be achieved with a program cost of $4.1 million. In effect, the Company is consistently lobbying for funding in the $4 - $5 million range to bring the I&M repair cycle closer ten years. The outcome of my review of the Company's request for $4.9 million in FY 2021 to achieve a ten-year I&M repair cycle is consistent with that reached in previous ISR Plans where I have not supported increased funding.

The I&M Program is mature and successful implementation has produced excellent reliability results. Should the Company be deficient in implementing the program, the impacts would be visible in reliability performance, yet the Company has continued to post results that meet or exceed annual service reliability targets since 2010, as shown in the following chart:[15]

[15] Docket 4995, FY 2021 ISR Plan Proposal, Section 2, page 2.



In addition to reliability indices review, I also considered the Company's annual report on the costs and benefits for its I&M Program. The most recent report[16] contains reliability statistics for feeders that had work completed since 2013. To calculate the reliability benefits for the I&M Program, the Company uses the average number of events and customer interruptions (CI) due to deteriorated equipment, animals, and lightning over a three-year period prior to the repair work year as a baseline. Extensive data is presented and analyzed. According to the Company, this current (seventh annual review) Cost Benefits of the I&M Program shows increasingly positive customer reliability results where there is at least one year of post-project data. The Company has also seen a downward trend of incidents in most CI categories since FY 2017, with animal related events showing mixed results. The Company states that animal events are largely due to squirrel contacts, which corelate with tree nut production that is variable and unpredictable. Overall, however, there is a general conclusion of mixed results when considering all I&M years.

[16] National Grid's Inspection & Maintenance Program Cost/Benefit Study –dated August 30, 2019.

Review of the I&M report, along with reliability statistics, confirms my ongoing opinion that a more moderate level of funding for I&M repairs is prudent. The Company is successfully managing minor asset replacements under this I&M repair program, Damage/Failure, and the discretionary Asset Replacement program. The suite of programs has the same objective, which is small scale, proactive infrastructure replacement to maintain safety and reliability. The Company is not solely relying on the I&M repair program to address asset condition across the system, and there is no indication that system conditions have suffered from an extended I&M repair cycle.

Overall, my review continues to support controlled spending and the Company's streamlined approach for the I&M Program. Through discussions with the Company, reductions totaling $2 million were applied, which resulted in a final proposed capital budget of $2.9 million. The budgets for the associated Opex, Inspection and Repair costs, and Removal Costs were adjusted by $500,000 for a total of $1.3 million. I encourage the Company to continue monitoring results of the I&M cost/benefit analysis as additional data becomes available, and expect that the Company will raise concerns with program results and propose adjustments when warranted. I continue to recommend that the Company's I&M inspection program be based on a ten-year cycle. Given that the Company's inspections have resulted in repairs of less than half of the identified deficiencies, it is logical that many of the same issues are repeatedly documented. The Company should discuss options, or support its current methodologies, in its FY 2022 ISR Plan. Lastly, I repeat my global recommendation that the Company monitor, summarize, and report on the work performed in FY 2021 for the I&M repair program, along with Asset Replacement-Distribution and Substation, and Asset Replacement-

Damage to validate proper classification. Based on FY 2021 results, the Company would put forth additional program adjustments in the FY 2022 Plan.

The remaining O&M components of the ISR Plan relate to the mobile elevated voltage testing program and system planning study costs, with no adjustments, and VVO/CVR expansion. I will address elevated voltage testing in this section, and VVO/CVR in the System Capacity section.

The Company's mobile elevated testing program, which emanates from the Rhode Island Contact Voltage statute § 39-2-25(b)(6), will be in year five of the second five-year inspection cycle in FY 2020. Initially, the Company's vendor conducted surveying, testing, and required repairs on 100% of designated areas. The program has now transitioned to a survey and testing schedule based on the statutory minimum of 20% of designated areas. The Company has also completed the sale of streetlights to the City of Providence and the Town of Westerly. Although asset ownership has changed, the Company, by statute, remains responsible for surveying and testing for elevated voltage within the municipal rights-of-ways. Consistent with my prior recommendation, the Company has implemented a solution to meet statutory requirements through agreements with these municipalities, whereby the Company continues testing and the municipality is responsible for remediation work. Remaining municipalities have not purchased their streetlights, therefore, the Company does not have firm agreements regarding repair work associated with mobile testing[17]. I expect that, prior to the Company's scheduled testing

[17] Docket 4237, 2018 Contact Voltage Annual Report Compliance Filing

within any municipality, the Company will confirm the status of the streetlight purchase and have necessary agreements in place to address repairs.

The Contact Voltage Program testing cost in FY 2019 was $80,000 for 20% of the system, which is consistent with the FY 2018 cost. The Company is proposing to continue surveying and testing 20% of the designated areas between FY 2019 and FY 2022, to complete 100% of the testing in a five-year period. The next vendor request for proposals is scheduled for FY 2020. The current vendor has shared both one-year and three-year contract options with the Company, which indicate a cost of $80,000 for surveying and testing 20% of designated areas. Based on preliminary information, it is reasonable for the Company to budget $80,000 in FY 2021. Overall, I confirm that the Company's approach to the Contact Voltage Program is acceptable and appropriately balances statutory obligations with safety requirements. I will evaluate the Company's subsequent vendor contract as part of the Division's annual review of the Contact Voltage Program under Docket 4237.

In summary, concurrence was reached on net budget reductions of $2.5 million for the I&M program and all O&M line items, resulting in a FY 2021 proposed capital budget of $2.9 million for I&M capital and $1.8 million for O&M. This brings the total FY 2021 ISR proposed capital budget for Asset Condition to $41.1 million, comprised of $21.7 million for major projects, $16.5 million for recurring projects, and $2.9 million for the I&M program.

E. Non-Infrastructure Category

This category is for telecommunications and other capital expenditures needed for operation, which are neither related to condition nor system capacity. I consider this $580,000 of capital expenditures prudent and necessary, while consistent with prior costs.

F. System Capacity and Performance Category

The System Capacity and Performance category is comprised of both Load Relief and Reliability Projects. A significant portion of this discretionary budget is dedicated to substation capacity expansion projects. The Company initially proposed to expend $31.3 million in FY 2021. Additional adjustments were applied during the course of my evaluation, which decreased the final proposed budget to $25.2 million, or twenty-four percent (24%) of the total FY 2021 ISR Plan budget. The FY 2020 budget and forecast for this same category are $21.9 million and $25.5 million respectively. I will address the Company's proposed FY 2021 Plan in three sections: Major Projects, Reliability projects, and a separate discussion on the Strategic DER component of Reliability projects.

FY 2021 Proposed Budget	NG Initial Proposed Budget (9-30-19)	Net Adjustments	National Grid Proposed Budget (12-16-19)
Load Relief Major Projects			
Aquidneck Island (Newport projects)	$ 6,206,000	$ (226,000)	$ 5,980,000
Aquidneck Island (Jepson projects)	$ 6,959,000	$ 546,000	$ 7,505,000
New Lafayette	$ 289,000	$ 101,000	$ 390,000
Warren Substation	$ 865,000	$ (400,000)	$ 465,000
East Providence Substation	$ 4,974,000	$ (3,424,000)	$ 1,550,000
Major Projects Total	**$ 19,293,000**	**$ (3,403,000)**	**$ 15,890,000**
Reliability Total	**$ 11,955,000**	**$ (2,700,000)**	**$ 9,255,000**
Total System Capacity & Performance	**$ 31,248,000**	**$ (6,103,000)**	**$ 25,145,000**

FY 2020 Budget Variance	Filed FY 2020	Over/Under Budget	FY 2020 Forecast
Load Relief Major Projects			
Aquidneck Island (Newport projects)	$ 14,055,000	$ 3,063,000	$ 17,118,000
Aquidneck Island (Jepson projects)			
New London Ave Substation #150	$ 150,000	$ 364,000	$ 514,000
Warren Substation	$ 600,000	$ (49,000)	$ 551,000
East Providence Substation	$ 1,280,000	$ (792,000)	$ 488,000
New Lafayette		$ 2,000	$ 2,000
Quonset Sub	$ -	$ 1,011,000	$ 1,011,000
Chase Hill (Hopkinton) & Related	$ -	$ 673,000	$ 673,000
Major Projects Total	**$ 16,085,000**	**$ 4,272,000**	**$ 20,357,000**
Reliability Total	**$ 5,810,000**	**$ (703,000)**	**$ 5,107,000**
Total System Capacity & Performance	**$ 21,895,000**	**$ 3,569,000**	**$ 25,464,000**

The Company is managing the FY 2020 budget by balancing projects solely within this category, rather than measuring performance against other significant projects. Consistent with my previous recommendation in the FY 2017 proceeding, major projects in the System Capacity and Performance are managed separately to encourage the Company to focus on transparency and accountability for projects within this specific category. The Company forecasts overall actual costs to exceed budget by $3.7 million, driven by a projected $4.3 million overspend in the major projects classification.

1. Load Relief - Major Projects

   The Load Relief category is a mixture of legacy projects, or those projects that have been independently studied and historically considered for inclusion in the ISR Plan, in addition to two projects associated with the East Bay Area Study. The FY 2021 Plan continues to be transitional, since it includes a blend of residual capital projects previously identified by the Company and a series of new projects emanating from completed Area Studies as follows:

Project	Respective Planning Area Sudy
Aquidneck Island (Newport projects)	Legacy Project - Newport
New Lafayette	South County East
Warren Substation	East Bay
East Providence Substation	East Bay

Aquidneck Island projects (formerly Jepson and Newport projects), or the most significant Load Relief projects, are budgeted at $13.5 million in FY 2021. The current sanctioned estimate for the total distribution related portions of the project is $81 million as compared to the last sanctioned estimate of $56 million[18]. The portfolio of related projects, particularly Jepson Substation, is driven by the outcome of an area reliability study which identified potential problems in meeting area load requirements under contingency conditions, or the loss of critical components. The Company assessed solutions and selected the most economical long-term solution to solve the reliability issues.

I performed an extensive review of the proposed transmission upgrade and work related to Jepson substation under RIPUC Docket 4614, including assessment of both traditional and non-wires alternatives. My review resulted in concurrence that these legacy projects present the most cost-effective solutions to contingency issues. Non-wires alternatives do not provide a viable option due to the magnitude and duration of load loss, coupled with the age and condition of equipment. I also agree with the related work at Newport and all associated substation retirements, along with the Company's FY 2021 proposed budget of $13.5 million for this legacy project.

[18] Based on most recent sanctioned estimates listed in the Company's "Meg-file" provided in Attachment 4 of each annual ISR Plan Proposal filing.

The FY 2021 ISR Plan load relief category includes two projects supported by the East Bay Area Study, which is the first regional planning study to be completed by the Company. These projects consist of the East Providence and Warren Substations, which are aligned with the recommended solutions identified in the study that I previously evaluated. The Area Study projects a six-year timeline for both projects, which are currently in early engineering, permitting and procurement stages. The ISR Plan indicates cost estimates (+50%/-25%) of $16 million for East Providence and $8.7 million for Warren, which are consistent with FY 2020 ISR estimates. The Company initially proposed a FY 2021 budget of $4.4 million for East Providence and $865,000 for Warren. Discussions focused on the funding level and resource requirements considering the significant work in progress for Aquidneck and major Asset Condition projects. The Company agreed to project delays and associated budget reductions, with final proposed budgets of $1.6 million for East Providence and $465,000 for Warren.

The Company also included the New Lafayette Substation identified in the South County East Area Study with a budget of $390,000 for project development. The new substation addresses reliability and condition issues by expanding the 12.47 kV distribution system. The Company will also retire the existing Lafayette substation and deteriorated 34.5 kV sub transmission, some of which is constructed on wetlands. The project is aligned with the recommended solutions identified in the study that I previously evaluated, and I concur with the proposed FY 2021 budget.

Although agreement was reached on Plan components and budgets, I raised the ongoing issue of extraordinary cost estimate increases. Aquidneck project estimates rose $25 million between the FY 2020 and FY 2021 Plans. Like major projects in the Asset Condition category, the Company is experiencing upward pressure on funding requirements for complex System Capacity projects. A new CCD process may improve future estimates and project management to aid in overall planning and transparency, but this does not change the capital requirement. To manage discretionary spend within an overall reasonable budget, the Company must methodically advance Area Study projects while completing major legacy projects. I will continue to monitor future project estimates and evaluate sanctioning papers to ensure that scope and costs are reasonable and aligned with the outcome of Area Studies prior to the Company expending major capital. As the projects advance through construction, I will also examine actual expenditures against budgeted amounts to determine the Company's success in managing multi-year projects to budgets.

My analysis and discussions of Area Study related projects in the Load Relief category resulted in a $3.7 million adjustment, and concurrence was reached on a final proposed FY 2021 ISR Plan budget of $2.4 million. Combined with the $13.5 million for legacy projects, the overall Load Relief category reached a final proposed budget of $15.9 million.

2. Reliability – Recurring Programs

In the Reliability category, the Company proposed a $7 million budget for several recurring programs, excluding $5 million for a new Strategic DER Advancement

program which I address separately. Overall, the Company is tracking close to its total FY 2020 budget of $5.8 million, with individual projects experiencing both over and under-spend. I evaluated each project in the FY 2021 ISR Plan and, based on additional information provided by the Company, adjustments of $1.4 million were applied, bringing the final proposed total down to $5.6 million. I address the programs in more detail below.

FY 2021 Proposed Budget	NG Initial Proposed Budget (9-30-19)	Net Adjustments	National Grid Proposed Budget (12-16-19)
Reliability (excluding Strategic DER)		$ -	
Volt/Var	$ 2,285,000	$ (1,150,000)	$ 1,135,000
EMS/RTU	$ 980,000		$ 980,000
Flood Contingency	$ 750,000	$ (750,000)	$ -
OH Line Transformer Replacement	$ 650,000		$ 650,000
Other Load Relief & Reliability	$ 365,000		$ 365,000
3VO	$ 540,000		$ 540,000
Recloser Replacement Program	$ -	$ 500,000	$ 500,000
Blanket Projects - SCP	$ 1,385,000		$ 1,385,000
Reliability Total	**$ 6,955,000**	**$ (1,400,000)**	**$ 5,555,000**

FY 2020 Budget Variance	Filed FY 2020	Over/Under Budget	FY 2020 Forecast
Volt/Var	$ 1,850,000	$ 317,000	2,167,000
Storm Hardening	$ -	$ 3,000	$ 3,000
EMS/RTU	$ 310,000	$ (38,000)	$ 272,000
Recloser Replacement Program	$ 850,000		$ 378,000
Flood Contingency			$ 56,000
OH Line Transformer Replacement	$ 600,000	$ (82,000)	$ 518,000
Other Load Relief & Reliability	$ 665,000	$ (421,000)	$ 244,000
3VO	$ 210,000	$ (57,300)	152,700
Blanket Projects - SCP	$ 1,325,000	$ (8,000)	$ 1,317,000
Reliability Total	**$ 5,810,000**	**$ (286,300)**	**$ 5,107,700**

For the FY 2020 ISR Plan, the Company continues funding additional Volt/Var ("VVO/CVR") projects which I reviewed in prior reports and opined that this initiative was an example of technology deployment which brings necessary grid enhancements. The VVO/CVR program is correlated to components of the Company's newly proposed Strategic DER Advancement. Discussions with the Company identified spending overlap between the programs, and the Company ultimately reduced the VVO/CVR budget in the Reliability category and maintained additional spend in the Strategic DER budget.

Program overlaps between Strategic DER Advancement, and both Recloser Replacements and VVO were also identified. I address the correlations and adjustments in more detail in the Strategic DER Advancement section below.

The Company initially proposed $750,000 in the Flood Contingency category to proceed with minor work at Westerly Substation. The budget is an extension of FY 2020 discussions where the Company proposed significant spend at Westerly for a long-term mitigation project. Ultimately, the Company decided to cease the long-term flood mitigation project and implement a short-term solution. The Company further stated that it would reassess the need to rebuild Westerly station at a higher elevation, taking into account area long-term growth, in its pending South County West Area Study. I agreed with the project deferral in FY 2020, consistent with my ongoing recommendation that the Company not pursue significant projects unless compelled by an Area Study. In this case, the Company appropriately deferred the Westerly project with the understanding that the optimal solution to flood mitigation is influenced by the broader area needs. During discussions on the FY 2021 proposal to spend $750,000 towards a short-term solution, the Company recognized the practicality of suspending all funding for Westerly flood work since the South County West Area Study was scheduled to be complete in the current year. Remaining Reliability budgets for smaller initiatives in the Other Load Relief and Reliability category, along with EMS/RTU expansion, overhead transformer replacement, and blanket projects, were accepted as proposed.

My evaluation of Reliability projects, similar to previous years, produces a recurring observation that the Company is pursuing projects within the ISR Plan that originate from

multiple and unrelated external initiatives. The Company may be recovering capital requirements outside the ISR Plan, or the external initiative may result in projects within the ISR Plan. The Strategic DER Advancement initiative is an excellent example of how the Company proposes programmatic spend within the ISR Plan to meet an objective, in this case increased DER, that is not purely aligned with core safety and reliability but has duplicative investments to current projects in the ISR Plan. To the extent the project enters the ISR, I will continue to analyze the proposed scope and spend, taking into consideration the following:

- Confirm that the proposed project is approved for inclusion in the ISR if required by an external initiative, such as studies, regulatory proceedings, or legislative actions,
- Determine whether the proposed project compliments or conflicts with other ISR Plan projects,
- Verify alignment with Area Studies,
- Verify that the proposed project takes into account similar studies performed by the Company to leverage "lessons learned" and avoid duplicative costs,
- Determine reasonableness of budget and impact on current and future years, and
- Identify ISR Plan work that may be deferred by the project.

As I noted in my FY 2019 ISR Plan review, these factors are difficult to differentiate during a single ninety (90) day annual review. I firmly believe that more frequent dialogue with the Division and the Company is necessary to keep apprised of external initiatives that result in ISR Plan projects. Recurring meetings should be established to discuss the status of various programs and policies, regulatory proceedings, or legislative

actions that ultimately influence the ISR Plan. An ongoing, collaborative approach will serve to keep the Division apprised of the Company's activities and provide a platform to not only discuss alignment of multiple initiatives, but also address any planning deficiencies. I discuss the Company's efforts to address these recommendations in more detail in Section G.

My review of the remaining Reliability projects resulted in concurrence for all proposed programs and associated budgets. Total adjustments and deferrals resulted in a proposed budget of $5.6 million in the Reliability category, excluding Strategic DER Advancement.

3. Strategic DER Advancement

The Company proposed spend within a new multi-year Strategic DER Advancement ("Strategic DER") category in the FY 2021 ISR Plan. Initially, the Company proposed a $5 million annual program budget that lacked project scopes and estimates. Concurrence with the proposal was withheld until project specifics were provided. As discussions commenced, the Company detailed four initiatives: (1) Accelerated 3VO, (2) Mobile 3VO, (3) Advanced Capacitor/Regulator Controls and Feeder Monitor Sensors, and (4) Advanced Recloser Controls. The Company also presented a draft white paper for each component, which is pending finalization, for Division review and comment. After considering adjustments based on discussions with the Division, the Company proposed expending a total of $3.7 million in the first year of the DER program. A breakdown of the proposed budget and correlated reliability-based programs, which I discussed in the previous section, are as follows:

FY 2021 Proposed Budget		NG Initial Proposed Budget (9-30-19)	Adjustments	National Grid Proposed Budget (12-16-19)
ISR Plan				
Reliability Projects				
	VVO	$ 2,285,000	$ (1,150,000)	$ 1,135,000
	3VO	$ 540,000	$ -	$ 540,000
	Reclosers	$ 850,000	$ (350,000)	$ 500,000
	Subtotal	**$ 3,675,000**	$ (1,500,000)	**$ 2,175,000**
Strategic DER Projects				
	Strategic DER	$ 5,000,000	$ (5,000,000)	$ -
	DER 3VO		$ 500,000	$ 500,000
	DER Mobile 3VO		$ 1,200,000	$ 1,200,000
	DER Capacitors		$ 800,000	$ 800,000
	DER Reclosers		$ 1,200,000	$ 1,200,000
	Subtotal	**$ 5,000,000**	$ (1,300,000)	**$ 3,700,000**
	Grand Total Reliability + DER	**$ 8,675,000**	**$ (2,800,000)**	**$ 5,875,000**

The new Strategic DER category was proposed by the Company to position it to more readily respond to Distributed Energy Resources ("DER") interconnections. The Company explained that increasing amounts of DER brings complexities in managing the distribution system to meet core compliance obligations, such as system load, voltage, and protection schemes, which are key to safety and reliability. The effort put forth in the Strategic DER program would proactively install or upgrade equipment on select feeders to maintain required system performance and reliability needs, while accommodating additional DER. Similar to any new ISR program, my evaluation focused on the reasonableness of proposed solutions, potential alignment with current programs or initiatives, and level of investment.

I first evaluated the issues experienced by the Company in managing DER interconnections. Like many regions with growing renewable industries, an increasing number of customers and developers are requesting to install and interconnect distributed

generation in the Company's service territory. In some areas, the Company's circuits have reached the maximum allowable capacity and additional DER would require significant upgrades to maintain system reliability. Clusters of DER have been proposed in those areas, and the Company has determined that specific improvements could be implemented to alleviate the constraints and allow multiple projects to advance in a timely manner. The system improvement costs, which may be significant, would normally be borne by the interconnecting customer. By proactively implementing the improvements in the ISR Plan, the Company anticipates increasing DER viability by removing capacity barriers, reducing interconnection timelines, and shifting cost burdens away from DER projects. The Company determined that DER interconnection could be strategically facilitated by investing in both 3VO for system protection at the substation level, and installing advanced equipment and controls to manage protection and voltage compliance on distribution feeders. I found the Company's initial proposed solutions reasonable, subject to my full evaluation below.

The 3VO program provides critical system fault protection to prevent DER generation from contributing to transmission faults, and is required once DER capacity reaches certain thresholds on distribution feeders. Once the threshold is met, additional DER projects may not advance until 3VO is installed. The Company currently installs 3VO protection in newly constructed substations, and has been retrofitting select existing substations with 3VO in the ISR Plan since FY 2019. Timelines to complete retrofits are 60-72 weeks, which delays DER interconnections while construction is completed. To accommodate DER interconnection at a faster pace, the Company is proposing to accelerate 3VO retrofits at priority substations and has identified a mobile 3VO solution

that may be installed in less time and remain in place until permanent facilities are installed. The total cost of permanent installations is proposed in the ISR Plan, and the capital cost for the mobile 3VO solution is proposed in the ISR Plan. Interconnecting DERs that benefit from the installation pay for the installation cost.

The accelerated DER 3VO installations proposed by the Company are essentially an extension of current 3VO initiatives in the ISR Plan Reliability category, which are considered core business. The Company proposed spending $540,000 for core business 3VO in FY 2021, but did not designate how much of the $5 million Strategic DER budget was allocated for additional 3VO. The programs were identical but categorized under different spending rationale, making it likely that the Company's plan included redundant spend. After initial discussions, the Company reevaluated both investments and proposed a DER 3VO budget of $500,000 to be expended with the core 3VO budget of $540,000 for installations in three existing substations, or a total of $1.04 million. The Company's adjustments were found reasonable, recognizing that system protection is a priority for safety and reliability and the Company's area of investments are necessary.

Similar to the permanent 3VO solution, the Company did not originally identify a proposed budget for mobile 3VO, but ultimately identified $1.2 million to cover the capital costs of four units. The mobile 3VO is not a category previously funded in the ISR Plan. According to the Company, a mobile installation can be completed in 8-12 weeks, and remain in place until a permanent solution is implemented. This significantly reduces delays in new DER projects that cannot interconnect until the permanent 3VO system protection is installed. The Company's proposal is an innovative solution to

accelerate DER by targeting substations where capacity constraints are imminent. The condensed construction timeline provides flexibility and ensures that investment in a permanent solution is necessary. In addition, I note that technological innovations may allow for lower cost 3VO protection schemes than the Company currently installs, such as distribution level equipment as opposed to more costly high voltage applications. Using mobile 3VO allows the Company to provide a temporary solution should the industry produce viable alternatives. I advocate mobile 3VO as an economic means to solve system protection issues, and concur with the proposed $1.2 million budget.

I find the Company's proposal for 3VO installations reasonable, but observe that the Company's strategy is pivotal when considering how system improvements required for DER interconnections are prioritized and funded. My experience in many states shows that DER owners are responsible for the cost to alleviate operational impacts that their project may cause on the system. The Company follows this philosophy within its interconnection standards, and, as an example, has proposed assigning the cost of 3VO to interconnected DER projects in its New York jurisdiction. However, through this Strategic DER initiative in Rhode Island, the Company is accepting the responsibility and cost for 3VO where groups of DER projects may benefit. The Company has effectively determined that costs normally attributable to DER owners should become a core business cost within the ISR Plan. These concerns relate more to the permanent 3VO strategy as opposed to the mobile 3VO, which provides the Company with economic and operational flexibility. Although the Company's 3VO program protects the system while advancing the goal of facilitating greater amounts of DER, it also raises a question regarding future categories and magnitude of investments that are absorbed in the ISR

Plan to support a subset of DER projects. At some point, the customer benefits may not outweigh the costs. The Division will consider these factors when evaluating the Company's extended Strategic DER investments and alternatives.

In addition to 3VO, the Company proposed two remaining initiatives comprised of (a) Advanced Capacitor/Regulator Controls and Feeder Monitor Sensors, and (b) Advanced Recloser Controls. Collectively, these advanced field devices and controls enable the Company to monitor and manage system conditions to ensure continued compliance obligations such as load, voltage and protection systems. As DER projects increase on certain feeders, these field devices are required to mitigate system impacts. Similar to the 3VO initiative, the Company has identified areas of the system where additional DER cannot be accommodated without these system improvements. By proactive investment in advanced field devices on targeted circuits, the Company may facilitate additional DER projects under its Strategic DER program.

My examination of the final two components focused on synergies with existing ISR Plan programs. First, the Company currently implements Volt/Var Optimization ("VVO") on specific circuits, which the Company references as the "process of more intelligently using distribution capacitors and regulators in a coordinated manner to flatten the voltage profile based on real time system performance."[19] The Strategic DER investments mirror the VVO program with enhancements for reclosers and line sensors that help the Company monitor and maintain system reliability. Second, under its Recloser Replacement Strategy and Program in the ISR Plan, the Company replaces outdated

[19] Docket 4995, FY 2021 ISR Plan Proposal, Section 2, page 33.

reclosers with new units containing advanced controls, or similar units to those that would be used in the Strategic DER program. Regarding budgets, the FY 2021 ISR Plan included $2.3 million for VVO and $850,000 for Reclosers. The Company did not initially disclose what portion of the proposed $5 million Strategic DER program was designated for advanced devices. After discussing the program overlap and potential budget redundancy, the Company reduced the ISR Plan VVO program to $1.14 million and the Recloser program to $500,000. The Company then proposed $2 million for advanced field devices in the Strategic DER program. Concurrence was reached on the proposed levels in both the ISR Plan and Strategic DER program, for a total of $3.64 million, prior to the Company filing its proposal in December 2019.

Additional discussions between the Company and Division were held to clarify components of the Strategic DER program and to assess its broader implications outside the ISR Plan. The Division raised concerns that a formal program document did not accompany the proposal, and would be expected should the investments be approved as part of the ISR Plan. More importantly, the Advanced Capacitor/Regulator Controls and Feeder Monitor Sensors, and Advanced Recloser Controls components were compared to the Company's draft Grid Modernization Plan ("GMP"). A clear overlap was identified between the advanced field devices proposed in the Strategic DER program and nearly identical components in the GMP. In effect, the Company was advancing GMP components in the ISR Plan before the GMP had been fully vetted and approved. The Company acknowledged these actions and advocated that the investments, although reflected in the GMP, met both core business needs and enabled DER. The Division, upon further reflection, has determined that it is not prudent to prematurely approve

programmatic investment in advanced field devices which are part of the pending GMP. The PUC and stakeholders must be afforded the opportunity to review the Company's proposals in the context of the GMP, rather than signing off on an independent component. Advanced field devices support many utility operations and are inextricably connected to an array of platforms, such as communications and operational software systems. This warrants a comprehensive evaluation. The Division supports funding of the Company's proposed $2 million for Advanced Capacitor/Regulator Controls and Feeder Monitor Sensors, and Advanced Recloser Controls as part of the Strategic DER program in this FY 2021 ISR Plan. However, the Company should defer associated work until the GMP is approved and adequately correlated with these Strategic DER projects.

The comprehensive evaluation and discussions with the Company on all Reliability based projects in the System Capacity and Performance category resulted in a total budget of $9.3 million, comprised of $5.6 million for recurring programs and $3.7 million for a newly proposed Strategic DER Advancement program. Within the Strategic DER Advancement program, however, the Division recommends that the Company delay deployment of $2 million for advanced field devices until those projects are correlated with an approved GMP. This brings the total System Capacity and Performance discretionary budget to $25.2 million, considering major Load Relief projects budgeted at $15.9 million.

Through the course of discussions and data analysis, concurrence was reached on a total proposed discretionary budget of $66.9 million comprised of the Asset Condition, Non-Infrastructure, and System Capacity & Performance categories, or sixty-four (64%) of the total Capital Investment of the ISR Plan budget.

G. Area Studies and Integrated Planning Requirements

1. Area Studies

A significant portion of my ISR Plan evaluation has been dedicated to the Company's need to evaluate projects against the results of Area Studies, with a resulting system Long-Range Plan before inclusion in the ISR Plan. In response, the Company is in the sixth year of performing Area Studies to be used to support projects in the ISR Plan. There are ten study areas, and only four completed studies. As discussed earlier in this report, the first major projects compelled by completed Area Studies are now in the ISR Plan. The Company continues to advance remaining studies. The status of that progress was provided in the FY 2021 ISR Plan filing as follows[20]:

National Grid's Study Areas: Current Priority and Statistics

Rank	Study Area	Load (MVA)	% State Load	# Feeders	# Stations	Annual Planning Review % Complete	Area Planning Study % Complete	Area Planning Study Stage	Estimated Planning Study Complete Date	Expected Commencement of next Area Study
1	Providence	358	19%	95	17	100%	100%	Stage 9	Complete 2017	2024
2	East Bay	147	8%	22	7	100%	100%	Stage 9	Complete 2015	2022
3	Central Rhode Island East	204	11%	37	9	100%	100%	Stage 9	Complete 2017	2024
4	South County East	159	9%	22	9	100%	100%	Stage 9	Complete 2018	2025
5A	Blackstone Valley North	139	8%	27	6	100%	50%	Stage 5	Mar-2020	2026
5B	North Central Rhode Island	269	15%	35	10	100%	50%	Stage 5	Mar-2020	2026
6	South County West	98	5%	14	5	100%	20%	Stage 3	Dec-2020	2027
7	Central Rhode Island West	167	9%	33	11	100%	5%	Stage 1	Dec-2020	2027
8	Tiverton	28	2%	4	1	100%	5%	Stage 1	Dec-2020	2027
9	Blackstone Valley South	171	9%	54	11	100%	5%	Stage 1	Dec-2020	2027
10	Newport	105	6%	42	12	100%	0%	NA	Jun-2021	2020
	Totals	1,845	100%	385	98	100%	60%[1]	-		

[1] Percent complete based on total state load studied.

[20] Docket 4995, FY 2021 ISR Plan Proposal; Section 1, page 5

The Company completed the South County East study since last year. In this study, the Company released NWA Requests for Proposals ("RFP") to determine the economic viability of NWA instead of a traditional wires solution to solve three independent system issues. Their course of action is consistent with the Division's strong encouragement to pursue NWA opportunities presented in Area Studies. The Company further reports in its South County East Area Study that all NWA solution bid proposals submitted to National Grid did not pass evaluation for a feasible solution. Of these, one project will advance with a wires option while the two remaining system issues require solutions in 2022 or 2024, creating an opportunity for a potential NWA, or partial NWA, in the future. I agree that the Company's approach is consistent with requirements of the SRP and expect that the solutions, whether a traditional wires or future NWA, will be included in the ISR Plan when scheduled for implementation. The Division continues to have concerns, however, with the completion rate of Area Studies. The Company continuously delays completion dates and, although remaining studies are scheduled to conclude in January 2021, the rate at which studies are completed, delivered and reviewed with the Division Consultant and the Division continues to fall short of our expectations.

2. <u>ISR Plan Development, Presentation and Execution</u>

Over the course of many proceedings, I detailed several observations that impact the Company's ISR Plan and raised concerns with the Company's efforts to manage those issues. These generally included:

a. Delays in completing Area Studies and deficient NWA analyses,

b. The lack of transparency and cohesiveness between the Company's design criteria, System Reliability Procurement, and Area Studies,

c. The Company's lack of a grid modernization strategy and determination of how ISR projects either reflect or complement that strategy.

The levels of complexity in distribution planning continue to rise when considering the role and impact of distributed generation and legislative mandates, such as energy efficiency or reliability. Fundamentally, the Company is tasked with creating a single, comprehensive capital investment plan to meet traditional safety and reliability objectives that must be compatible with multiple external initiatives today and in the future. I have discussed the confluence of these external initiatives and encouraged the Company to take a proactive stance in proposing improvements that integrate various planning requirements, and allow for a transparent and forward-looking approach. While my recommendations have been endorsed by the Commission[21], the true resolution takes extensive collaboration and coordination between the Company, Commission Staff, Division, and stakeholders.

As part of these efforts, the Division offered specific proposals to the Company during FY 2021 ISR Plan discussions to enhance the development, presentation and execution of the Plan. These include the Company clearly identifying the system problems being addressed in the Plan and the proposed actions to solve the problems. The Company should efficiently compile and summarize all its pre-filed information and accompanying analysis in a more organized manner so that stakeholders may perform varying levels of evaluation. The ISR Plan should clearly state system issues identified through programs, such as Area Studies, that evaluate capacity and load relief projects and Asset

[21] Docket 4783, FY 2019 ISR Plan Proposal Report and Order (effective April 1, 2018); Order No. 6, pages 22-25

Management Tools used for condition assessment programs. The Division would like enhanced information on Area Studies to be included in the proposed ISR Plan filings. For completed studies, the Company should provide a strategic spending plan listing all proposed projects by rationale (Assed Condition or System Capacity) and estimated cost by year. The Company should correlate the strategic plan to the ISR Plan, clearly indicating the status of projects that have been incorporated in the Plan. The Division would also like the Company to propose a tracking mechanism that compares original cost estimates developed within the Area Study to revised cost estimates as the projects advance in the ISR Plan. Lastly, the Division recommends that the Company attempt an expansion of the discussion, including possible use of Appendices, that provides stakeholders with sufficient detailed analysis behind the Plan projects and programs. After the initial restructured filing as part of the proposed FY 2021 ISR Plan, the Division would develop recommendations to further expand contents and exhibits in cooperation with the Company.

The Company has taken initial steps to meet prior recommendations and to reorganize its Plan presentation but, given the short time frame between discussions and the Company filings, additional enhancements were not included. The Division expects that the Company will proactively collaborate prior to the FY 2022 ISR Plan to combine and implement both Commission recommendations and informal Plan improvements suggested in this report. Broader stakeholder engagement should continue as grid modernization strategies develop that could potentially impact the ISR Plan. The Company's actions should be directed towards the goal of achieving a more holistic

planning approach, presented in a manner such that stakeholders may readily comprehend the need for annual capital investments, which now exceed $100 million.

3. Docket 4600

The Company is now identifying new or incremental programs in the proposed ISR Plan and describing how each advances, detracts, or is neutral to each goal in Docket 4600. For the first time within this ISR Plan filing, the Company is also applying benefit-cost analysis ("BCA") to new or incremental programs using the Docket 4600 Framework.

The Company has identified thirty-four categories of costs and benefits for evaluation of two programs in the ISR Plan, New Lafayette Substation and DER Enabling Investments. The BCA was also applied to incremental spend associated with Hazardous Tree Removal, which the Company has prepared since 2012 and submitted as part of its pre-planning documents each year. A separate conference with the Company was held to specifically address the BCA analysis. The Division made recommendations as they relate to presenting a clear comparison between each project alternative being evaluated, including, when possible, a "do nothing" scenario.

The BCA Framework, although much more comprehensive, is consistent with my overall philosophy that the Company should support specific programs with a cost-benefit analysis. I have recommended this in the past when the Company proposed incremental discretionary spend, whether expanding a current program or proposing a new initiative, that did not have a clear alignment with existing programs or an Area Study. A most recent example is VVO, where the Company documented energy reductions on targeted

feeders that resulted in benefits exceeding program costs. The Company is validating the benefits through actual project implementation, and the results support further expansion of the VVO program.

The BCA Framework is similar, except that it applies to all new or incremental spend in the ISR Plan while also establishing discreet categories and methodologies for analysis. For instance, the Framework considers societal impacts which would not ordinarily be assessed in my engineering review of ISR Plan investments. The BCA is a complex process that the Company must now apply to its core investments for safety and reliability. In my role as Division consultant, I approach the Framework as an additional measure of support for programs, and consistent with the PUC, "…not an exclusive measure of whether a specific proposal should be approved."[22] Given that this is the Company's first application of the BCA Framework in the ISR Plan, I offer the following observations:

a. The Framework is complex, covering thirty-four categories of BCA. The underlying data is not apparent and would require extensive consultation with the Company to analyze. It is not clear if this would occur under Docket 4600, the ISR proceedings, or under an alternative format.
b. The incremental spend for hazardous tree removals has been included in the ISR Plan since 2012. The Company has developed a robust BCA for the program, but it is not identical to the Framework format. All forms of vegetation management primarily benefit reliability. Absent an adequate program, the reliability indices goals could not be achieved. Therefore, BCA would be measured against the minimum program to

[22] Docket 4995, FY 2021 ISR Plan Proposal, Joint Testimony, page 20

achieve the reliability goals with the incremental benefit beyond that base program, which in part is subjective. That is why the Division has recommended the Company track and include the benefit analysis dating back to FY 2012.

c. The Company will have multiple complex projects in future ISR Plans which emanate from Area Studies. The Company must be prepared to refine the Framework application and determine if projects are viewed collectively for an area, or independently.

d. Project costs increase as projects mature and BCA's should reflect these adjustments.

e. Where possible, benefits should ultimately be measured to verify assumptions in BCA.

f. Overall, it is not clear how the data, as presented by the Company, shapes, influences, augments, complements, or otherwise supports the ISR Plan. It is yet another example of how requirements under a separate, but related, regulatory docket are introduced in the ISR Plan without being fully integrated. In addition, the Framework extends beyond the ISR Plan, and should be similarly addressed within the Company's pending cross program statement or template.

III. VEGETATION MANAGEMENT

The Company's initial FY 2021 ISR Plan proposed expenditures of $10.6 million for the Vegetation Management Program, which includes the Enhanced Hazard Tree Mitigation (EHTM) program, are two percent (2%) higher than the FY 2020 budget and forecasted spend of $10.4 million.

FY 2021 Proposed Budget	NG Initial Proposed Budget (9-30-19)	Adjustments	National Grid Proposed Budget (12-16-19)	FY 2019 Forecast
Vegetation Management				
Cycle Pruning	$ 6,100,000	$ -	$ 6,100,000	$ 5,600,000
Hazard Tree	$ 1,750,000		$ 1,750,000	$ 2,250,000
Sub-T	$ 550,000		$ 550,000	$ 500,000
Police/Flagman Detail	$ 775,000		$ 775,000	$ 825,000
All Other Activities	$ 1,425,000		$ 1,425,000	$ 1,225,000
Program Total	**$ 10,600,000**	**$ -**	**$ 10,600,000**	**$ 10,400,000**

Consistent with historical budgets, the major spending component is Cycle Pruning with a proposed budget of $6.1 million. The Company forecasts a lower level of spend in the EHTM category after having managed increased tree mortality due to the spread of the Gypsy Moth throughout Rhode Island. The EHTM program will continue to be impacted in the future as the Company prepares a strategy to address pest-related tree damage. Overall, the Company is successfully executing the Vegetation Management program while meeting budget targets. No adjustments were recommended, and concurrence was reached on the proposed Vegetation Management Program budget of $10.6 million for FY 2021.

I have evaluated the Vegetation Management Program in detail and on multiple levels in prior ISR Plan assessments, and continue to support the Company's funding level and frequency

of cycle pruning work, which is consistent with industry practices. The Company reports[23] that, on average, a fifteen (15%) improvement in customer interruptions (CI) per circuit occurs in the first year after pruning. The Company implements a four-year pruning cycle to maintain approximately 5,016 miles of overhead distribution circuits. Reliability indices indicate that the Company continues to meet or exceed annual goals, suggesting that budget increases, unless warranted by upward pressure in contractor labor, are not required since the cycle pruning is not expanding or changing. I continue to support this core critical activity and the Company's proposed $6.1 million for cycle pruning.

EHTM is another program component that the Company continues to perform and justify with favorable reliability statistics. The ISR Plan filing states[24] that three years of tree-related interruption data for Rhode Island indicates that fallen trees account for forty-six percent (46%) of tree-related customer interruptions. Reliability data indicates that, with few exceptions, trees account for the majority of customer interruptions each year.

The EHTM program accounts for seventeen percent (17%) of the proposed Vegetation Management budget. The program has continuously been a source of annual discussions to better understand the cost/benefit of the program. Under the program, the Company identifies and removes dying or structurally weakened trees along the three-phase sections of the worst performing circuits, and beyond the mainline portion of feeders that are experiencing multiple interruptions. The Company reports[25] that from FY 2008 to FY 2019, tree-related customer

[23] Docket 4995, FY 2021 ISR Plan Proposal; Section 3, page 2.
[24] *Id.* Section 3, page 3.
[25] *Id.* Section 3, page 3.

interruptions improved on an average of sixty-eight percent (68%) for the first year following completion of EHTM work.

I continue to believe that hazard tree identification and removal, particularly on the worst performing feeders, remains critical. The Company increased the EHTM budget in FY 2018 to manage tree mortality expected from spread of the Gypsy Moth. After successful removal of oak trees in targeted areas, the Company is reducing the EHTM budget in FY 2021. Efforts to coordinate with municipalities continues, which has resulted in lower police detail costs and improved communication with customers prior to tree removals. The Company discussed that the Emerald Ash Borer infestation is presently community specific, not a current risk, and that proactive tree removals will be required in five to six years. This strategy is consistent with my prior recommendation that the Company take a measured approach in managing pest infestation as opposed to removing massive amounts of trees before the effects materialize. I continue to expect that when future ISR Plan budget requests are submitted for Emerald Ash Borer management; the Company will be prepared to reduce discretionary spend in other categories to offset vegetation management increases. Any budget request should be accompanied by a clear, collaborative statewide strategy, outlining the utility's role and estimated cost responsibility relative to other stakeholders. I support the proposed FY 2021 EHTM budget of $1.75 million.

Discussions with the Company also focused on general statistics for tree related outages. In FY 2019, the Company experienced an increase in customer interruptions due to trees, with nearly half of the interruptions occurring within the top ten worst performing days[26]. The Company theorized that warmer temperatures, longer growing seasons, and increasing events of

[26] Docket 4995, Attachment DIV 3-1

high wind and rain were contributing to outages caused by vegetation management. The Company will continue to investigate data in Rhode Island to determine if program adjustments are warranted. For FY 2021, the core activity budget of $1.425 million includes an additional $200,000 to target pockets of poor performance. These are circuits that have experienced significant customer outages due to trees which would benefit from additional clearing between customary cycles. I find the additional budget and associated work reasonable. The remaining components of Vegetation Management include sub-transmission work and police detail which are collectively budgeted at $1.325 million. All categories are reasonable and consistent with recent historical levels of spend. This brings the total Vegetation Management Program proposed budget to $10.6 million.

IV. SUMMARY AND RECOMMENDATIONS

The process between the Company and the Division resulted in a FY 2021 Electric ISR Plan which sets forth a capital budget, VM Program and I&M Program, and associated O&M activities that balance the need for safety and reliability with efficient benefit/cost considerations. Appendix-2, Summary of Capital Outlays by Key Driver Category and Budget Classification, summarizes by spending rationale (category) and individual budget class within each category, differences between the Company's initially proposed ISR Plan of September 30, 2019, and the resulting December 20, 2019 filing of the FY 2021 ISR Plan Proposal. The consensus ISR Plan is a four percent (4%) reduction of $1.5 million in the non-discretionary capital spending budget, and a thirteen percent (13%) reduction of $9.95 million in the discretionary capital spending budget, for an overall reduction of $11.5 million, or nearly ten percent (10%).

For FY 2021, review of the proposed ISR Plan and discussions with the Company continued to address the reasonableness of budget levels for customary projects, many of which are part of mature programs. The Company continues to pursue a portfolio of capital investments for load relief and to replace aging and obsolete infrastructure. Focus is shifting from small, individual projects to multi-year major projects. The Southeast Substation and Aquidneck Island projects dominate the current discretionary budget, and will be followed by many significant projects resulting from Area Studies being developed as part of a system Long-Range Plan. Efforts to improve project management to meet scope and budgets have produced incremental changes, such as a new Complex Capital Delivery process, but the resulting improvements to the ISR Plan remain unclear. An Area Study which identified three opportunities for NWAs has recently been completed. No feasible NWA solutions were proposed, and the Company will

reconsider NWAs for two system issues on the future. Overall, completion of Area Studies remains below expectations.

The Division Consultant supports ongoing investment in proposed categories and continues to evaluate work performed between discretionary and non-discretionary categories. The Company has made efforts to combine and manage a discretionary budget for repairs completed in the Damage/Failure and I&M categories separately from a budget required to replace failed equipment in the non-discretionary category. I expect continued monitoring and reporting of the associated budget categories to validate classification. In addition, the Company should more narrowly define a "fix on failure" Damage/Failure asset replacement strategy and put forth additional program adjustments in the FY 2022 ISR Plan.

The Company introduced a new program, Strategic DER Advancement, that initially lacked a scope and clear budget components. Once the Company identified additional details, multiple areas of overlap with current ISR Plan programs were identified. Budget adjustments were found acceptable by the Division with a condition that advanced field device deployment, which is part of a pending GMP, should be deferred until those projects are correlated with an approved GMP.

The longer-term challenge continues to be how the Company globally prioritizes and schedules projects arising from pending Area Studies, while incorporating other requirements arising from separate but interrelated dockets. There will be significant upward pressure on the ISR Plan budget to accommodate future projects and initiatives such as AMI/GMP, while balancing the competing interests of safety and reliability with economic impacts to its ratepayers. The Company must be diligent in preparing and adhering to planning criteria that

supports orderly development of the system. The Company must continue to monitor its core ISR Plan spending strategies, which will require modulation of discretionary program spend to avoid excessive ISR Plan funding needs. Emphasis on creating a cohesive and transparent long-term planning process, combined with enhanced budgeting and project management, are critical to successful ISR Plan execution. In this report, I have commented on the Company's application of a BCA using the Docket 4600 Framework, recommended that the Company inform the Division prior to advancing significant (greater than $1 million) unbudgeted projects during implementation of an ISR Plan, and have also proposed enhancements for ISR Plan development, presentation, and execution. These do not translate to formal recommendations, but will serve to guide ongoing discussions between the Division and the Company prior to the subsequent ISR Plan filing.

I support the FY 2021 ISR Plan Capital Budget as proposed at $103.8 million, the proposed Vegetation Management Program at $10.6 million and the I&M Program Operations and Maintenance Expenses at $1.8 million. I propose a revised recommendation that the Company and Division coordinate to develop a methodology that combines the discretionary spend under Damage/Failure, I&M, and related programs. I have emphasized a recommendation that the Company correlate its GMP to all ISR Plan investments. I propose deleting a previous recommendation that the Company provide its metalclad switchgear replacement program cost benefit analysis, since future work should be incorporated in Area Study projects. I expect that my remaining recommendations accepted during prior ISR Plan proceedings will continue to be followed by the Company.

Recommendations

1. National Grid shall coordinate with the Division to monitor and report on work performed under Damage/Failure, I&M, and related Asset Replacement blanket programs to validate proper classifications. The Company shall put forth program adjustments in the FY 2022 ISR Plan that include advancing Damage/Failure to a "fix on failure" strategy.

2. 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 SRP, Area Studies, ISR Plan, NWA options and internal Design Criteria.

3. 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:
    - 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.
    - Discussion on the impact to related Company initiatives, Commission programs, the various pilot projects, or other requirements driven by SRP, DSP, 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. This includes description of technology or infrastructure investment, cost-benefit to traditional safety and reliability objectives, and additional operational benefits achieved, if implemented. The GMP should be closely correlated with all ISR Plan investments, including both recurring and newly proposed programs.
- A robust NWA evaluation for projects passing initial screening that clearly identifies alternatives considered, costs, and benefits.

4. 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 2022 ISR Plan Proposal, but in any event no later than August 31, 2020.

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

6. National Grid will continue to manage (underspend/overspend management) individual project costs within the ISR 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.

7. 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 I&M program.

8. 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 4-year period. The budget shall be provided in advance of the FY 2022 ISR Plan Proposal filing, and in any event no later than August 31, 2020.

9. 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 2022 ISR Plan Proposal filing, and in any event no later than August 31, 2020.

10. 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 2022 ISR Plan Proposal filing, and in any event no later than August 31, 2020.

11. 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 2022 ISR Plan Proposal, and in any event no later than August 31, 2020.

APPENDIX 1

Historical Budgets versus Actual

Spending Rationale	FY 2006 Budget	FY 2006 Actual	FY 2007 Budget	FY 2007 Actual	FY 2008 Budget	FY 2008 Actual
Customer Request/Public Requirements	20,302,000	22,885,193	17,902,500	21,012,048	24,630,000	23,887,492
Damage/Failure	3,250,000	8,264,656	4,550,000	7,442,272	5,660,000	7,642,277
Total Discretionary	***23,552,000***	***31,149,849***	***22,452,500***	***28,454,320***	***30,290,000***	***31,529,769***
Asset Condition	9,323,000	5,828,465	8,641,000	8,342,907	10,020,000	12,559,436
Non-Infrastructure	793,000	(2,196,297)	990,000	3,041,061	75,000	385,109
System Capacity & Performance	10,276,500	10,980,393	12,961,500	11,545,608	12,434,000	13,558,424
Total Non-Discretionary	***20,392,500***	***14,612,561***	***22,592,500***	***22,929,576***	***22,529,000***	***26,502,969***
Grand Total	**43,944,500**	**45,762,410**	**45,045,000**	**51,383,896**	**52,819,000**	**58,032,738**
Vegetation Management	-	-	-	-	-	6,630,000
Inspection & Maintenance Program	-	-	-	-	-	-

Spending Rationale	FY 2009 Budget	FY 2009 Actual	FY 2010 Budget	FY 2010 Actual	FY 2011 Budget	FY 2011 Actual
Customer Request/Public Requirements	24,022,668	21,171,756	23,726,000	19,311,885	21,014,000	14,631,340
Damage/Failure	6,596,000	8,345,442	7,919,000	9,031,133	9,365,000	13,194,101
Total Discretionary	***30,618,668***	***29,517,198***	***31,645,000***	***28,343,018***	***30,379,000***	***27,825,441***
Asset Condition	10,090,732	10,941,238	14,253,000	13,065,303	7,201,000	5,830,800
Non-Infrastructure	242,600	284,808	168,000	(590,138)	685,000	705,603
System Capacity & Performance	16,707,000	14,595,922	22,434,000	17,454,290	8,635,000	10,758,714
Total Non-Discretionary	***27,040,332***	***25,821,968***	***36,855,000***	***29,929,455***	***16,521,000***	***17,295,117***
Grand Total	**57,659,000**	**55,339,166**	**68,500,000**	**58,272,473**	**46,900,000**	**45,120,558**
Vegetation Management	-	7,857,000	-	6,882,000	-	4,829,000
Inspection & Maintenance Program	-	-	-	-	-	-

Spending Rationale	FY 2012 Budget	FY 2012 Actual	FY 2013 Budget	FY 2013 Actual	FY 2014 Budget	FY 2014 Actual
Customer Request/Public Requirements	21,636,500	13,075,154	20,006,000	10,410,223	16,509,000	17,137,642
Damage/Failure	9,705,000	12,992,859	10,422,000	17,515,452	10,050,000	14,373,392
Total Discretionary	***31,341,500***	***26,068,013***	***30,428,000***	***27,925,675***	***26,559,000***	***31,511,034***
Asset Condition	12,318,050	11,520,099	11,863,000	8,070,832	20,242,000	20,904,838
Non-Infrastructure	278,000	266,545	336,000	2,269,065	255,000	(346,246)
System Capacity & Performance	17,962,450	13,955,240	13,913,000	11,249,210	12,544,000	25,972,338
Total Non-Discretionary	***30,558,500***	***25,741,884***	***26,112,000***	***21,589,107***	***33,041,000***	***46,530,930***
Grand Total	**61,900,000**	**51,809,897**	**56,540,000**	**49,514,782**	**59,600,000**	**78,041,964**
Vegetation Management	9,826,000	8,176,000	8,256,000	8,248,749	8,476,000	8,529,815
Inspection & Maintenance Program	2,479,230	1,465,884	2,270,900	1,480,205	3,779,000	3,611,958

Historical Budgets versus Actual
(Continued)

Spending Rationale	FY 2015 Budget	FY 2015 Actual	FY 2016 Budget	FY 2016 Actual	FY 2017 Budget	FY 2017 Actual
Customer Request/Public Requirements	14,537,000	17,759,797	15,647,000	17,412,295	19,450,550	20,232,661
Damage/Failure	9,816,000	3,044,445	11,177,000	14,531,159	11,467,000	15,614,335
Total Discretionary	***24,353,000***	***20,804,242***	***26,824,000***	***31,943,454***	***30,917,550***	***35,846,996***
Asset Condition	19,511,000	25,140,871	24,053,000	27,178,961	33,280,427	31,274,161
Non-Infrastructure	277,000	1,216,345	275,000	457,389	275,000	621,795
System Capacity & Performance	21,759,000	25,889,850	22,148,000	19,919,705	18,968,000	16,370,536
Total Non-Discretionary	***41,547,000***	***52,247,066***	***46,476,000***	***47,556,055***	***52,523,427***	***48,266,492***
Grand Total	**65,900,000**	**73,051,308**	**73,300,000**	**79,499,509**	**83,440,977**	**84,113,488**
Vegetation Management	7,726,000	8,029,095	8,884,000	8,893,000	8,719,000	8,719,000
Inspection & Maintenance Program	2,995,000	2,022,743	3,333,000	1,196,756	1,611,750	1,611,750

Spending Rationale	FY 2018 Budget	FY 2018 Actual	FY 2019 Budget	FY 2019 Actual	FY 2020 Budget	FY 2020 Forecast	FY 2021 Proposed
Customer Request/Public Requirements	21,853,000	19,627,243	19,005,000	23,989,000	27,025,000	29,148,000	24,540,000
Damage/Failure	11,379,000	19,184,118	13,674,000	13,998,000	13,505,000	15,463,000	12,365,000
Total Discretionary	***33,232,000***	***38,811,361***	***32,679,000***	***37,987,000***	***40,530,000***	***44,611,000***	***36,905,000***
Asset Condition	42,744,000	17,241,994	29,768,000	30,708,000	39,675,000	34,965,000	41,120,000
Non-Infrastructure	553,000	362,242	556,000	673,000	550,000	361,000	580,000
System Capacity & Performance	24,092,000	50,642,444	39,764,000	41,704,000	21,045,000	25,463,000	25,145,000
Total Non-Discretionary	***67,389,000***	***68,246,680***	***70,088,000***	***73,085,000***	***61,270,000***	***60,789,000***	***66,845,000***
Grand Total	**100,621,000**	**107,058,041**	**102,767,000**	**111,072,000**	**101,800,000**	**105,400,000**	**103,750,000**
Vegetation Management	9,400,000	9,515,300	9,800,000	9,800,000	10,400,000	10,400,000	10,600,000
Inspection & Maintenance Program	1,230,800	684,744	1,289,000	1,289,000	1,243,000	1,243,000	1,782,633

APPENDIX 2

FY2021 ISR Plan Division Adjustments Capital Outlays by Key Driver Category and Budget Classification					
		FY 2021 ($)			
SPENDING RATIONALE	BUDGET CLASS	NG Revised Proposed Budget (9-30-19)	Adjustments (12-16-19)	Notes	National Grid Proposed Budget (12-16-19)
Customer Request/ Public Requirements	3rd Party Attachments	200,000			200,000
	Distributed Generation	1,000,000			1,000,000
	Land and Land Rights - Dist	385,000			385,000
	Meters – Dist	2,745,000			2,745,000
	New Business - Commercial	8,405,000			8,405,000
	New Business - Residential	4,370,000			4,370,000
	Outdoor Lighting - Capital	315,000			315,000
	Public Requirements	2,670,000			2,670,000
	Transformers & Related Equipment	4,700,000	(500,000)		4,200,000
	Meters-AMR & Landline Projects	250,000			250,000
Customer Request/ Public Requirements		**25,040,000**	**(500,000)**		**24,540,000**
	Damage/ Failure	10,740,000	(1,000,000)		9,740,000
Damage/ Failure	Major Storms – Dist (includes Reserves)	2,625,000			2,625,000
Damage/Failure Total		**13,365,000**	**(1,000,000)**		**12,365,000**
Subtotal Non-Discretionary		**38,405,000**	**(1,500,000)**		**36,905,000**
Asset Condition	Major Projects			(1)	
	South Street	0			-
	Southeast	10,080,000			10,080,000
	Flood - Westerly	0			-
	Flood - Hope Substation	220,000			220,000
	Dyer Street-Indoor Substation	7,160,000			7,160,000
	Providence LT Study	4,240,000			4,240,000
	Major Projects Total	21,700,000	-		21,700,000
	Asset Replacement				
	Battery Replacement	220,000			220,000
	Metalclad Switchgear	-			-
	Substation Transformer Replacement	-			-
	Substation Breakers & Reclosers	1,305,000			1,305,000
	Network Arc Flash	-			-
	Recloser Replacement	850,000	(850,000)		-
	URD Cable Strategy	5,000,000	(1,000,000)		4,000,000
	UG Cable Replacement	5,500,000	(1,000,000)		4,500,000
	UG Improvements	375,000			375,000
	Others	1,640,000			1,640,000
	Blanket Projects	3,480,000			3,480,000
	Asset Replacement ***New* Discretionary Damage work**		1,000,000		1,000,000
	Asset Replacement Total	18,370,000	(1,850,000)		16,520,000
	Asset Replacement - I&M (NE)	4,900,000	(2,000,000)		2,900,000
Asset Condition Total		**44,970,000**	**(3,850,000)**		**41,120,000**
Non-Infrastructure	General Equipment	330,000			330,000
	Telecommunications Capital - Dist	250,000			250,000
Non-Infrastructure Total		**580,000**	**-**		**580,000**

FY2021 ISR Plan Division Adjustments Capital Outlays by Key Driver Category and Budget Classification					
		FY 2021 ($)			
SPENDING RATIONALE	BUDGET CLASS	NG Revised Proposed Budget (9-30-19)	Adjustments (12-16-19)	Notes	National Grid Proposed Budget (12-16-19)
System Capacity and Performance					
	Load Relief			(1)	
	Aquidneck Island (Newport projects)	6,206,000	(226,000)		5,980,000
	Aquidneck Island (Jepson projects)	6,959,000	546,000		7,505,000
	New Lafayette Substation	289,000	101,000		390,000
	New London Ave Substation #150	0			-
	Warren Substation	865,000	(400,000)		465,000
	East Providence Substation	4,974,000	(3,424,000)		1,550,000
	Load Relief Total	19,293,000	(3,403,000)		15,890,000
					-
	Reliability				-
	Volt/Var	2,285,000	(1,150,000)		1,135,000
	Storm Hardening	0			-
	EMS/RTU	980,000			980,000
	Flood Contingency	750,000	(750,000)		-
	OH Line Transformer Replacement	650,000			650,000
	Other Load Relief & Reliability	365,000			365,000
	3VO	540,000			540,000
	Recloser Replacement Program	0	500,000		500,000
	Strategic DER Advancement	5,000,000	(5,000,000)		-
	DER 3V0		500,000		500,000
	DER Mobile 3V0		1,200,000		1,200,000
	DER Capacitors		800,000		800,000
	DER Reclosers		1,200,000		1,200,000
	Blanket Projects - SCP	1,385,000			1,385,000
	Reliability Total	11,955,000	(2,700,000)		9,255,000
System Capacity and Performance Total		**31,248,000**	**(6,103,000)**		**25,145,000**
Subtotal Discretionary		**76,798,000**	**(9,953,000)**		**66,845,000**
Total Electric Distribution		**115,203,000**	**(11,453,000)**		**103,750,000**
Vegetation Management Program	Cycle Trimming	6,100,000			6,100,000
	Hazard Tree	1,750,000			1,750,000
	Sub-T	550,000			550,000
	Police/Flagman Detail	775,000			775,000
	All Other Activities	1,425,000			1,425,000
Vegetation Management Program Total		**10,600,000**	**-**		**10,600,000**
Other Programs, Principally I&M	Operation and Maintenance Expenses:				
	Opex related to Capex	735,000	(300,000)		435,000
	Repair - Related Costs				-
	Inspections and Repair- Related Costs	600,000			600,000
	System Planning & Protection Coordination Study	25,000			25,000
	VVO/CVR Program O&M	431,633			431,633
	Sub-total Operations & Maintenance Expense	1,791,633	(300,000)		1,491,633
	Cost of Removal for I&M Capex	491,000	(200,000)		291,000
Other Program Total (principally I&M)		**2,282,633**	**(500,000)**		**1,782,633**
Grand Total ISR- All Programs		**128,085,633**	**(11,953,000)**		**116,132,633**

NOTES:

(1) National Grid will manage (underspend/overspend management) on individual project costs within the ISR 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 projects.