Fifth Set of Data Requests in Docket 4770
From the Division of Public Utilities to National Grid
January 3, 2018

Benefit-Cost Analyses

5-1. For each benefit-cost analysis included in the rate case filing, please provide all workpapers, workbooks, and calculations in machine-readable format with formulas intact.

Response can be found in Book 1 on Bates page(s) 1-4.

5-2. For each benefit-cost analysis included in the rate case filing, please describe each methodology or assumption that is different from the methodologies and assumptions used by the Company when modeling the cost-effectiveness of its energy efficiency programs.

Response can be found in Book 1 on Bates page(s) 5-7.

5-3. For each benefit-cost analysis included in the rate case filing, please use a societal discount rate of 3.0% (in real terms). Please provide all workpapers, workbooks, and calculations in machine-readable format with formulas intact.

Response can be found in Book 1 on Bates page(s) 8-75.

5-4. For each benefit-cost analysis included in the rate case filing, please use a discount rate equal to the discount rate that is currently used for modeling the cost-effectiveness of the Company's energy efficiency programs. Please provide all workpapers, workbooks, and calculations in machine-readable format with formulas intact.

Response can be found in Book 1 on Bates page(s) 76.

5-5. With regard to PST Book 1, Appendix 2.2 on Economic Development, please provide all documentation, workbooks, and workpapers used for this analysis, in machine-readable format with formulas intact.

Response can be found in Book 1 on Bates page(s) 77-88.

PST Tracker

5-6. With regard to the most recent ISR filing submitted by the Company, what portion of the Company's total annual capital expenditures were recovered through the ISR relative to other ratemaking mechanisms. Please provide the actual ISR capital expenditures and the actual non-ISR capital expenditures, as well as the proportions.

Response can be found in Book 1 on Bates page(s) 89.

5-7. With regard to the most recent ISR filing submitted by the Company, what portion of the Company's total annual non-capital expenditures were recovered through the ISR relative to other ratemaking mechanisms. Please provide the actual ISR non-capital expenditures and the actual non-ISR non-capital expenditures, as well as the proportions.

Response can be found in Book 1 on Bates page(s) 90.

5-8. Please describe how the regulatory review of the PST Factor and the PST Reconciliation Factor would differ from the regulatory review of the ISR, in terms of timing, stakeholder input, and related procedures. Does the Company intend to coordinate or synchronize the two review processes?

Response can be found in Book 1 on Bates page(s) 91-92.

5-9. Please describe how the recovery of the PST costs would differ from the recovery of costs reviewed through the ISR?

Response can be found in Book 1 on Bates page(s) 93.

5-10. Please explain why the Company does not simply submit all PST costs to the ISR review, and recover all PST costs through the ISR process, instead of creating the PST Factor and the PST Reconciliation Factor.

Response can be found in Book 1 on Bates page(s) 94-95.

5-11. Please explain why the Company did not request the inclusion of the Power Sector Transformation costs in base rates under a multi-year rate plan?

Response can be found in Book 1 on Bates page(s) 96.

Grid Modernization

5-12. Refer to Schedule PST-1, Chapter 3, pages 4-5.

a. Please provide the results of the VVO/CVR pilot project.

b. Please provide the estimated savings on the additional 40 feeders.

Response can be found in Book 1 on Bates page(s) 97-129.

5-13. Refer to Schedule PST-1, Chapter 3, page 4 regarding the power flow analysis to perform long-term system planning. Please provide the Company's most recent long-term system plan.

Response can be found in Book 1 on Bates page(s) 130.

5-14. Refer to Schedule PST-1, Chapter 3, page 7 regarding the system data portal.

a. Please describe the methodology for identifying the most advantageous locations for DERs, and whether this methodology will include an estimate of locational avoided costs.

b. Please provide a link to the similar system data portal deployed in New York and any documents that describe the additional functionality planned or under development.

Response can be found in Book 1 on Bates page(s) 131-132.

Advanced Meter Functionality

5-15. Refer to page 1 of Chapter 4 – AMF in Schedule PST-1, in which the customer service enhancements are described as "including notifications about changes to consumption patterns mid-month that give customers an opportunity to take action before the end of the billing cycle." Please provide the average load profile of a) Income Eligible customers and b) non-Income Eligible customers for the last five calendar years. Please provide the the profiles in machine-readable Excel documents.

Response can be found in Book 1 on Bates page(s) 133-158.

5-16. Please provide the number of residential and commercial customers by service rate over the last five calendar years.

Response can be found in Book 1 on Bates page(s) 159-165.

5-17. Please provide a list of all energy efficiency, conservation, and demand response programs – collectively, demand-side management (DSM) projects – currently offered by the Company, including the names and brief descriptions of the programs.

Response can be found in Book 1 on Bates page(s) 166-171.

5-18. Please provide a list of all DSM program that are expected to be deployed in the upcoming calendar year.

Response can be found in Book 1 on Bates page(s) 172-178.

5-19. For each current DSM program, please provide the annual number of customers participating in the program, by rate schedule, for each of the past five calendar years.

Response can be found in Book 1 on Bates page(s) 179-181.

5-20. Please provide the number of Income Eligible customers each year for the most recent five calendar years.

Response can be found in Book 1 on Bates page(s) 182.

Transportation Electrification

5-21. Refer to Schedule PST-1, Chapter 5, page 1 regarding company-owned charging stations.

a. Please discuss whether any company-owned charging stations are operated by third-party vendors.

b. Please identify whether the site host is the customer of record for each charging station, or whether the Company is the customer of record.

c. Please describe whether and how EV drivers pay to use the station, and whether payment is on a time basis, kWh basis, or some other basis.

d. Please provide the date of installation for each station.

e. Please provide data showing the utilization of each station, and the hours during which the stations are used.

f. Please provide a map of the locations of the Company's charging stations.

g. Please describe how the decision regarding where to locate stations is made.

Response can be found in Book 1 on Bates page(s) 183-188.

5-22. Refer to Schedule PST-1, Chapter 5, page 1 regarding public charging stations needed.

a. Please provide the number of EVs registered in Rhode Island for each of the past 5 years.

b. Has the Company estimated how many public charging stations will be necessary to support the 40-fold growth in EV adoption under the ZEV Draft Plan? If yes, please provide such estimates.

c. Please provide any data or analyses that the Company has in its possession regarding the relationship between EV adoption and charging station availability.

Response can be found in Book 2 on Bates page(s) 1-248.

5-23. Refer to Schedule PST-1, Chapter 5, page 5 regarding the Charging Station Demonstration Program, and construction and ownership by the Company of a new distribution service and required electrical infrastructure (such as new electrical panel, conduit, and wiring) at the premises for each charging site.

a. Will the Company install a new distribution service even if it is not needed to support a charging station?

b. Will the host customer be assessed an additional monthly fixed charge for the new distribution service?

c. If a station is not operated by the Company, will a customer be assessed a demand charge (if a demand charge is included in the tariff under which the customer takes service)?

Response can be found in Book 2 on Bates page(s) 249.

5-24. Refer to Schedule PST-1, Chapter 5, page 5 regarding DC fast charging under the Charging Station Demonstration Program.

a. Please describe how the Company determined that DC Fast Charging should be installed at four public locations at the current time.

b. Please provide all data and analysis that the Company has in its possession regarding the utilization of the existing DC fast chargers in Rhode Island.

c. Did the Company consider providing a rate discount equal to the demand charge to encourage third parties to install additional DC Fast Charging stations? If yes, please explain why this approach was not selected.

d. Did the Company consider providing a charging station rebate (or other up-front incentive) to encourage third parties to install additional DC Fast Charging stations? If yes, please explain why this approach was not selected.

Response can be found in Book 2 on Bates page(s) 250-252.

5-25. Refer to Schedule PST-1, Chapter 5, page 8 regarding Discount Pilot for DC Fast Charging Station Accounts.

a. Please confirm that the demand charge will essentially be waived for three years for service for dedicated DC Fast Charging.

b. For each of the existing DC Fast Charging stations, please provide the customer's rate schedule, the customer's total annual bill, the demand charge portion of the total bill, and the load factor. If such information cannot be provided due to confidentiality reasons, please provide the data in as much detail as possible (such as in a histogram with ranges for each category).

c. Will the Company consider a phasing-in of the demand charge once the three-year period is over?

Response can be found in Book 2 on Bates page(s) 253-254.

Electric Heat Initiative

5-26. Refer to Schedule PST-1, Chapter 6. For each of the four Electric Heat Initiative components, please identify whether the component could be implemented through the Company's energy efficiency programs instead of through a separate PST initiative, and what the advantages or disadvantages of doing so would be.

Response can be found in Book 2 on Bates page(s) 255-256.

Energy Storage

5-27. Refer to Schedule PST-1, Chapter 7 regarding energy storage. Please discuss how the Company will evaluate potential locations to maximize quantifiable benefits.

Response can be found in Book 2 on Bates page(s) 257.

Income Eligible

5-28. Refer to Schedule PST-1, Chapter 8 regarding the Company's proposed Solar Program.

a. Please discuss whether the low income bill reductions under the Company's proposed Solar Program would likely be the same, less than, or greater than bill reductions under a comparable investment in the Community Renewables program.

b. Please discuss whether the Company considered additional support for the Community Renewables program instead of the proposed Solar Program. If yes, please discuss the decision to propose the Solar Program rather than investments in the Community Renewables program.

Response can be found in Book 2 on Bates page(s) 258.

Performance Incentives

Proposed Capital Efficiency Incentives

5-29. Regarding the proposed metric for the Complex Capital Projects Capital Cost Incentive:

a. Please explain whether the incentive would apply to all of the projects included in the Company's ISR plan, or only a subset. If only a subset, please explain how such projects would be determined.

b. Please provide portfolios of complex capital projects for FY 2015, 2016, and 2017, including the project names, sizes, and brief descriptions.

c. Please provide baseline estimates of cost for portfolios of complex capital projects for FY 2015, 2016, and 2017.

d. Please provide a list of planned complex capital projects for FY 2018.

Response can be found in Book 2 on Bates page(s) 259-263.

5-30. Please provide the rationale behind the $2.5 million cap on the value of savings that might be retained by the Company from the Complex Capital Projects Capital Cost Incentive.

Response can be found in Book 2 on Bates page(s) 264.

5-31. Please provide information on the per-mile construction costs for previous overhead distribution line projects.

Response can be found in Book 2 on Bates page(s) 265-266.

System Efficiency PIM

5-32. For each of the most recent five years, please provide the portion of total costs that each of the following categories represents: generation capacity (FCM), transmission, distribution, and energy supply. Please provide these costs on a monthly basis, if possible.

Response can be found in Book 2 on Bates page(s) 267-268.

5-33. Refer to Workpaper 9.1 – Peak Demand Reduction Targets.

a. Please provide the Company's internal peak forecast in machine-readable format.

b. Please provide the methodology behind and the input data for the forecast in machine-readable format.

c. Please provide the methodology and calculations for the EE reduction and PV reduction forecasts in machine-readable format.

Response can be found in Book 2 on Bates page(s) 269-286.

5-34. Regarding the proposed metric for the Monthly Transmission Peak Demand Reduction Incentive Mechanism:

a. Please describe the weather-normalization methodology to be used for this PIM and provide a numerical example.

b. Please provide the actual monthly peaks for each of the most recent five years in MW, as well as the date and time of the peak.

c. Please provide the weather-normalized monthly peaks for each of the most recent five years.

d. Please provide the reductions in monthly peaks for each of the most recent five years due to energy efficiency, storage, DG, VVO, and Demand Response. Where possible, please provide the reductions separately, by technology.

e. Please explain how "large new electric loads" is defined.

f. Please provide the additions of "large new electric loads" on the system for each of the past five years, as well as the peak demands at the new large load sites that are coincident with monthly or annual peak load.

Response can be found in Book 3 part 1 on Bates page(s) 1-10.

5-35. Regarding the proposed metric for the Forward Capacity Market Peak Demand Reduction:

a. Please describe the weather-normalization methodology to be used for this PIM and provide a numerical example.

b. Please provide the actual annual peak load for each of the past five years in MW, as well as the date and time of the peak.

c. Please provide the weather-normalized annual peak load for each of the past five years.

d. Please provide the reductions in annual peak load from the past five years due to energy efficiency, storage, DG, VVO, and Demand Response. Where possible, please provide the reductions separately, by technology.

Response can be found in Book 3 part 1 on Bates page(s) 11-20.

5-36. Refer to Workpaper 9.4 – Incentive Benefits, page 2 of 5. Please provide the calculations used to derive the annual capacity benefits from the peak targets (in MW) in as a machine-readable Excel file.

Response can be found in Book 3 part 1 on Bates page(s) 21-23.

5-37. Regarding the EV Off-Peak Charging Rebate Participation incentive mechanism:

a. Please explain how off-peak EV charging will be measured. Will an advanced meter be required, or will the Company rely on a different technology?

b. If the Company will rely on a different technology to measure off-peak charging, please describe the technology, the cost of the technology, and who will bear the cost of purchasing and installing the technology.

c. Please explain how target participation levels will be developed. Will the target participation level be based on a percentage of EV sales in Rhode Island, or some other metric?

Response can be found in Book 3 part 1 on Bates page(s) 24-25.

Distributed Energy Resources

5-38. Regarding DG-Friendly Substation Transformers:

a. Please describe the conditions under which ground fault detection is needed to integrate DG.

b. Please identify the number of substation transformers that currently experience the conditions described in (a).

c. Please identify the number of substation transformers that are projected to experience the conditions described in (a), and when such conditions are expected to first occur.

d. Please provide the number of substation transformers that already have ground fault detection (3V0) installed and are capable of readily accommodating distributed generation.

e. Please provide the number of substation transformers that were installed with ground fault detection (3V0) each year for the past five years.

f. For each substation, please provide the number and capacity (MW) of DG installations, and identify whether the substation already has ground fault detection installed, or when installation is planned.

Response can be found in Book 3 part 1 on Bates page(s) 26-29.

5-39. Regarding the Company's Connected Solutions program:

a. Please provide the average annual number of residential customers participating in the Connected Solutions program for each of the last five years.

b. For each high energy demand event over the last five years, please provide the MW reductions attributed to the Connected Solutions program.

c. Please provide the average kW reduction per high energy demand event per residential customer attributed to the Connected Solutions program.

d. Please provide the program costs by major cost category, exclusive of customer incentives, for each of the past five years.

Response can be found in Book 3 part 1 on Bates page(s) 30-35.

5-40. Regarding the Company's C&I demand response programs:

a. Please describe each of the Company's C&I demand response programs.

b. Please provide the average annual number of commercial and industrial customers, separately, participating in the Company's C&I demand response programs.

c. Please provide the historical MW capacity enrolled in the Company's C&I demand response programs.

d. Please provide the historical MW reductions achieved via the Company's C&I demand response programs.

e. Please provide the program costs by major cost category, exclusive of customer incentives, for each of the past five years.

f. Are demand reductions attributable to this program included in the Company's baseline forecast of peak demand?

Response can be found in Book 3 part 1 on Bates page(s) 36-38.

5-41. Regarding the Company's ground source heat pump and equipment incentives being offered under the Electric Heat Initiative:

a. Please provide the annual number of customers, by rate schedule, that have used the Company's ground source heat pump and equipment incentives for the past five years;

b. Please provide the annual CO_2 reductions attributed to the ground source heat pump and equipment incentives for the past five years.

c. Please provide the average per customer CO_2 reductions, by customer class, attributed to the ground source heat pump and equipment incentives for the past five years.

d. Are demand reductions attributable to these programs included in the Company's baseline forecast of peak demand?

Response can be found in Book 3 part 1 on Bates page(s) 39.

5-42. Regarding Electric Vehicles:

a. Please provide the data and calculations used to derive the 2018 – 2021 forecasts for EV registrations in Workpaper 9.3 – Electric Vehicle Targets in machine-readable format.

b. Has the Company or its consultants developed any other forecasts of EV Sales Growth? If yes, please provide such forecasts.

Response can be found in Book 3 part 1 on Bates page(s) 40-56.

5-43. Regarding behind-the-meter storage:

a. Please provide the total MWs of behind-the-meter storage currently installed in National Grid's Rhode Island service territory, by customer class.

b. Please provide the annual incremental MW of installed behind-the-meter storage for the past five years.

c. Please describe how the Company is informed of, and tracks, behind-the-meter storage.

d. Please discuss whether the Company will be rewarded for any additional behind-the-meter storage installed, or only incremental to a baseline forecast of naturally-occurring storage installations.

Response can be found in Book 3 part 1 on Bates page(s) 57.

5-44. Regarding Company-owned storage as described on Schedule PST-1, Chapter 9, page 13:

a. Please identify whether the Company owns any storage that is not "used to support peak reduction or provide other system benefits."

b. Please provide the total MW and MWh of Company-owned storage currently installed.

c. Please provide the annual incremental MW and MWh of Company-owned storage for the past five years.

d. Please provide a list of all planned Company-owned storage projects, including the site, size (in MW and MWh), and expected installation date.

Response can be found in Book 3 part 1 on Bates page(s) 58.

Network Support Services

5-45. Refer to page 175 of the Power Sector Transformation Panel (Book 1 of 3). Please provide examples of customer insights from internal customer research, knowledge gained from Company experience with pilot projects, and industry best practices that will be used in the

proposed customer engagement plan under the AMF Customer Engagement and Deployment incentive mechanism.

Response can be found in Book 3 part 1 on Bates page(s) 59-Book 3 part 5 on Bates pages(s) 280.

5-46. Regarding the VVO Pilot Delivery incentive mechanism:

a. Please provide the baseline reduction in energy consumption and peak demand that will be used in the VVO Pilot Delivery incentive mechanism.

b. Please provide all supporting documents for the development of the baseline.

Response can be found in Book 3 part 5 on Bates page(s) 281-286.

5-47. Regarding the Time to Interconnection Service Agreement (ISA) metric:

a. Please provide the average time measured in business days necessary for the Company to provide a customer with an executable ISA (commencing from the data a completed application is received) over all processes for the last five years.

b. Please provide the annual number of ISAs completed for the last five years.

c. Please provide the annual number of ISAs completed within the number of business days allowed by the Interconnection Tariff.

d. Please provide the annual number of ISAs not completed within the number of business days allowed by the Interconnection Tariff.

Response can be found in Book 3 part 5 on Bates page(s) 287-288.

5-48. Regarding the Average Days to System Modification metric:

a. Please provide the average time measured in business days necessary for the Company to complete system modifications (commencing from the date of execution of the ISA) over all processes for the last five years.

b. Please provide the annual number of system modifications completed for the last five years.

c. Please provide the annual number of system modifications completed within the number of business days allowed by the Interconnection Tariff.

d. Please provide the annual number of system modifications not completed within the number of business days allowed by the Interconnection Tariff.

Response can be found in Book 3 part 5 on Bates page(s) 289-290.

5-49. Regarding the Interconnection Support Estimate versus Actual Cost incentive:

a. Please discuss whether the employees developing the actual costs will have access to the cost estimates.

b. If the answer to (a) is yes, please discuss how the Company will mitigate the incentive for an employee to modify the actual cost so that it better matches the estimated cost.

c. Please discuss whether any independent review of the data is contemplated.

Response can be found in Book 3 part 5 on Bates page(s) 291.

Impact on Policy Goals and Benefits to Customers

5-50. Please provide the calculations used to arrive at the Company WACC that is used in Workpaper 9.4 – Incentive Benefits in a machine-readable Excel document.

Response can be found in Book 3 part 5 on Bates page(s) 292-293.

System Efficiency

5-51. Please provide estimates of savings from reduced capacity share that will benefit customers in the years 2020 and 2021 from the Forward Capacity Market Peak Demand Reduction targets.

Response can be found in Book 3 part 5 on Bates page(s) 294-296.

5-52. Please describe the value the EV Off-Peak Charging Rebate is expected to provide in understanding customer response to time-differentiated price signals. Please provide examples of how this understanding will assist the development of time-differentiated price signals via AMF deployment.

Response can be found in Book 3 part 5 on Bates page(s) 297.

Network Support Services

5-53. Refer to Schedule PST-1, Chapter 9, page 21. Please list the system efficiencies that are expected to occur through the combination of AMF and VVO/CVR.

Response can be found in Book 3 part 5 on Bates page(s) 298.