

National Grid USA Service Company, Inc.

Request for Proposals (RFP)

Non-Wires Alternative Project

to Provide Solutions for

Bonnet 42F1

Narragansett, Rhode Island

RFP ISSUED: DECEMBER 29, 2020

PROPOSAL SUBMISSION DEADLINE: APRIL 6, 2021

nationalgrid

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1. Introduction

National Grid is an electric and gas investor-owned utility serving nearly 3.3 million electric and 3.5 million gas customers through its subsidiary companies in Massachusetts, New York, and Rhode Island. National Grid is committed to providing safe, reliable, and affordable energy to all customers throughout our service territory.

As a part of providing this service, National Grid is pursuing the potential implementation of Non-Wires Alternative (NWA) solutions in each service territory. Such implementation aligns with principles set forth by the following, respectively:

- National Grid's *Northeast 80x50 Pathway*¹, a greenhouse gas (GHG) emissions reduction blueprint.
- Massachusetts: Massachusetts Bill H.1725, regarding an Act Relative to Local Energy Investment and Infrastructure Modernization².
- New York: Energy storage goal to integrate 1,500 MW of storage by 2025³ and other goals associated with NY REV⁴.
- Rhode Island: RI PUC Title 39 § 39-1-27.7 – System Reliability and Least-Cost Procurement statute⁵ and related Standards⁶.

National Grid has been pursuing Non-Wires Alternative projects across its service territories for several years. Please visit National Grid's NWA homepage⁷ for more information on the planning process, available opportunities, and links to the System Data Portals, state regulatory sites, and the Ariba vendor platform.

¹ "Northeast 80x50 Pathway." *National Grid's Northeast 80x50 Pathway*, National Grid USA, Inc., 15 June 2018, www.nationalgridus.com/news/Assets/80x50-White-Paper-FINAL.pdf.

² "An Act Relative to Local Energy Investment and Infrastructure Modernization." Bill H.1725, The General Court of the Commonwealth of Massachusetts, 23 Jan. 2017, [https://malegislature.gov/\(X\(1\)S\(qrnukq454nz5loj0nlrwz3jw\)A\(JhIZ50y0zAEkAAAAMDA3NmNmNTMtYWIyYS00YzFhLTljNDAtNWUwMjAwMmI3MDcyh1q6qQcrf5-fAtsKWQVlpaGhb_c1\)\)/Bills/190/H1725](https://malegislature.gov/(X(1)S(qrnukq454nz5loj0nlrwz3jw)A(JhIZ50y0zAEkAAAAMDA3NmNmNTMtYWIyYS00YzFhLTljNDAtNWUwMjAwMmI3MDcyh1q6qQcrf5-fAtsKWQVlpaGhb_c1))/Bills/190/H1725).

³ "Energy Storage Program." *Energy Storage - NYSEDA*, NYSEDA, Dec. 2018, www.nyserda.ny.gov/All-Programs/Programs/Energy-Storage.

⁴ "Goals." *Reforming the Energy Vision (REV)*, NYSEDA, <https://rev.ny.gov/goals/>.

⁵ "Title 39 Public Utilities and Carriers." *State of Rhode Island General Laws*, State of Rhode Island General Assembly, <http://webserver.rilin.state.ri.us/Statutes/title39/39-1/39-1-27.7.HTM>.

⁶ "Least Cost Procurement Standards." *State of Rhode Island Public Utilities Commission and Division of Public Utilities and Carriers*, Energy Efficiency and Resource Management Council, 8 Sep. 2018, <http://www.ripuc.org/eventsactions/docket/4684-LCP-Standards-FINAL.pdf>.

⁷ "Non-Wires Alternatives." *National Grid Business Partners*, National Grid USA, Inc., 13 Nov. 2019, www.nationalgridus.com/Business-Partners/Non-Wires-Alternatives/.

2. Project Overview

Problem Statement	
Background	National Grid is seeking to provide load relief to the Bonnet 42F1 feeder from 2022-2034. Max of 1.2MW needed for the 2029 scenario.
Description	The Town of Narragansett is supplied mostly by (4) 12.47 kV distribution feeders. Feeder 42F1 is projected to be loaded above summer normal ratings and lacks useful feeder ties to reduce loading below its ratings. Either more capacity must be added or load must be reduced in the town. Additionally, the 42F1 circuit experiences a violation of National Grid's distribution planning criteria during a contingency event.
Solution Requirements	
Approximate Value	\$1,190,000
Commercial Operations Date (COD)	May 1, 2023
Contract Term	12 years
Load Reduction Needed (MW)	1.2 MW
Maximum MWh Need per Event	5.0 MWh
Number of Times Called per Year	5

Please note that this NWA requires contingency support. Therefore, solutions may need to be on dedicated standby throughout the summer months (approximately June through September) to provide rapid response.

3. RFP Schedule

The RFP schedule outlined below is subject to change. Note that resources included in awarded bid(s) are required to be in-service no later than the date detailed below. An earlier in-service date may be negotiated.

Planned Date	Milestone
12/29/2020	RFP Launch
1/19/2021	Pre-Bid Conference Call
4/6/2021	RFP Responses Due
6/15/2021	End of Evaluation; All bidders notified of their status
12/15/2021	Target Contract Execution
5/1/2023	Solution In Service Date

4. Project Information

In addition to the information presented in Section 2, National Grid has provided information on the solution requirements to meet the system need and any location-specific interconnection information.

4.1. Technical and Operational Requirements

Solution Requirements	
Technical Requirements	National Grid is seeking to provide load relief and contingency support to the Bonnet 42F1 feeder from 2022-2034. Max of 1.2MW needed for the 2029 scenario.
Distribution/Transmission Need?	Distribution
Operating District	Coastal
ZIP Code(s)	02882
Town(s)	Narragansett
Substation(s)	Bonnet 42
Feeder(s) / Transmission Line(s)	42F1
Operating Voltage (kV)	12.47
Summer Normal Rating (Amps)	525
Summary Normal Rating (MVA)	11.3
Load Reduction Needed (MW)	1.20
Maximum MWh Need per Event	5.0
In Service Date (year)	2023
End Date (year)	2034
Days of the Week Needed	Any day, weekend and weekday
Time of Day	12:00pm to 7:00pm
Call Response Time	None, called as needed (contingency-based)
Duration per Event	4 hours
Minimum Period Between Events	24 hours
Number of Times Called Per Year	5
Number of Consecutive Days Called	2 days
Load Profile	Residential: 93.4% Commercial & Industrial: 6.6%
Customer Profile	Residential: 2,721 Commercial & Industrial: 191

The proposed solution must be compliant with the ESB 756 specification.⁸ The proposed solution must have communication capability to provide data so National Grid Operations can monitor load flow and voltage. The solution must also have status and control capability so National Grid Operations can remotely take the asset offline as needed during planned work or in emergency circumstances. Typical setups for communication and control capability include pole-top reclosers (PTR), pad-mount reclosers (PMR), or other similar equipment that conform to the Distributed Network Protocol 3 (DNP3) communication protocol standard.⁹ National Grid is open to equivalent communication protocols; however, DNP3 is the preferred standard and other communication protocols may require an approval process. Please specifically and clearly state if the solution proposal will have operable and working communications and controls capability.

4.1 The proposed solution must also have a visible open switch in addition to the recloser, to conform with installation safety for field crews, as applicable for asset-based solutions.

The solution proposal must have at least 95% guaranteed performance. Guaranteed performance is defined as the amount of load reduction the solution provides during a dispatch window. Guaranteed performance is the percentage based off the load reduction need stated in the technical requirements table of Section 4.1.

The solution will need to be available for at least the number of times called per year stated in the technical requirements table of Section 4.1.

For solution proposals that entail equipment, technology, or hardware of some type, the guaranteed nominal power and capacity ratings of the solution must equal or exceed the load reduction need and the maximum MWh need, respectively, stated in the solution requirements table of Section 4.1. The guaranteed nominal power and capacity ratings must maintain these ratings at the end of the contract period. Therefore, bidders must account for system degradation over time.

The proposed solution must account for the thermal limits of the substation and feeder it is installed on. National Grid will coordinate with the selected bidder as needed to provide the vendor with monitoring capability and data as allowed on National Grid's data systems.

For battery storage solutions, National Grid prefers the ability to view/monitor battery state of charge.

⁸ "Electric System Bulletin No. 756: Supplement to Specifications for Electrical Installations." *National Grid US*, National Grid US, 4 Dec. 2019, www.nationalgridus.com/media/pronet/shared_constr_esb756.pdf.

⁹ "1815-2012 - IEEE Standard for Electric Power Systems Communications-Distributed Network Protocol (DNP3)." IEEE Standards Association, IEEE and PE/PSCC – Power System Communications and Cybersecurity, 10 Oct. 2012, <https://standards.ieee.org/standard/1815-2012.html>.

4.2. Feeder Details

4.2.1. Feeder Load Profile Overview

The Town of Narragansett is supplied mostly by four 12.47 kV distribution feeders. Feeder 42F1 is projected to be loaded above summer normal ratings and lacks useful feeder ties to reduce loading below its ratings. Either more capacity must be added or load must be reduced on the feeder. Additionally, the 42F1 circuit experiences a violation of National Grid's distribution planning criteria during a contingency event.

The contingency event for Bonnet 42F1 involves the loss of energy supply at the feeder head, with the NWA intended to support part of 42F1's load in order to avoid a MWh violation. The NWA solution for this contingency event support would be needed during the summer months, approximately from June to September.

In order to alleviate the thermal overloads on feeder 42F1, the wires option to resolve this system need is to provide additional load capacity during a contingency event. This load capacity is obtained by extending feeder 59F4 out of Peacedale by approximately 2,700 feet down to feeder 17F3 in Wakefield and creating a new feeder tie between the two to transfer load from feeder 17F3 to 59F4, thereby allowing for available load capacity on feeder 17F3 for 42F1. Then, existing load will be transferred from feeder 42F1 to 17F3, along with additional switching steps to further adjust load on the system.

Loading on the 42F1 feeder is predicted to be over 100% of its summer normal ratings and will be overloaded in the next ten years. All other facilities' loadings are within their normal equipment ratings. The rating of feeders is determined by the equipment with the most limiting element (that with the lowest normal summer rating). The load forecast utilizes a technique called weather normalization, a process that assumes future year peaks will occur given high loading condition (e.g., a June peak will occur on a hot day, where the temperature in the 95th percentile of hottest years). The charts in section 4.2.3 show the projected load on the feeders using the peak day at the time of study and the loads are grown according to the forecasted analysis.

4.2.2. Customer Demographic

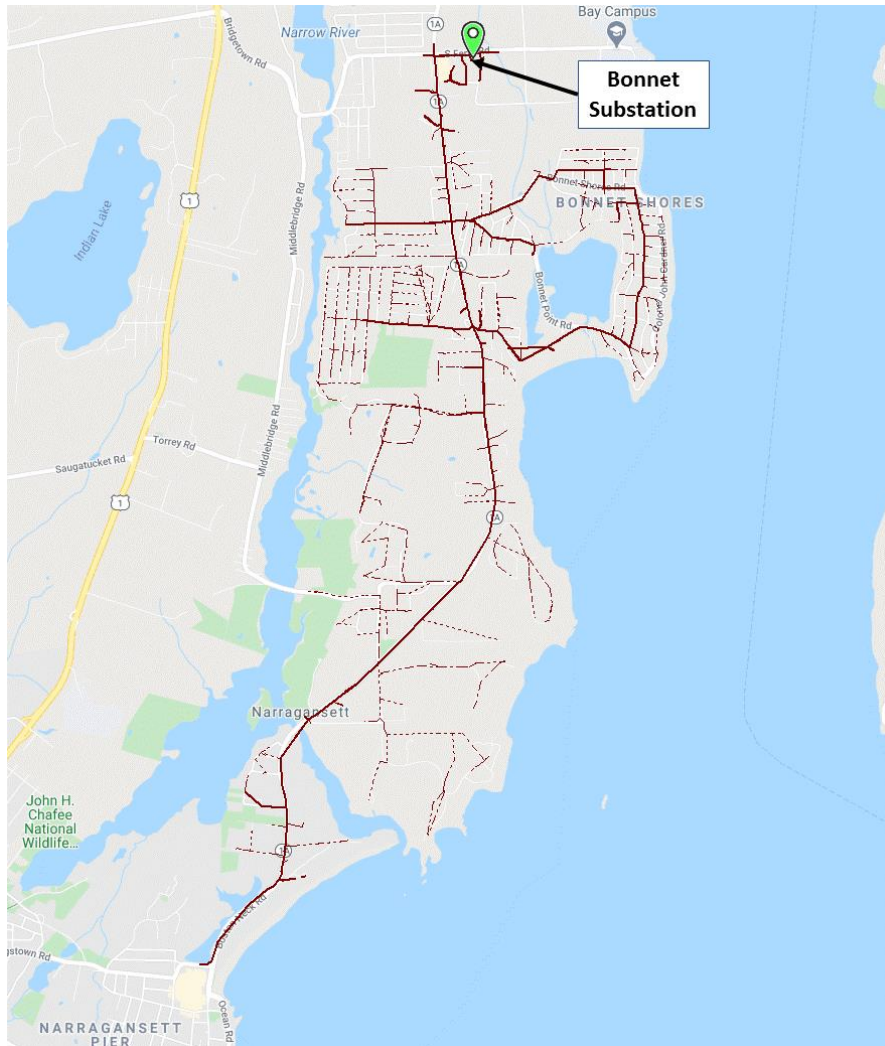
Customer Demographic				
Substation	Feeder	Commercial Customers	Residential Customers	Total
Bonnet	42F1	191	2,721	2,912

4.2.3. Feeder Load Profile Charts

Feeder Load Profile: Contingency Load Relief Needed (MW)												
Feeder	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
42F1	0.8	0.9	1.0	1.0	1.1	1.1	1.2	1.1	1.1	1.0	1.0	0.9
% of Area Load	7%	8%	9%	9%	10%	10%	11%	10%	10%	9%	9%	8%

For the forecasted peak-day feeder information, the line voltage is assumed to be nominal and per the operating voltage stated in the technical requirements of Section 4.1. Note that these forecasts are intended to provide bidders an idea of feeder characteristic, actual characteristic may vary.

4.2.4. Feeder Map and Locational Information



Find additional electric distribution system information on the Rhode Island System Data Portal:
<https://www.nationalgridus.com/Business-Partners/RI-System-Portal>

Feeder hosting capacity information is available on the "Hosting Capacity" tab of the System Data Portal.

4.3. Project Economics

National Grid is seeking solutions that provide value to the customer and are cost-effective. Submitted solutions are reviewed under two mechanisms: the Approximate Value and the Benefit-Cost Analysis (BCA).

The Approximate Value is \$1,190,000.

Projects will only be considered with a BCA score exceeding 1.0.

The Approximate Value is the estimated net present value derived from the calculated deferral value of the wires investment for the specified amount of time. This Approximate Value is intended to be used as a total estimate associated with an NWA solution that meets the need statement described above. The Approximate Value is based on the current planning level estimate for the wires solution and includes all project work, capital expenditure, annual service feeds, energy service agreement payments, and the locational incentive value. Please note that interconnection costs are not included in the Approximate Value due to the high variability of interconnection costs based on specific proposed solution implementation. Design of the wires solution by National Grid will continue throughout the NWA RFP development and bid evaluation process, so the Approximate Value is subject to change.

This Approximate Value is intended to inform developers whether their proposals are cost-competitive; if the present value of the contract cost is near or below this value, the bid could be considered cost-competitive in comparison to the wires investment. The BCA, performed during bid proposal evaluation, will fully determine if the submitted bid is indeed cost-effective and cost-competitive. Therefore, the Approximate Value is a good preliminary indicator to help guide bidders. The Approximate Value is to be compared to all the costs National Grid would incrementally incur by moving forward with the NWA solution (including contract cost, interconnection, program administration, and other costs as applicable). Please also note that the Benefit-Cost Analysis (BCA) considers numerous costs and benefits in addition to bid price and the deferral value of the wires investment.

4.4. Additional Supporting Data

Additional supporting data, such as customer load profiles, may be found as separate documents or files in the project posting on the Ariba platform. Upon execution of the non-disclosure agreement (NDA) in the Ariba project posting, the additional forms and technical and load profile data will be available for review.

5. Proposal Evaluation Criteria

See below for a detailed summary of the criteria and the process by which National Grid’s Review Team will evaluate and prioritize bids (Bidders’ proposed solutions or Proposal(s)).

Proposals will be ranked based on their criteria scores. The number of projects and quantity of MWs which National Grid will procure is a function of the Proposal price, scoring of Proposals based on evaluation criteria, and National Grid’s final discretion.

Category	Description	Details
Proposal Content & Presentation	Information requested has been provided by the bidder and is sufficiently comprehensive and well presented to allow for evaluation.	Appendix E (Checklist)
Developer Experience	The experience of the Bidder, any Engineering, Procurement and Construction (EPC) contractor, prime subcontractors and, if applicable, O&M operator or other entity responsible for the development, construction, or operation of the proposed solution.	Appendix A
Environmental	The Bidder’s Proposal shall address Impacts including but not limited to acoustic, aesthetic, air, water, and soil impacts, and permitting and zoning considerations.	Appendix A
Project Viability	The probability that the solution(s) associated with a Proposal can be financed and completed as required by the relevant agreement.	Appendix B
Functionality	The extent to which the proposed solution would meet the defined functional requirements and the ability to provide demand reduction during peak times and within the geographic area of need.	Appendix B
Technical Reliability	The extent to which the proposed type of technology and the equipment would meet the reliability need and can be integrated with utility operations including the ability to monitor and dispatch.	Appendix B
Safety	National Grid requires that the Bidders recognize safety is of paramount importance. Bidders will be required to provide safety information related to the proposed technology and information regarding safety history.	Appendix B
Customer and Socio-economic Impacts	The Bidder’s Proposal shall address how the proposed technology impacts the customer in addition to temporary and permanent jobs to be created, economic development impacts, and property tax payments.	Appendix B
Scheduling	The Bidder’s Proposal shall include proposed timelines outlining milestones and providing sufficient details for each deliverable, including meeting the in-service need date.	Appendix C
Offer Price	The Bidder’s Proposal shall be based on project-specific values and financing requirements.	Appendix F Appendix G
Adherence to Terms	The extent to which the Bidder accepts National Grid’s proposed Contract Template will be taken into consideration. The RFP evaluation may impute an additional amount to Bidder’s Proposal to reflect any proposed modifications to the non-price terms and conditions by the Bidder that result in National Grid incurring additional costs or risks. Redlines to the Contract Template shall be provided by the Bidder as part of its Proposal for review by National Grid during the evaluation period.	Contract Template (Ariba)
Credit	Bidder’s capability and willingness to perform all of its financial and other obligations under the relevant agreement will be considered by National Grid in addition to Bidder’s financial strength, as determined by National Grid, and any credit assurances acceptable to National Grid that Bidder may submit with its Proposal.	Appendix E (Checklist)

6. Proposal Submittal Process

6.1. Proposal Submission Instructions

All Proposals must be submitted via National Grid's RFP service, Ariba. If a firm is not already registered in Ariba, then the firm must request to be added to the database by contacting Non-WiresAlternativeSolutions@nationalgrid.com. Proposals will not be accepted via email.

Please provide a concise written Proposal under 50 pages in length, excluding appendices.

The Offer Form must be submitted without modifications to the Excel file structure or format. All other submission parts must be submitted as a single PDF document mirroring the organization of the RFP documents described in the Offer Submission Checklist in Appendix E. Bidders must also provide the checklist referenced in Appendix E.

It is the Bidder's responsibility to thoroughly review all provisions of the respective supporting documents, appendices, and requirements of this RFP process as applicable. It is also the Bidder's responsibility to understand all anticipated costs that should be factored into the Offer Price and identify any exceptions to the RFP proposal requirements as applicable.

Bidders may include multiple solutions and/or portfolio solutions per bid so long as each solution and/or portfolio is concisely and completely detailed as requested in this RFP document.

Please provide sufficient detail in your Proposal as to how your firm can perform each of the required categories in Section 5. Proposals that do not provide the requested information below may be disqualified by National Grid.

Any questions related to the NWA RFP content before the deadline should be promptly directed through the Ariba messaging system.

Any questions on or technical issues with submitting a Proposal before the deadline should be promptly directed to SAP Ariba Customer Support.¹⁰

6.2. Proposal Solution Approach

Bidders are encouraged to identify optionality provided by their solution designed for average/optimized load in conjunction to peak/requested load.

To find National Grid's definition of an NWA and for identified bid solution approaches, please visit the NWA website here: <https://www.nationalgridus.com/Business-Partners/Non-Wires-Alternatives/What-is-an-NWA>

Bidders should carefully review the Offer Evaluation Criteria and consider which solution approach may be favorable due to various factors including but not limited to: availability of state or federal incentives, ability for the solutions to stack eligible revenue streams from multiple markets and/or programs, eligibility for specific retail tariffs, and ability to mitigate

¹⁰ SAP Ariba Customer Support contact instructions can be found here:
https://support.ariba.com/AUC_Support_Tab/Contact_Support/

any risks to underperformance or unavailability of the proposed NWA solution(s). It is the Bidder's responsibility to be aware of how eligibility requirements may vary based on a specific technology type or project MW and/or MWh size.

6.3. Execution of Agreement

By submitting a Proposal, Bidder agrees, if their Proposal is selected for National Grid, that they are prepared to negotiate and execute a definitive Contract consistent with the Bidder's Offer and containing such other terms and conditions as may be mutually acceptable to National Grid and the Bidder. National Grid reserves the right to consider, in its evaluation of Bidder's Proposal, any changes Bidder requests to the Draft RFP documents. The Contract Template is available only in Ariba.

Appendix A – Bidder Information

Bidder shall provide the following information for use by National Grid in assessing the experience, organizational structure, and financial viability of the Bidder. Bidder shall include additional sheets and supporting materials in responding to the requirements of this Appendix as necessary.

Experience, organizational, and financial information must be provided for the Bidder and any entity providing credit enhancement or other corporate support to the Bidder. As necessary, please specify whether the information provided is for the Bidder, its parent or Affiliates, or any other entity providing security on the Bidder's behalf.

OVERVIEW

1. Provide contracting party's name if different from Bidding entity.
2. Describe in detail Bidder's organizational structure. A written description and flow chart diagram showing relationships is required. List the legal registered name of all owners and participants, including but not limited to joint offer participants, of the project and their relative percentage ownership.

DEVELOPER EXPERIENCE

List and describe the Bidder's background and experience developing projects of a similar nature and technology.

BIDDING TEAM OVERVIEW

1. Please provide a description and organization chart of the personnel structure of the proposed project's development, design and construction, and operations and maintenance organizations.
2. Please provide a description of the Bidder's project management team and any sub-developers or vendors to be used; include team organization chart and resumes.

PROJECT DEVELOPMENT EXPERIENCE

1. Please provide current listing of environment certifications.
2. Please provide a history of projects and/or programs with environmental or eco awards, and a history of actions/incidents that are detrimental or beneficial to the environment.
3. If the solution is proposing behind the meter (BTM) solutions, please describe experience in customer acquisition.
4. Provide three (3) references of prior industry specific work that is similar in nature and relevant to solution proposed. References should include:
 - a. Client contact information
 - b. Project location
 - c. Description of the solution provided
 - d. Commercial operation date
 - e. Construction/implementation timeline

- f. Any other relevant information supporting and validating the proposed solution in response to this RFP
5. Projects using the proposed technology and completed and in commercial operation.

Total count of completed projects with similar solution technology: _____

For each completed project, list information in the format presented below.
Include all relevant projects.

Project Name	MW (nominal)	MWh (nominal)	Use Case	Location, Utility	Contact/Reference	Bidder's role

6. Projects using the proposed technology and currently under construction.

Total count of such projects: _____

For each completed project, list information in the format presented below.
Include all relevant projects.

Project Name	MW (nominal)	MWh (nominal)	Use Case	Location, Utility	Contact/Reference	Bidder's role

PROJECT FINANCING

1. Please provide a detailed description of proposed short and long-term financing arrangement.
2. Please provide sources of debt and equity.
3. Please provide financing organizations and supporting loan or credit agreements (include rates and terms).
4. Please provide a detailed description of on-going debt/equity ratio to be carried by the proposed project during construction and during operation.
5. Overview of proposed project's market participation strategy and how the NWA solution would support that strategy; in particular, provide assurance that the NWA solution would be available for contracted services.
 - a. Please specify any wholesale markets the NWA solution plans to participate in (*i.e.*, energy, capacity, ancillary services, etc.).
 - b. Please specify any applicable tariffs that the NWA solution corresponds to or may be participating in (such as the Value Stack tariff, sometimes referred to as Value of Distributed Energy Resources (VDER), in New York).

Appendix B – Proposed Solution Information

Please provide the following project information in the order requested.

GENERAL REQUIREMENTS

PROJECT DESIGN

1. Provide a description and equipment specifications of the proposed project, including core technology modules (e.g., battery modules, solar panels, etc.), power converters, meters, communications equipment and protocols, disconnect devices, point of interconnection voltage, and any other related facilities necessary to interconnect the proposed project to the National Grid’s distribution system.
2. Include, as applicable, potential safety, risks, and mitigation plans associated with the proposed solution technology (e.g. fire suppression, lighting/indicators for first responders, visible open switches, etc.).
3. Consider and include, as applicable, customer, aesthetic, economic, acoustic, and environmental impacts of the proposed solution.
4. Please provide information relating to the availability of, and Bidder’s access to, the equipment and components utilized / proposed for construction and operation of the project, including purchase lead times.
5. Provide a list of preferred technology suppliers.¹¹
6. Specify how the project’s design will meet new equipment and certification requirements of all relevant national, state, local codes and standards, and any additional requirements of the local authority having jurisdiction (AHJ).
7. Physical size and footprint including preliminary site layout plan.
8. Identify lifecycle expectancy for all major components including but not limited to batteries, inverters, solar photovoltaic (PV) panels, and generators; confirm component replacement is considered in your overall business plan.
9. Identify changes in equipment capacity degradation over expected lifetime; confirm capacity degradation is considered in your overall business plan.
10. Accurate and validated (preferably independently verified) performance characteristics of the proposed project.
11. Describe how the system(s) and components will comply with all manufacturers’ installation requirements, applicable laws, regulations, standards, codes, licensing, and permitting requirements. This includes, but is not limited to, all applicable state, city, town, or local laws, policies, acts, and regulations according to the building code, disposal, the environment, and interconnection standards; the National Electrical Code®(NEC); National Grid’s Electric System Bulletins (ESB)¹²; and all applicable State, city, town, or local ordinances or permit requirements, and any additional requirements of the local AHJ. It is the Winning Bidder’s responsibility to ensure compliance with all such laws.

¹¹ Please note that Bidder Proposals that include Huawei and/or ZTE technology or products will not be considered, in alignment with the proposed (as of 7/29/19) NERC Level 2 alert.

¹² National Grid Electric System Bulletins are located on National Grid’s website: <https://www.nationalgridus.com/ProNet/Technical-Resources/Electric-Specifications>. ESB 756 is typically applicable to DER interconnecting in parallel with National Grid’s electric power system (“EPS”).

OPERATIONAL PARAMETERS

Please note, not all criteria listed below may be applicable to all NWA solutions proposed.

1. The equipment must consist of commercial products carrying a manufacturer warranty. The warranty must cover the entire system, including ancillary equipment and power electronics.
2. The Bidder's Proposal must list any restrictions on system use, including but not limited to restrictions based on warranty conditions.
3. Describe what capabilities will be in place for remote monitoring and control (e.g., equipment, communication means, and protocols used).
4. Describe what change management controls and procedures will be used to coordinate between National Grid and the project owner regarding any changes to the project.
5. Submit control schemes, electrical configurations, and sufficient detail for the utility to review and confirm acceptance of Bidder's Proposal. Detail any integrated control scheme(s) that are included in the interconnected inverter(s), if applicable.
6. Provide a description of the communications and control architecture along with any diagrams as applicable for the proposed project and how the project intends to integrate with National Grid's supervisory control and data acquisition (SCADA) systems.
7. Specify guaranteed Round-Trip Efficiency, if applicable.
8. Specify guaranteed availability, if applicable.
9. Specify guaranteed performance (MW load reduction, etc.) per event, if applicable.
10. Specify measurement and verification (M&V) capability.
11. Plant operations factors should be provided for equipment being proposed to include staff training programs, staffing requirements, maintenance support availability, any/all permit limitations on plant operations, long-term service agreement terms, maintenance outage requirements (i.e., impacts on availability), spare parts, and labor agreements.
12. Ability of proposed project to directly integrate with National Grid's Energy Management System (EMS)/Distribution Management System (DMS) systems.
13. Control scheme to maintain system stability and transition from grid to island modes (if applicable).

MAINTENANCE PARAMETERS

Note, not all of the criteria may be applicable to all NWA solutions proposed.

1. Provide a description of the expected Operating Life of the proposed project including any inverter equipment and the long-term replacement or shuffle (e.g., augmentation) plan, if applicable.
2. Provide a description of how the Bidder will maintain the MW and MWh ratings of the proposed project during the term of the Agreement.
3. Provide any information regarding planned or forced outage rates based on manufacturer's recommendation and experience.
4. Provide a description of how the Bidder will provide operational and/or maintenance onsite and remote support in real time (e.g., via an operating center with 24x7x365 support).
5. Provide a description of the emergency response plan and schedule.
6. Proposed protection scheme that will integrate the NWA solution with the National Grid's EPS.

Appendix C – Schedule, Site Control, and Permitting

Bidders are solely responsible for:

1. Ascertaining the requirements and necessary approvals to construct and operate the proposed project on the site;
2. Interfacing with the municipality, preparing and filing all required applications, making all necessary public hearing and civic association appearances and obtaining all required municipal approvals; and
3. Complying with all municipal requirements and permits. Bidder must include a permitting plan and cost estimates related to these activities as part of the proposed project's all-in costs. Bidders are responsible for all costs associated with the above-referenced approvals and are responsible for compliance, mitigation measures, and/or other conditions of approval. Bidders should provide these costs as part of their RFP Proposal.

Bidder shall provide the information requested below for use by National Grid in assessing the proposed solution's schedule, site preparation and control, and permitting plan. Bidder shall include additional sheets and supporting materials in responding to the requirements of this Appendix as necessary.

OVERVIEW

Please provide the following project information. Indicate if a question is not applicable but do not leave any required responses blank. Please see list of definitions in the main RFP as applicable.

1. Site's Street Address, City, State, Zip Code (all sites of interest);
2. Site's Tax Map Number (*i.e.*, Section, Block and Lot)

PROJECT MILESTONE SCHEDULE

An appropriately detailed project milestone schedule will help the National Grid review team evaluate the Bidder's understanding of the project development process in each respective jurisdiction and the proposed project's likelihood of meeting the requirement for being operational by the in-service need date.

1. Please provide a detailed project schedule describing financing, permitting, engineering, procurement, construction, interconnection, commissioning, and start-up activities timelines and status; the schedule should include detail milestones for each phase.
2. Please include a site control timeline and details in the proposed schedule.
3. Please provide a cut-off date by which an agreement between the parties must be fully executed in order for the project to be in-service by the need date.
4. Describe the customer acquisition plan and how it incorporates into the schedule, if applicable.
5. Discuss any risks or challenges anticipated with the overall project and project construction schedule.

PERMITTING OVERVIEW

Please provide the following project information for each site where you are proposing to construct NWA solutions:

1. Address, City, State, Zip Code; Tax Map Number (*i.e.*, Section, Block and Lot);

2. Municipality (*i.e.*, Town, Village or City) where the Site is located;
3. A description of the Bidder's current legal property interest in the site (*i.e.*, fee ownership, lease, easement, license, existing option, exercisable option) demonstrating that the Bidder has/will have the site owner's authorization to build the project and maintain same for the entire term of the Energy Services Agreement (ESA);
4. Google Earth Aerial Map of the site, depicting where Bidder is considering constructing the NWA equipment on the site (with the understanding that this is subject to change); and
5. A second Google Earth Aerial Map of the site, "zoomed out" far enough so that National Grid can see the surrounding neighboring uses in the area (*i.e.*, 1,000-foot radius around the property boundary);
6. A detailed explanation for why the site is the first choice (or multiple sites); and
7. A table of bulk and dimensional standards applicable to the Bidder's proposed use/zoning district for the site (*i.e.*, minimum front yard setback; minimum side yard setback; minimum rear yard setback; maximum height; maximum impervious surface coverage; maximum fence height requirements) and whether the proposed project location complies with same.

Please note that all permitting costs are the responsibility of the Bidder even if the NWA solution is located on National Grid-owned land.

FOR PROPOSALS INCLUDING ENERGY STORAGE

A rapid deployment of energy storage has directly led to permitting challenges, including concerns by local municipalities that may include, but are not limited to, safety, acoustic, visual impact, thermal runaway, etc. caused by energy storage systems. For National Grid to properly gauge the Bidder's permitting qualifications, please provide the following supplementary information (indicate if a question is not applicable but do not leave any required responses blank):

1. List of Bidder's (or Bidder's subcontractor) construction projects permitted in the state. Project examples similar to the proposed solution are preferred (please briefly describe the proposed use permitted, the permitting timeline, any challenges faced and associated mitigations);
2. Please describe the permitting process and plan for the proposed solution;
3. List of Bidder's (or Bidder's subcontractor) construction projects that faced community opposition (please briefly describe the proposed use, the permitting timeline, resolutions to the community's opposition, and any challenges faced and how they were overcome); and
4. Please briefly describe the general strategy for obtaining all necessary municipal approvals to construct an energy storage project.
5. For open-air lithium-ion battery storage systems, please use 50 feet as a minimum separation distance between the lithium-ion battery storage system and vegetation, tree growth, and/or combustible materials and associated storage locations to prevent starting a fire. The open-air battery storage system must be containerized.
6. For warehouse lithium-ion battery storage systems, please use 311 feet as a minimum separation distance between the warehouse lithium-ion battery storage systems and vegetation, tree growth, and/or combustible materials and associated storage locations to prevent starting a fire.

FOR PROPOSALS INCLUDING INTERMITTENT ENERGY GENERATION

While useful in several contexts, solutions containing only intermittent energy generation (e.g. solar, wind, hydro, etc. that do not include storage) do not provide a reliable solution for the electric grid in the context of NWA. Only dispatchable

power and energy capacity will be considered to reliably address the need statement defined in the NWA RFP. Dispatchable resources must have a dependable energy source (such as stored electric energy in a battery). Intermittent resources such as wind and solar can be included in the proposed solution and will be considered when evaluating project benefits, including the BCA, but will not count towards solving the need unless they include storage capacity of some type. Transmission and distribution planning must consider all contingencies when addressing system needs, including loss of intermittent fuel or energy supply (such as solar irradiance or wind), which is the reason an intermittent resource cannot be considered as reliably solving a system need.

If a bidder submits a bid proposal that includes intermittent energy generation, the solution must include storage capacity of some type for the intermittent energy generation to be considered as potentially solving the system need in a reliable manner and therefore included in the evaluation of NWA bids.

FOR PROPOSALS THAT USE FUELS

Fuel-based energy systems have historically been commonly deployed in genset installations for grid reliability and use fuel types such as hydrocarbons, alkanes, alcohols/hydroxyls, biofuels, etc. This has led to concerns by local and state municipalities that may include, but are not limited to, safety, acoustic, visual impact, and environmental impact. For National Grid to properly gauge the Bidder's permitting qualifications, please provide the following supplementary information (indicate if a question is not applicable but do not leave any required responses blank):

1. List of Bidder's (or Bidder's subcontractor) construction projects permitted in the state. Project examples similar to the proposed solution are preferred (please briefly describe the proposed use permitted, the permitting timeline, any challenges faced and associated mitigations);
2. Please describe the permitting process and plan for the proposed solution;
3. List of Bidder's (or Bidder's subcontractor) construction projects that faced community opposition (please briefly describe the proposed use, the permitting timeline, resolutions to the community's opposition, and any challenges faced and how they were overcome);
4. Please briefly describe the general strategy for obtaining all necessary municipal approvals to construct an energy storage project;
5. Detail the expected acoustic impact in magnitude of dB;
6. Detail the visual impact in terms of site plan and visual presence; and
7. Detail the nominal power rating of each genset, fuel type(s), estimated fuel consumption in liters of each fuel type, efficiency of the system(s), the volume and content of any anticipated runoff, and estimated annual emission levels for NO_x, SO_x, CO, CO₂, O₃, nonmethane hydrocarbons (NHMC), and particulate matter (PM) of the system(s).

FOR PROPOSALS THAT INCLUDE ENERGY MANAGEMENT SYSTEMS

Energy management system proposals must meet or exceed the bidder's proposed guaranteed nominal power rating and guaranteed nominal capacity rating by including dispatchable generation and/or by reducing specific customer loads (through measures such as EE and DR) downstream of the asset or grid element that has loading concerns. Since National Grid expects solutions to meet a system need, an energy management system (e.g. DERMS) is not considered a viable proposal unless DER is included in the solution that meets or exceeds the defined need as stated in this RFP or meets the partial need specified in a bidder's proposed partial solution.

Appendix D – Offer Form

Provide the ESA or CSA fee proposed to be charged to National Grid for contracting services over the contract period. This will be the bid or asking price. National Grid strongly suggests that Bidders provide proposed project pricing in the format of a fixed monthly, quarterly, or annual price over the life of the project, including any and all escalators or other fees during that time.

Bidder shall provide the following information in the template below:

Information Required	Value
Preferred payment structure (state “CSA” or “ESA”)	
Cost (if CSA or annual ESA fee) (\$)	
Energy Cost (\$/kWh) (if ESA)	
Annual Additional Proposed Fees, if applicable (\$/kwh)	
Total Annual Fees based on X annual operating hours, if applicable (\$)	
Initial Investment from National Grid (if ESA and if applicable) (\$)	
State Incentives (\$)	
Preferred payment cadence	
Contract Period Start Date (ex. MM/DD/YYYY)	
Contract Period End Date (ex. MM/DD/YYYY)	
Expected Operational Lifetime of Solution/Technology (years)	
Guaranteed Availability (number of events) per year for entire contract period	
Guaranteed Performance (MW) available per event/call for entire contract period	
Guaranteed Energy (MWh) available per event/call for entire contract period	
Guaranteed Nominal Power Rating (MW) of system available <u>at end of</u> contract period	
Guaranteed Nominal Capacity Rating (MWh) of system available <u>at end of</u> contract period	
Improvements to CAIDI and/or SAIFI ¹³ , as applicable	
Does the solution require land? (Yes/No)	
Does the solution leverage existing National Grid programs? (Yes/No)	

The cost of interconnection should NOT be included in any proposals. Interconnection costs will be borne by the utility and included as a cost in the BCA.

¹³ Customer Average Interruption Duration Index and System Average Interruption Frequency Index, respectively.

Appendix E – Checklist

Bidders are asked to provide the following checklist with their bid proposal:

Offer Submission Checklist	
Checklist Item	Initial/Check
Reviewed all RFP documents and applicable laws and regulations that in any manner may affect cost, progress, or performance of the proposed project.	
Proposal Overview	
Bidder Information (See RFP Appendix A)	
Technical Information (See RFP Appendix B)	
Schedule, Site Control & Permitting (See RFP Appendix C)	
Offer Form (See RFP Appendix D)	
References (See Appendix A)	
Executed Non-Disclosure Agreement	
Executed Data Security Agreement	
Three (3) years of Audited Financial Statements	
Supplier Sustainability Information	
Review National Grid Payment Methods	
Review Supplier Obligations to National Grid’s contract document	
Review U.S. background checks for contractors	
Review NGSP 6 background check requirements for contracted service providers ¹⁴	
Review and complete the National Grid documents concerning Network Infrastructure, Technical Questionnaire, and Compliance ¹⁵	
Review Supplier Code of Conduct	
Review Contractor Safety Requirements	
Financing Plan	
Reviewed the Contract Template ¹⁶	

¹⁴ “NGSP 6 – Background Check Requirements for Contracted Service Providers - Attachment A - National Grid Requirements for Contractor Employee Background Checks.” *NGSP-6-Attachment-A*, National Grid USA, Inc., 5 June 2019, [www.nationalgridus.com/media/procurement/national-grid-requirements-for-contractor-employee-background-checks-\(ngsp-6-attachment-a\).pdf](http://www.nationalgridus.com/media/procurement/national-grid-requirements-for-contractor-employee-background-checks-(ngsp-6-attachment-a).pdf).

¹⁵ Note that these documents will be provided in the project posting on the Ariba platform.

¹⁶ Note that these documents will be provided in the project posting on the Ariba platform.

Appendix F – Economics Information

BENEFIT-COST ANALYSIS

For Rhode Island, National Grid’s Benefit-Cost Test (RI Test) outlines the methodology and benefit impact factors used in a BCA and for cost-effectiveness evaluation. The RI Test is detailed in RI PUC Docket 4684.¹⁷

Cost-effectiveness involves comparison of the total benefits, of applicable benefit factors from the RI Test, to the total cost of the proposed NWA solution, as assessed in the BCA. The NWA investment is considered cost-effective if the benefit-cost ratio (BCR) for the NWA is greater than 1.0. The BCA methodology for NWA proposals is consistent with the language in the Docket 4600 framework¹⁸ and Section 2.3.F of the Least-Cost Procurement Standards.

To properly calculate the BCA, National Grid requires Appendix D to be completed by the bidder and submitted with the Proposal.

DELIVERY CHARGES

The applicable rates would be dependent on the project’s size, parent service classification, voltage delivery level, and jurisdiction. Bidders should include applicable delivery charge costs in their Proposal. Bidders should review the tariff provisions^{19,20,21} for the respective state for more details regarding determination of demand, calculation of energy, interconnection requirements, metering, and other special provisions and requirements of the applicable service classification. For dispatchable energy storage solution proposals, bidders should note that the same rate shall apply for charging and for discharging the energy storage asset.

Delivery charges and applicable rates will be determined based on the ownership model the Bidder proposes that is selected. Regarding the rate class for a specific solution technology, National Grid will work with the selected Bidder to ensure the assignment of the appropriate rate class is utilized for the system. The rate class and customer of record will be confirmed with the selected bidder during the contracting phase based on the on-site use and load. National Grid does expect Bidders, like all other distribution customers, to fully understand National Grid’s terms and conditions for service as well as thoroughly review National Grid’s tariffs to understand how rate application would work.

Bidders may contact National Grid for guidance or clarification over the applicable tariff for their proposed specific solution.

¹⁷ “Docket No. 4684.” *RIPUC*, Rhode Island Public Utilities Commission, 12 June 2019, www.ripuc.ri.gov/eventsactions/docket/4684page.html.

¹⁸ “Docket No. 4600.” *RIPUC*, Rhode Island Public Utilities Commission, 2 Nov. 2018, www.ripuc.ri.gov/eventsactions/docket/4600page.html.

¹⁹ “Tariff Provisions.” Massachusetts: Bills, Meters & Rates, National Grid USA, Inc., 2020, <https://www.nationalgridus.com/MA-Business/Rates/Tariff-Provisions>.

²⁰ “Tariff Provisions.” New York: Bills, Meters & Rates, National Grid USA, Inc., 2020, <https://www.nationalgridus.com/Upstate-NY-Business/Rates/Tariff-Provisions>.

²¹ “Tariff Provisions.” Rhode Island: Bills, Meters & Rates, National Grid USA, Inc., 2020, <https://www.nationalgridus.com/RI-Business/Rates/Tariff-Provisions>.

PRICING MODEL

National Grid is open to considering shared capital costs or owning a non-generation solution or asset.

National Grid encourages vendors to pursue additional relevant revenue streams or participation in relevant markets, so long as there is no operational conflict, to produce the most cost-effective solution.

Pricing models to be considered shall be as follows:

- Annual service fee, Construction Services Agreement, or Energy Services Agreement (i.e., dollars per kW)
- Any combination of the above

Appendix G – List of Acronyms and Definitions

Please note that this list of definitions and acronyms is not exhaustive.

Term	Definition
3V ₀	Zero-Sequence Voltage
ADCI	Avoided Distribution Capacity Infrastructure
Approximate Value	The estimated net present value of deferring the wires investment for the required timeframe.
BCA	Benefit-Cost Analysis
BCR	Benefit-Cost Ratio
C&I	Commercial and Industrial
CAIDI	Customer Average Interruption Duration Index
CESIR	Coordinated Electric System Interconnection Review
CSA	Construction Service Agreement
DER	Distributed Energy Resources
DG	Distributed Generation
DR	Demand Response
EE	Energy Efficiency
EPC	Engineering, Procurement, and Construction
EPS	Electric Power System
ESS	Energy Storage Systems
ESA	Energy Services Agreement
FERC	Federal Energy Regulatory Commission
ISO	Independent System Operator
ISO-NE	ISO New England Inc.
IT	Information Technology
kW	Kilowatt
LSRV	Locational System Relief Value
M&V	Measurement & Verification
MW	Megawatt
MWh	Megawatt-hour
NERC	North American Energy Reliability Corporation
NWA	Non-Wires Alternatives
NYISO	New York Independent System Operator, Inc.
O&M	Operations and Maintenance
PSC	Public Service Commission
PUC	Public Utilities Commission
PV	Photovoltaic
Resi	Residential
REV	Reforming the Energy Vision
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SCT	Societal Cost Test
TB	Transformer Bank
T&D	Transmission and Distribution
WACC	Weighted Average Cost of Capital