nationalgrid

Request for Proposal (RFP)

Non-Wires Alternatives Solutions
Project Development Services

Coffeen Substation
Watertown, NY

RFP Issue Date: November 8, 2019
Proposal Submission Deadline: January 29, 2020, 5pm EST

Contents

1.0 GENERAL INFORMATION

1.1 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 territories. As a part of providing this service, National Grid is pursuing the potential implementation of Non-Wires Alternatives (NWA) solutions in its Niagara Mohawk Power Corporation d/b/a National Grid (the "Company") service territory in Upstate New York.

This Request for Proposal (RFP) is open to all NWA approaches that have the potential to provide NWA solutions in the area(s) identified in the problem description. National Grid has several long-term goals in consideration (in alignment with state, federal, and Company ambitions) that impact the viability of any given proposal. These include National Grid's *Northeast 80x50 Pathway* (a greenhouse gas (GHG) emissions reduction blueprint),[1] New York's aggressive goal to integrate 1,500 MW of energy storage by 2025,[2] and other goals associated with REV.[3]

1.2 OVERVIEW

The loading at the Company's Coffeen Substation, a two (2) transformer bank station, serving the Watertown area has increased to a level at which an outage on one of the station's transformer banks is projected to overload the remaining station transformer bank to 100% (or higher) of its emergency rating. The Company is evaluating alternatives to reduce the area load in order to maintain or improve reliability performance. This project is in the New York Independent System Operator (NYISO) Load Zone E.

National Grid is seeking NWA solutions that could potentially provide delivery infrastructure avoidance value or other reliability and operational benefits. The area being considered for an NWA solution is located near the City of Watertown in Jefferson County. Below is a high-level summary of solution requirements. Refer to Appendix A for further project-specific information.

Problem Description	
Load on the remaining station transformer bank at Coffeen Substation will be at or over 100% summer emergency rating at peak upon loss of either station transformer bank (TB3 or TB4).	
Solution Requirements	
Technical Requirements	Maintain loading on remaining station transformer bank (upon a loss of one of the two transformer banks) at Coffeen Substation below summer emergency rating, such that there is no overload in the event of loss of either station transformer bank
Commercial Operations Date (COD)	June 2022 to June 2032
Maximum MW Need	5.7 MW of load relief
Maximum MWh Need per Day	29 MWh
Contract Term	10 years minimum
Number of Times Called per Year	Up to 25
Approximate Value	$9,000,000

[1] *See* http://news.nationalgridus.com/wp-content/uploads/2018/06/80x50-White-Paper-FINAL.pdf
[2] *See* https://www.nyserda.ny.gov/All%20Programs/Programs/Energy%20Storage/Achieving%20NY%20Energy%20Goals/The%20New%20York%20State%20Energy%20Storage%20Roadmap
[3] *See* https://rev.ny.gov/goals/

1.3 RFP SCHEDULE

The RFP schedule presented below is subject to change.

Tentative Date	Milestone
November 8, 2019	Issue RFP
Week of November 18, 2019	Pre-bid teleconference
January 28, 2020	RFP responses due
April 10, 2020	All bidders notified of their status
April 10, 2020	Commence negotiations
June, 2022	NWA solution in-service date[4]

2.0 OFFER 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 the Company will procure is a function of the Proposal price, scoring of Proposals based on evaluation criteria, and the Company'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.	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 B
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 B
Project Viability	The probability that the solution(s) associated with a Proposal can be financed and completed as required by the relevant agreement.	Appendix C
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 C
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 C
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 C
Customer and **Socio-economic Impacts**	The Bidder's Proposal shall address how the proposed technology impacts the customer in addition to temporary and permanent	Appendix C

[4] Resources included in awarded bid(s) are required to be in-service no later than June 1, 2022. An earlier in-service date may be negotiated.

Category	Description	Details
	jobs to be created, economic development impacts, and property tax payments.	
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 D
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 Term Sheet 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 Term Sheet shall be provided by the Bidder as part of its Proposal for review by National Grid during the evaluation period.	Appendix I
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.	Checklist

3.0 OFFER SUBMITTAL PROCESS

3.1 PROPOSAL SUBMISSION INSTRUCTIONS

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

The Offer Form must be submitted without modifications to the Excel file structure or format. All other submissions must be in a single PDF format mirroring the organization of the RFP documents described in the Offer Submission Checklist below. Any questions on or technical issues with submitting a Proposal before the deadline should be promptly directed to Non-WiresAlternativeSolutions@nationalgrid.com

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

3.2 OFFER SUBMISSION FORMAT

Bidders need to submit a Proposal for this RFP and shall be submitted as a single PDF document (as well as a completed Offer Form as an .xlsx file). Please provide a concise written Proposal under 50 pages in length (excluding appendices). Bidders are encouraged to identify optionality provided by their solution designed for average/optimized load in conjunction to peak/requested load.

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

Bidders are asked to provide the checklist referenced in Appendix H. A shortened version is shown below:

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 B)	
Technical Information (See RFP Appendix C)	
Schedule, Site Control and Permitting (See RFP Appendix D)	
Offer Form (See RFP Appendix E)	
Redlines to Term Sheet (See RFP Appendix I)	
References (See Appendix B)	
Executed Security and Safety Agreement	
Three (3) years of Audited Financial Statements	
Supplier Sustainability Information	
Review U.S. background checks	
Review Code, Safety, and Payment Requirements	

Partial solutions that provide a reasonable portion of the solution requirements will be considered where National Grid can identify other partners to create a full solution. Bidders are encouraged to team up to offer a portfolio solution using multiple technologies, sizes, and implementation schedules, if this would provide the best value proposition. The NWA solution(s) will be required to operate as needed to support the electric system requirements. National Grid will consider resources that may include one or more, or a combination of the following technologies in this RFP:

- Distributed Generation
- Energy Storage
- Demand Response
- Energy Efficiency
- Other resources that can meet the identified reliability needs

Bidders should carefully review the Offer Evaluation Criteria and consider whether a portfolio of partial solutions may be favorable to a single full solution 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 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. The Company may be willing to combine multiple, partial Proposals to meet the full need, where a single Proposal alone does not meet the full need, or Bidders could collaborate and submit a combined Proposal (consisting of several partial solutions) that together meet the full need.

3.3 EXECUTION OF AGREEMENT

By submitting a Proposal, Bidder agrees, if its Proposal is selected for National Grid, that it is 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. Please see Appendix I for a Term Sheet for a contract.

APPENDIX A – PROJECT SPECIFIC DATA
OPPORTUNITY SPECIFIC REQUIREMENTS

In the sections below, National Grid has provided information on the background of the distribution/sub-transmission need in the Watertown location, the solution requirements to meet the need, and any location-specific interconnection information.

Access the National Grid System Data Portal for more information that is available online such as hosting capacity, distributed generation (DG) applications in the Company's queue, and more, via the following link: https://www.nationalgridus.com/Business-Partners/NY-System-Portal

TECHNICAL REQUIREMENTS

The following sections describe planned use cases and solution requirements for the location. Below are several solution requirements in this RFP:

Problem Description
Load on the remaining station transformer bank at Coffeen Substation will be at or over 100% summer emergency rating at peak upon loss of either station transformer bank (TB3 or TB4).

	Solution Requirements	Description
Technical Requirements	Maintain loading on remaining station transformer bank (upon a loss of one of the two transformer banks) at Coffeen Substation below summer emergency rating, such that there is no overload in the event of a loss of either station transformer bank	Criteria to be met by solution
In Service Date	June 2022	Date the NWA solution must be in place and operational to solve the need
Commercial Operation Term (Contract Term)	June 2022 to June 2032	10-year term where NWA solution must be operational (subject to extension). Term of contract to defer traditional wires investment(s)/asset(s) (subject to extension)
Maximum MW Need	5.7 MW of load relief	Amount of load relief that is required to meet the need at peak loading, but should not limit the project size (*i.e.*, projects with aggregate nameplate over 'Maximum MW Need' will be considered)
Maximum MWh Need per Day	29 MWh	Largest continuous 24-hour MWh need of NWA solution (calculated by adding average hourly MW need over any 24-hour period, assuming average MW need would be affected by field operations (*i.e.*, feeder ties/switching).
Duration per Call	Up to 11 continuous hours	Longest, continuous need of NWA solution. Not all hours may be at 'Maximum MW Need'.
Contract Term	10 years minimum	

Call Response Time	24 hours load notice	Lead time between a request for load relief coming in from the Company and when the NWA solution is to provide the load relief.
Days of Week Needed	Weekdays and Weekends	Type of day when the NWA solution could be called on (*e.g.*, weekdays only).
Time of Day	9:00-19:00	Earliest and latest possible times of need by the Company (based on projections, not continuous hours, see 'Duration per Call').
Number of Times Called per Year	Up to 25	Calls per year based on annual overloads seen in projections.
Minimum Period between Calls	24 hours	Least amount of time between the Company's requests for load relief.
Maximum Consecutive Days Called	Up to 4	Most consecutive days that may be requested by the Company (based on projections).

POTENTIAL SOLUTIONS

The installation and/or procurement of an NWA solution could reduce the overall demand at critical periods and thereby address the emergency (N-1) overloading at the Coffeen Substation. Integration of NWA solutions would reduce the peak loading on the remaining station transformer bank below 100% of its summer emergency rating (given an outage of either station transformer bank) for the period of 2022-2032 given the present load forecast. The NWA solution would be notified for dispatch when loads are forecasted to exceed 100% of the transformer's summer emergency rating through day-ahead notice of dispatch.

Depending on the nature of the NWA solution proposed, potential infrastructure upgrades may be required to accommodate and connect the NWA solution as it is necessary for the solution to be located downstream of the transformer to solve the problem (full details pending an interconnection study (*i.e.*, Coordinated Electric System Interconnection Review (CESIR)).

TECHNICAL DETAILS

SUBSTATIONS & FEEDERS

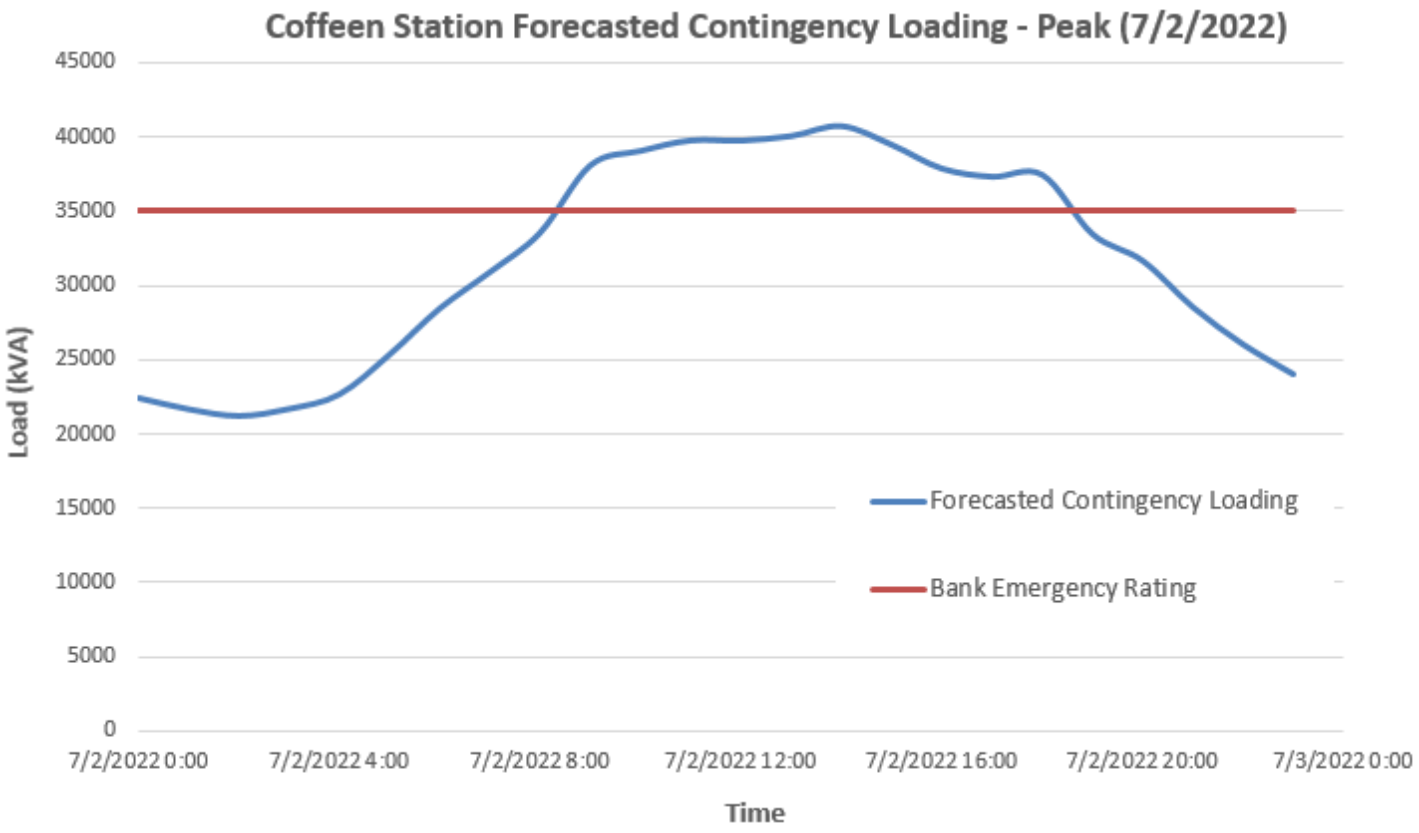
Target substation	Target distribution feeders
Coffeen	All feeders: 76051, 76052, 76053, 76054, 76055, 76056

All feeders are supplied from 115kV-13.2kV transformers. The 13.2 kV system is grounded wye.

ASSET LOADING

Loading on the remaining Coffeen Substation transformer bank is forecasted to be over 100% of the summer emergency rating over the span of 2022-2032 in the event of an outage on either station transformer bank (TB3 or TB4, given peak loading conditions). In the event of such outage, the low-side bus tie would be closed, and the entire substation's load would be supported by the remaining in-service transformer bank. All other substation equipment loadings are within acceptble ratings. The load forecast for the total loading on Coffeen Substation in 2022 (highest projected forecasted peak) is 40.7 MVA. The 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 hot day, where the temperature in the 95th percentile of hottest years). The latest hourly load forecast is available as a .CSV file on National Grid's Ariba platform. The chart below shows the highest projected load on the transformer bank over the project life (*i.e.*, peak day). Please

note station loading charts do not account for feeder tie capacity which may not be equal to the value in the technical requirements. See the Hosting Capacity map in National Grid's System Data Portal.



CUSTOMER DEMOGRAPHICS

Feeder	Commercial Customers	Residential Customers	Total Customers
76051	126	229	355
76052	271	833	1104
76053	69	633	702
76054	67	418	485
76055	40	352	392
76056	153	1179	1332
Total	726	3644	4370

The amount of DG connected or in the Company's interconnection queue on associated feeders and stations can be reviewed on the National Grid New York System Data Portal. See the first section of this Appendix A for System Data Portal details.

SUPPORTING DATA

The following tables were derived from the Company's Customer Load Data, which generally covers the 2018 calendar year (exceptions include shorter time periods and/or later start/end date). The following should be used for

informational purposes only. “Max” values represent the peak of the largest single customer while “Avg” values represent the average mean value of all customers on the associated feeder.

Residential kW Analysis

Feeder	Avg kW	Max kW
76051	1.7	33.3
76052	2.2	25.4
76053	2.7	48.9
76054	1.7	5.4
76055	2.2	9.7
76056	2.9	24.2
Total	2.4	48.9

Peaks among commercial users tend to be very high for a few users (as demonstrated by differences between maximum and average yearly values).

Residential kWh Analysis

Feeder	Avg kWh	Max kWh	Avg kWh Summer	Max kWh Summer	Avg kWh Winter	Max kWh Winter
76051	19.9	338.0	3040	49920	1658.5	32240
76052	21.9	258.3	2568.5	30684	1779.8	19120
76053	28.4	586.9	3994	75440	1653.8	35360
76054	17.5	97.9	2468.2	11990	1393.6	12486
76055	22.0	130.5	2474.2	16889	2502.8	12903
76056	28.5	246.1	3779.4	42639	2653.2	38497
Total	138.2	1657.7	18324.3	227562	11641.7	150606

Commercial kW Analysis

Feeder	Avg kW	Max kW	Max kW Summer	Max kW Winter
76051	39.7	640.4	621.6	634.8
76052	19.5	696.2	696.2	543
76053	47.8	2244	2244	1508
76054	97.9	642	642	520.8
76055	35.6	683.4	683.4	503
76056	31.3	2788	1716	1656

Commercial kWh Analysis

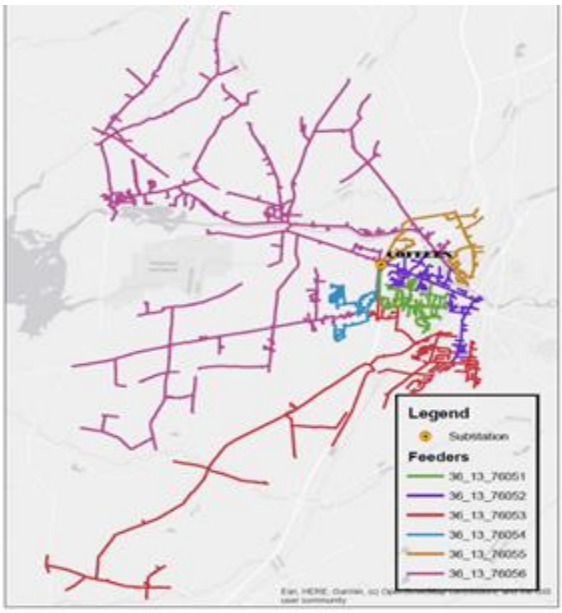
Feeder	Avg kWh	Max kWh	Avg kWh Summer	Max kWh Summer	Avg kWh Winter	Max kWh Winter
76051	396.3	8513.1	57255.3	1248396	23791.6	583469
76052	218.0	7969.8	32878.1	1114155	17939.3	658347
76053	420.4	10386.5	45879.7	1383732	46955.0	2604409
76054	1047.3	10796.9	148744.9	1554687	83082.8	917091
76055	257.4	6434.7	40716.5	1181582	19792.1	274543

76056	227.6	20870.4	32964.0	2973831	19484.0	2232126

NOTE: Subject to changes in forecasted needs and solution pricing, as well as any other applicable costs and benefits, National Grid is targeting the procurement of an NWA solution that could supply the need described above. During normal operation (*i.e.*, blue sky), any excess power could be exported to the Company's system depending on such factors as interconnection requirements, economics, portfolio fit, etc.

MAP AND LOCATIONAL INFORMATION

Any NWA solution location downstream of the target station feeder getaways (*i.e.*, where the feeder leaves the substation) has the potential to solve the loading issue, pending a full interconnection study. See below feeder map and visit the National Grid New York System Data Portal to search for the Coffeen Substation and feeders under the Distribution Assets Overview tab. For reference, the Coffeen Substation is located near the intersection of New York State Route 12F and Salmon Run Mall Road.



DEVELOPMENT SITE - COMPANY-OWNED PROPERTY

The Company owns an 8.6+/- acre parcel in Jefferson County, tax parcel identification number 73.75-1-52, located along Main Street in the Village of Glen Park. Bidders may utilize a portion of this property when proposing NWA solutions. Use of this parcel and a determination regarding a sale or lease of the property are subject to internal review of Bidder's Proposal.

PRIVATE PROPERTY

Bidders may utilize alternative locations other than Company-owned property in their Proposals. However, to be considered viable, Bidders must demonstrate site control in their Proposal.

PROJECT ECONOMICS

The estimated net present value of deferring the traditional wires solution for ten (10) years (Approximate Value) is $9,000,000.

The Approximate Value is the estimated net present value derived from the calculated deferral value of the traditional wires solution for the specified amount of time as well as the sum of the applicable benefits. National Grid provides the Approximate Value of a potential NWA solution so that Bidders can determine if their NWA solution is cost-competitive when compared to the traditional wires solution.

This Approximate Value is calculated using the Weighted Average Cost of Capital (WACC) in the Company's Benefit-Cost Analysis ("BCA") Handbook v2 ("BCA Handbook") with 6.53% as the deferral rate. This Approximate Value is primarily driven by the Avoided Distribution Capacity Infrastructure (ADCI) value, which is the 10-year deferral value of the traditional wires solution project.

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 outlined in the BCA Handbook). Contract cost, a value used in National Grid's BCA, is the net present value ("NPV") of payments National Grid would be making to the successful Bidder(S), as part of an Energy Service Agreement (ESA) or Construction Service Agreement (CSA). Since Contract Cost is typically the largest cost associated with an NWA solution, Bidders can look at the Approximate Value as a ceiling for the NPV of proposed contract costs when attempting to gauge proposal feasibility. Please also note that the BCA considers numerous costs and benefits in addition to bid price and the deferral value of the traditional wires solution. The Approximate Value is based on the current planning level estimate for the wires solution which is subject to change based upon when the Company performs its final BCA.

APPENDIX B – BIDDER INFORMATION

Bidder shall provide the following information for use by the Company 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.
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	MWh	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	MWh	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 if the NWA solution is participating in the Value Stack tariff (sometimes referred to as Value of Distributed Resources ("VDER")).

APPENDIX C – 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 Company's distribution system.
2. Please provide risks and challenges that may be encountered in the development of the proposed solution.
3. 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.
4. Provide a list of preferred technology suppliers.[5]
5. Specify how the project's design will meet new equipment and certification requirements of all relevant national, New York State, local codes and standards, and any additional requirements of the local authority having jurisdiction ("AHJ").
6. Physical size and footprint including preliminary site layout plan
7. 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.
8. Identify changes in equipment capacity degradation over expected lifetime; confirm capacity degradation is considered in your overall business plan
9. Accurate and validated (preferably independently verified) performance characteristics of the proposed project.
10. 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, the New York State Environmental Quality Review Act ("SEQRA"); any applicable provisions of the New York State Environmental Conservation Law ("ECL") and New York State Department of Environmental Conservation ("NYSDEC") regulations pertaining to disposal; Article 10, if applicable; the International Building Code Series as amended by the New York State Uniform Code Supplement; the National Electrical Code®("NEC"); New York State's Interconnection Standards; National Grid's Electric System Bulletins (ESB)[6]; and all applicable State, city, town, or local ordinances or permit requirements, and any additional requirements of the local Authority Having Jurisdiction ("AHJ"). It is the Winning Bidder's responsibility to ensure compliance with all such laws.

[5] 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.

[6] National Grid Electric System Bulletins are located on the Company's website: https://www.nationalgridus.com/ProNet/Technical-Resources/Electric-Specifications. ESB 756 is typically applicable to DER interconnecting in parallel with the Company'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 the Company 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 the Company's supervisory control and data acquisition ("SCADA") systems.
7. Specify guaranteed Round Trip Efficiency and guaranteed availability, if applicable.
8. Specify guaranteed availability, if applicable.
9. Specify measurement and verification ("M&V") capability.
10. 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.
11. Ability of proposed project to directly integrate with National Grid's Energy Management System ("EMS")/Distribution Management System ("DMS") systems.
12. 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 Company's EPS.

APPENDIX D – 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 the Company 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 New York 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 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 Company-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, noise, 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 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 New York 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.

APPENDIX E – OFFER FORM

Provide the ESA or CSA fee proposed to be charged to the Company 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
Annual ESA Fee ($)	
Cost ($/kWh) (if ESA)	
Initial Investment from National Grid (if ESA)	
Cost (if Construction Services Agreement)	
Annual Additional Proposed Fees, if applicable ($/kwh)	
Total Annual Fees based on X annual operating hours, if applicable ($)	
Guaranteed MW available per year	
Guaranteed MWh available per year	
Guaranteed MW available through 10-year contract period	
Guaranteed MWh available through 10-year contract period	
Improvements to CAIDI and/or SAIFI[7] when applicable	
State Incentives ($)	

Note: 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.

DELIVERY CHARGES

The ultimate rates would be dependent on the project's size, parent service classification, and voltage delivery level. Customers served under Service Classification No. 7 ("SC7") of the Company's Electricity Tariff, P.S.C. No. 220 ("Electricity Tariff"), are billed based on the following parameters: customer charge ($/month), standby contract demand charge ($/kW), as used daily on-peak demand charge ($/kW), electric supply charge ($/kWh), and various surcharges and adjustments ($/kW or $/kWh, depending on parent service classification). Parent service classifications SC3 and SC3A also are billed a reactive demand charge ($/kVAR). Bidders should review SC7 of the Electricity Tariff[8] (starting on Leaf 415) for more details regarding the determination of demand, calculation of energy, interconnection requirements, metering, and other special provisions and requirements of the service classification.

If the Bidder plans to receive compensation from other New York programs (*e.g.*, New York State Energy Research and Development Authority ("NYSERDA") programs), the Bidder shall disclose plans/status/magnitude of award and the likelihood of prevailing in such an award within their Proposal.

[7] Customer Average Interruption Duration Index and System Average Interruption Frequency Index, respectively.
[8] Available at https://www2.dps.ny.gov/ETS/jobs/display/download/6499154.pdf

APPENDIX F - ECONOMICS

BENEFIT COST ANALYSIS

National Grid's BCA Handbook v2 can be referenced using this link:
http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=16-M-0411

The BCA Handbook outlines three distinct tests which help evaluate each potential deployment approach from a variety of standpoints.

Test	Key Question Answered	Calculation Approach
Societal Cost Test (SCT)	Is there a net reduction in societal costs?	Compares the costs incurred to design and deliver projects, and customer costs with avoided electricity and other supply-side resource costs (*e.g.*, generation, transmission, and natural gas); also includes the cost of externalities (*e.g.*, carbon emissions and other net non-energy benefits).
Utility Cost Test (UCT)	Is there a net change in utility system costs and what is the impact of the proposed solution on average customer bills?	Compares the costs incurred to design, deliver, and manage projects by the utility with avoided electricity supply-side resource costs.
Rate Impact Measure (RIM)	How will utility rates be affected?	Compares utility costs and utility bill reductions with avoided electricity and other supply-side resource costs.

Each test attempts to address the complexities involved in large-scale investments with a unique understanding of how utility expense translates into tangible savings and improvement for all impacted parties. Even though the BCA calculations for the three tests have many overlaps, the SCT is generally considered as the primary cost-effectiveness measure. The SCT uses several costs, but the main two costs used are the Contract Cost and any state incentives assumed.

The BCA Handbook v2 further outlines common input assumptions and sources that are applicable statewide and utility-specific inputs that may be commonly applicable to a variety of project-specific studies. For example, it is stated that the after-tax utility WACC should be used as the discount rate across all metrics.

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

APPENDIX G – DEFINITIONS & ACRONYMS

Acronym	Definition
BCA	Benefit Cost Analysis
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
IT	Information Technology
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
PV	Photovoltaic
REV	Reforming the Energy Vision
SCT	Societal Cost Test
TB	Transformer Bank
T&D	Transmission and Distribution
VDER	Value of Distributed Resources
WACC	Weighted Average Cost of Capital

APPENDIX H – CHECKLIST

Bidder are asked to provide the following checklist:

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 B)	
Technical Information (See RFP Appendix C)	
Schedule, Site Control & Permitting (See RFP Appendix D)	
Offer Form (See RFP Appendix F)	
Redlines to Energy Storage Services Agreement (See RFP Appendix I)	
References (See Appendix B)	
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	
Review Background Check Requirements for Contracted Service Employees Attachment A	
Review National Grid Requirements for Contractor Employee Background Check & Contractor Compliance Statement	
Review Supplier Code of Conduct	
Review Contractor Safety Requirements	
Financing Plan	