



NY Prize Community Grid Competition – Stage 2

Request for Proposals (RFP) 3044

Stage 2: Detailed Engineering Design, Financial and Business Plan Assessment

Proposals Accepted Until: October 12th 2016 5:00 PM Eastern Time*

Note: Stage 3 (Build) to be released at a future date.

Summary of Revisions

The following changes have been made to RFP 3044 “NY Prize Community Grid Competition – Stage 2”:

The RFP has been amended to clarify that deviations to the scope of work must be accompanied by justification, which will be evaluated by NYSERDA.

This revision appears on Page 5 of the Solicitation under “Participation in Stage 1 is not a pre-requisite to participation in Stage 2,” and on Page 9 under “7. Work Plan and Schedule”.

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Stage 2: Detailed Engineering Design, Financial and Business Plan Assessment
Proposals Accepted Until: October 12th 2016 5:00 PM Eastern Time*
Note: Stage 3 (Build) to be released at a future date.

NY Prize Stage 2: Detailed Engineering Design and Financial and Business Plan. NYSERDA is accepting proposals for funding to conduct detailed engineering and commercial assessments that evaluate the feasibility of installing/operating a community microgrid at a site within New York State. Proposals **must be received by NYSERDA** by 5:00 PM Eastern Time on October 12th, 2016.

On February 11, 2015, the New York State Energy Research and Development Authority (NYSERDA) announced the availability of up to \$40,000,000 under the three-stage NY Prize Community Grid Competition (NY Prize), to support the development of community microgrids. The objective of NY Prize is to promote the design and build of community grids that improve local electrical distribution system performance and resiliency in both a normal operating configuration as well as during times of electrical grid outages. NY Prize objectives include empowering community leaders; encouraging broad private and public sector participation including local distribution utilities, local governments and third parties; protecting vulnerable populations; and providing tools to build a cleaner more reliable energy system. Just over \$8,000,000 was awarded in Stage 1 of the competition to 83 communities across the state to conduct microgrid feasibility studies. It is anticipated that approximately \$8 million will be available in Stage 2 to support development of detailed engineering design and financial and business plans, though, depending upon responses received and funding availability, NYSERDA may elect to commit more or less funding.

Category	Funding Limits	Total Project Cost Share
Detailed Engineering Design, Financial and Business Plan	Up to \$1,000,000	15%

Proposal Submission: Electronic submission is preferable. NYSERDA will also accept proposals by mail or hand-delivery. If submitting electronically, proposers must submit the proposal in either PDF or MS Word format with a completed and signed Proposal Checklist and Disclosure of Prior Findings of Non-Responsibility, in PDF format. Proposal PDFs should be searchable and should be created by direct conversion from MS Word, or other conversion utility, rather than scanning. For ease of identification, all electronic files must be named using the proposer’s entity name in the title of the document. Proposals may be submitted electronically by following the link for electronic submissions found on this RFP’s webpage, which is located in the “Current Opportunities” section of NYSERDA’s website (<http://www.nysesda.ny.gov/Funding-Opportunities/Current-Funding-Opportunities.aspx>). Instructions for submitting electronically are located in that section as Attachment G to this RFP.

If mailing or hand-delivering, proposers must submit (2) paper copies of their proposal with a completed and signed Proposal Checklist, along with a CD or DVD containing either a PDF or MS Word digital copy of the proposal, following the above guidelines. Mailed or hand-delivered proposals must be clearly labeled and submitted to:

Roseanne Viscusi, RFP 3044
NYS Energy Research and Development Authority
17 Columbia Circle, Albany, NY 12203-6399.

Programmatic questions should be directed to John Saintcross, 518-862-1090 ext: 3384 (john.saintcross@nysesda.ny.gov), or Michael Razanousky, 518-862-1090 ext: 3245 (michael.razanousky@nysesda.ny.gov). Questions regarding municipal procurement or contractual issues and related competitiveness issues should be directed to Janice Dean 518-862-1090 ext: 3117 (janice.dean@nysesda.ny.gov). Contractual questions should be directed to Nancy Marucci, (518) 862-1090 ext: 3335 (nancy.marucci@nysesda.ny.gov).

No communication intended to influence this procurement is permitted except by contacting Michael Razanousky, (518) 862-1090 ext: 3245. Contacting anyone other than this Designated Contact (either directly by the proposer or indirectly through a lobbyist or other person acting on the proposer’s behalf) in an attempt to influence the procurement: (1) may result in a proposer being deemed a non-responsible offerer, and (2) may result in the proposer not being awarded a contract.

* All proposals must be **received by NYSERDA by 5:00 Eastern Time on October 12, 2016**. Late proposals or proposals lacking the appropriate completed and signed Proposal Checklist will be returned. Faxed proposals will not be accepted. Mailed proposals will not be accepted at any other NYSERDA location other than the address above. Prior to preparing proposal for future rounds, proposer should contact NYSERDA regarding changes to solicitation. If changes are made to this solicitation, email notification will be sent to original distribution group as well as posted on NYSERDA’s web site: www.nysesda.ny.gov and in the Contract Reporter.

I. INTRODUCTION - NY Prize Community Grid Competition

Under NY Prize, up to \$40,000,000 was made available to support the development of community microgrids. NY Prize is a multi-stage competition aimed at supporting the design and building of community grids that improve the local electrical distribution system performance and resiliency in both a normal operating configuration as well as during times of electrical grid outages. The competition was developed in response to the Governor's New York RISE initiative regarding the use of microgrids as a means of minimizing the impacts due to power outages associated with emergencies, natural disasters, and other events. Communities considered vulnerable to weather-induced impacts historically had not benefitted from energy grid optimization, and co-located within a utility service territory with areas experiencing significant load growth or in potential need of utility grid reinforcements were encouraged to consider competing for a NY Prize award. Key NY Prize objectives include empowering community leaders, encouraging broad private and public sector participation, protecting vulnerable populations, expanding the use of locally distributed energy resources, engaging with private sector or third-party interests and providing tools for building a cleaner more reliable energy system.

Under this Stage 2 Detailed Engineering Design and Financial and Business Plan request for proposals, NYSERDA is accepting proposals for funding to conduct detailed engineering and commercial assessments that evaluate the feasibility of installing/operating a community microgrid at a site within New York State.

NY Prize is not intended to support the development of additional behind-the-meter, campus style, single entity microgrids for which an extensive operating history exists. NY Prize seeks to support the development of community grids encompassing no less than one facility providing a critical service to the public that is connected to multiple, uniquely owned/controlled buildings that act as a group of interconnected loads and distributed energy resources, lie within a clearly defined electrical boundary and act as a single controllable entity, which can connect and disconnect from the surrounding utility grid and operate in both grid-connected or island mode.

Originally, electric power in the United States, including generation and distribution systems, operated on a small, local scale. Over time, regional utilities and infrastructure were developed to deliver cost-effective, safe, and reliable water, heat, power, fuel, and communications over significantly broader distances. These large, networked systems of electric power generation, transmission, distribution, and delivery offer the benefits of fuel diversity, proximity of generating assets to large fuel and water resources, efficiencies of scale, reliability through diversity of assets, quality of life benefits from locating large emissions sources away from population centers, and least-cost-dispatch. These systems are, however, vulnerable to outages that can impact large regions and thousands of businesses and citizens, particularly as a consequence of extreme, destructive weather events. Microgrids could help minimize the impact of these outages by localizing power generation, distribution, and consumption so that a fallen tree or downed wire will not interrupt critical services for miles around.

Microgrids rely on a combination of Demand-side Resources (DR) (i.e., resources such as energy efficiency or curtailable load that impact how energy is consumed) and distributed generation resources (DG) (i.e., resources that produce energy). For the purposes of the NY Prize competition, these collectively are considered Distributed Energy Resources or DER as defined below:

DISTRIBUTED ENERGY RESOURCES (DER):

Demand-side resources are those that affect how and when energy is consumed within the microgrid. Most commonly, these will include intelligent energy management systems and energy efficiency

investments. Intelligent energy management technologies are systems that monitor and control electricity consumption in real time. These technologies allow the operator of the microgrid to reduce demand for either practical reasons (such as the microgrid islanding and needing to curtail consumption to match local generation) or in response to economic incentives (such as the microgrid's participation in a demand response program).

Supply-side resources affect energy production within a microgrid. The most common are distributed generators (DG). DG encompasses a wide range of generation technologies, including gas turbines, solar electric (photovoltaic or PV), wind turbines, fuel cells, biomass, and small hydroelectric generators. Some DG units that use conventional fuel-burning engines are designed to operate as combined heat and power (CHP) systems that are capable of providing heat for buildings or industrial processes using the "waste" energy from electricity generation. Some of the key attributes for microgrid developers to consider when choosing between types of DG to install in a microgrid include the intermittency of the generator's output (e.g., solar panels produce power only "intermittently," when the sun is shining), whether it is renewable or non-renewable, its location, its size, its relationship with the conventional electric grid, and its operating regime.

REGULATORY CONTEXT - Reforming the Energy Vision

In its order of December 26, 2013 ¹, the Public Service Commission (PSC) announced that it would comprehensively consider how the regulatory paradigm and retail and wholesale market designs either effectuate or impede progress toward achieving the policy objectives underlying the system benefit programs and regulation of electric distribution utilities². With respect to regulation of distribution utilities, the PSC identified the following key questions it needed to address:

1. What should be the role of the distribution utilities in enabling system wide efficiency and market-based deployment of distributed energy resources and load management?
2. What changes can and should be made in the current regulatory, tariff, and market design and incentive structures in New York to better align utility interests with achieving our energy policy objectives?

The PSC also identified several policy objectives it would want satisfied by any utility system reforms:

1. Enhanced customer knowledge and tools to support effective management of their total energy bill
2. Market animation and leverage of ratepayer contributions
3. System wide efficiency
4. Fuel and resource diversity
5. System reliability and resiliency; and
6. Reduction of carbon emissions

This was followed by an order instituting a proceeding to improve system efficiency, empower customer choice, and encourage greater penetration of clean generation and energy efficiency technologies and practices, commonly called Reforming the Energy Vision (or REV)³. In a subsequent memorandum and

¹ Case 07-M-0548, Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard, Order Approving EEPS Program Changes (issued December 26, 2013) (EEPS Changes Order).

² See Case 13-M-0412, Petition of New York State Energy Research and Development Authority to Provide Initial Capitalization for Governor Cuomo's New York Green Bank, Order Establishing New York Green Bank and Providing Initial Capitalization (issued December 19, 2013) and Case 03-E-0188, Retail Renewable Portfolio Standard, Order Authorizing the Redesign of the Solar Photovoltaic Programs and the Reallocation of Main-Tier Unencumbered Funds (issued December 19, 2013).

³ CASE 14-M-0101 - Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, (issued April 25, 2014).

resolution⁴, the PSC stated that demonstration projects would be an important step in implementing the REV changes and informing decisions on utility functionalities, customer responses to program offerings and associated prices and determining the most effective implementation of Distributed Energy Resources (DER). The intent of early REV demonstrations is to advance the development of new utility and third party service or business models and gain experience with integration of DER. Lead applicants in NY Prize are encouraged to consider these principles as they develop plans for a community microgrid.

RESILIENCY TO CLIMATE CHANGE INDUCED IMPACTS

NYSERDA has been studying, documenting, and modeling the impacts of climate change in New York State for several years. As public awareness of the impacts of climate change has grown, so have NYSERDA's efforts to better understand and forecast both gradual changes and extreme events. In 2011, NYSERDA released Responding to Climate Change in New York State (ClimAID), which provides climate projections for the state, as well as detailed information on New York's adaptation strategies and vulnerability to climate change <http://www.nyserdera.ny.gov/-/media/Files/Publications/Research/Environmental/EMEP/climaid/ClimAID-Report.pdf>.

Working with the original ClimAID researchers and using the most up-to-date datasets, improved baseline scenarios, and the latest generation of climate models and emissions projections, NYSERDA has released Climate Change in New York State: Updating the 2011 ClimAID Climate Risk Information (the 2014 Update) <http://www.nyserdera.ny.gov/-/media/Files/Publications/Research/Environmental/ClimAID/2014-ClimAid-Report.pdf>.

Across the Empire State, temperatures are increasing; along the coastline, the sea level is rising. These changes are projected to accelerate because of increased concentrations of carbon dioxide and other greenhouse gases (GHGs) in the atmosphere. Throughout the Northeast, heavy rain events have become more frequent, and cold events more rare. These and other climate changes are projected to lead to increasing impacts across New York State's economy and natural systems. Not all of these changes will necessarily be gradual; when certain tipping points are crossed, impacts can increase dramatically. Impacts from climate change are already affecting every part of New York State—water, energy, agriculture, ecosystems, and other social and economic systems—and all its 20 million inhabitants. The design basis for community microgrids supported during Stage 2 of this NY Prize competition must include consideration of the resiliency of the community grid to projected impacts from climate change relevant to the grid location as predicted by the 2011 ClimAid report and 2014 ClimAid update.

II. Competition Structure

Community microgrid development projects, including those being funded through current or pending NYSERDA awards, funded through other means or otherwise in progress, have the option of submitting a proposal under Stage 2 and/or Stage 3 when issued. All applications are eligible for NY Prize Stage 2 monetary awards only to the extent that the proposer demonstrates that existing or pending funding awards are insufficient to complete a Detailed Engineering Design and Financial and Business Plan that complies with the NY Prize competition requirements stated herein.

⁴ CASE 14-M-0101 - Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Memorandum and Resolution on Demonstration Projects (Issued December 12, 2014).

COMPETITION STAGES

The NY Prize competition offered support for feasibility studies (Stage 1), audit-grade engineering design and business planning (Stage 2) for which this RFP applies, and will offer project build-out and post-operational monitoring support (Stage 3) that will be open for applications at a later date. Applications will be judged against program requirements at each stage of the competition for which funding is being requested. Cost sharing is required for Stages 2 and Stage 3 of the competition.

Stage 1: Feasibility Assessment (Closed)

Stage 1 of the competition under RFP 3044 has been completed with the NY Prize Selection Committee approving approximately \$8.1 million in funding for 83 feasibility studies across New York State.

Stage 2: Detailed Engineering Design and Financial and Business Plan Assessment (Open)

Communities or Proposers are encouraged to offer proposals for conducting a Detailed Engineering Design, Financial and Business Plan Assessment for a community microgrid, subject to the requirements of Section IV. Proposals satisfying the specified evaluation criteria will be awarded up to \$1,000,000 in NY Prize funding, with a 15% total project cost sharing. It is anticipated that many Stage 2 projects may need substantially less than the maximum award amount in order to complete Stage 2 deliverables.

Participation in Stage 1 is not a pre-requisite to participation in Stage 2. - Proposals from the entire field of competitors will be evaluated against prescribed Stage 2 evaluation criteria. Projects subject to current or pending NYSERDA awards for community grid design and engineering are eligible for additional monetary awards at this stage, but only to the extent that the proposer can demonstrate that any existing or pending awards are insufficient to complete an audit-grade design assessment in accordance with NY Prize competition requirements specified herein. A minimum cost share of 15% of total project costs is required of Stage 2 awardees. NYSERDA anticipates making up to 10 Stage 2 awards. **The awarded contract will take the form of Attachment C and include the tasks and requirements contained in Attachment C. Change to the scope and degree of analysis contained in Attachment C to add other tasks considered essential to the analysis and eliminate tasks considered inapplicable must be accompanied by justification.**

NOTE: NYSERDA reserves the right to negotiate scope of work, budget and funding levels on all awarded projects.

Stage 3: Microgrid Build-out and Operation (Pending/Not Open)

At this stage of the competition, all remaining competitors will be encouraged to submit their Detailed Engineering Design, Financial and Business Plan Assessment for consideration and all or some of these proposed plans will be awarded NY Prize funding for construction and post-commissioning monitoring and evaluation activities. NYSERDA anticipates supporting the construction of community grid projects at Stage 3. At this final stage of the competition, eligible microgrid project participants will be expected to secure private capital for the majority of project capital requirements and higher cost sharing will be considered favorably in determining projects to be supported at Stage 3.

SCHEDULE

The schedule for this competition reflects intentions to provide windows of opportunity for communities to enter the stage for which funding is being requested and be evaluated expeditiously. **Please note:** The dates below are subject to change. Notification of such change(s) will be posted on the NY Prize website at <http://www.nyserda.ny.gov/All-Programs/Programs/NY-Prize>

Milestone	Target Date(s)
Stage 1 Feasibility Assessment Studies	Completed
Stage 2 Detailed Engineering Design, Financial and Business Plan Assessment Entries	
- Outreach/Informational Session	May 2016
- Stage 2 proposals accepted	October 2016
- Review panel convenes/proposals evaluated	November 2016
- Contracts issued to Stage 2 awardees	December 2016
Competition Open to Stage 3 Microgrid Build-out and Operation Entries	January 2018
- Outreach/Informational Session	January 2018
- Stage 3 proposals accepted	April 2018
- Review panel convenes/proposals evaluated	May 2018
- Awardees selected	June 2018

COMMUNITY OUTREACH

NYSERDA will conduct a teleconference (outreach session) to review the competition objectives, process for participation, and contractual requirements. Questions will be taken and to the extent possible, responses will be provided during the Outreach Session. Communities who intend to participate in the Outreach Session must send an email indicating such to <http://www.nyserda.ny.gov/All-Programs/Programs/NY-Prize/Email-List>, by 12:00 noon on May 11th, 2016, with the subject line “NY Prize Outreach Session.” Respondents will be provided with information on how to participate. NYSERDA may conduct a second outreach session should the need arise. In such event, NYSERDA will forward information relevant to participating in such session when such decision is made to the authorized contact for project proposers.

III. PROGRAM REQUIREMENTS

To be eligible to participate in Stage 2 of the NY Prize Competition, the following pre-requisites must be included in any project proposal:

- **Stage 1 Completed Feasibility Assessment (includes Benefit Cost Analysis)(or equivalent).**
- **Provide evidence that project participants remain committed to conducting Stage 2 assessments.**
- **Provide evidence that project participants have complied with applicable State and local municipal procurement and contracting laws and guidelines for both Stage 2 and Stage 3. See Section IV(10) below for more detail.**

IV. STAGE 2 PROPOSAL REQUIREMENTS

Detailed Engineering Design, Financial and Business Plan Assessment (up to \$1,000,000 in funding with a minimum 15 % proposer total project cost share required)

NOTE: NYSDERDA reserves the right to negotiate scope of work, budget and funding levels on all awarded projects.

Please read this RFP in its entirety and be sure to include all required information. When preparing the various required sections of your proposal, review the Evaluation Criteria included under Section V.

ALL PROPOSALS MUST INCORPORATE THE FOLLOWING SECTIONS:

1. Proposal Checklist - Complete the specific Proposal Checklist (Attachment A of this RFP), and include it as the front cover of the original and each copy of the proposal. Please note the following:

Indicate whether you accept the standard terms and conditions as contained in the Attachment F - Sample Agreement. If you do not accept the standard terms and conditions, provide alternate terms with justification based on the risk and benefit to NYSDERDA and New York State. NYSDERDA reserves the right to reject proposals based on the nature and number of any exceptions taken to the standard terms and conditions of the Sample Agreement. Be sure the individual who is signing the Proposal Checklist is authorized to commit the proposer's organization to the proposal as submitted.

Failure to include a signed copy of the Proposal Checklist referenced in this solicitation may disqualify your proposal.

2. Procurement Lobbying Requirements - State Finance Law sections 139-j and 139-k -- Procurement lobbying requirements contained in State Finance Law sections 139-j and 139-k are available at: (<http://www.ogs.ny.gov/aboutogs/regulations/advisoryCouncil/StatutoryReferences.html>). In compliance with §139-j and §139-k of the State Finance Law, for proposals submitted in response to this solicitation that could result in agreements with an annual estimated value in excess of \$15,000, additional forms must be completed and filed with proposals: (1) a signed copy of the Proposal Checklist including required certifications under the State Finance Law and (2) a completed Disclosure of Prior Findings of Non-Responsibility form. Failure to include a signed copy of the Proposal Checklist referenced in this solicitation will disqualify your proposal.

3. Executive Summary (two page maximum) – State the title of the proposed project and briefly summarize the project, the team members, the community microgrid systems-related problem or opportunity, the proposed solution and its innovative characteristics, and potential energy, environmental, and economic benefits to New York State.

4. Proposer Information (two page maximum):

- Please provide the *legal name(s)*, title(s), mailing address(es), phone number(s), and e-mail address(es) of the proposer. Phone number(s) must be a number where the proposer can be reached during business hours. Please fill in the name(s), title(s), mailing address(es), phone number(s), and e-mail address(es) of the project contact only if different from the proposer. Phone number(s) must be a number where the contact can be reached during business hours.
- Please state the name and title of the representative who would be legally authorized to sign a contract, if awarded. Have this individual sign and date the Proposal checklist in the space

provided. The legally authorized representative of the Proposer also certifies by the submission of its proposal that:

1. the Proposer has reviewed this Notice and has investigated and informed itself with respect to all matters pertinent to this Notice and its proposal;
 2. the Proposer's proposal is submitted in compliance with all applicable federal, state, and local laws and regulations, including antitrust and anti-corruption laws; and
 3. the information provided in the proposer's proposal is true and accurate.
- Identify the proposing entity's legal authority for accepting funds from NYSERDA for project work and legal authority to conduct the project.
 - If applicable, provide evidence that the Proposer has financial resources to share the costs of conducting a Stage 2 Feasibility Assessment.

5. Proposer Qualifications (two to four pages); include resumes and other material in an appendix.

- Proposing Organization(s) - Include a brief description of organization(s) involved in the proposing team, including major subcontractors. Include date founded, history, size, product portfolio, and location. Also include an explanation of why the proposed organization or team is qualified to perform/implement the project from a technical and business perspective. Identify any other organizational qualifications relevant to the proposed work. If applicable, include examples of previous successful commercialization projects and the current status of those successes. (Note: Subcontracts of \$50,000 or more, unless named in the proposal, are subject to competitive bid procedures; see Attachment F - Sample Agreement).
- Organizational Chart - Prepare an organizational chart listing all team members, including the project manager and any subcontractors and other sponsors involved in the project, showing their roles and responsibilities.
- Qualifications of Key Individuals – Identify key individuals that will be involved in the project and its success. Provide one- to two-paragraph summaries of relevant technical and business expertise of these individuals. Submit resumes (in an appendix) of all key project team members. Include in the resumes, education and experience that are relevant to the proposed work.
- Previous Experience - Describe the proposing team's experience that is relevant to the proposed effort. List related projects that have been undertaken and successfully completed by the Proposer and/or subcontractors. List NYSERDA contracts awarded to the proposer, if any, in the past five years.
- Identify public interests/organizations/customers involved in the Project Team and describe their respective roles in and relationship to the project:
 - Local government(required);
 - Regional Economic Development Council;
 - Low- to- moderate income tenants associations;
 - Local/regional emergency management;
 - Retail /Institutional customers;
 - Non-profit organizations;

- Third party implementers/project developers;
- Vendors;
- Others.

6. Proposer Feasibility Assessment Information:

Provide a copy of a completed Stage 1 Feasibility Assessment (or equivalent) with benefit cost analysis as part of the Stage 2 proposal. You can add this as an appendix in back of proposal.

Also, to support the evaluation of project proposals, Proposers must complete and include with their proposal, the form-fillable **Stage 1 Feasibility Assessment Report Checklist contained in Attachment I**. Attachment I will be used by the IEP to quickly determine if and where in the proposal, the evaluation criteria listed in Section V below have been addressed by the Proposer.

7. Work Plan and Schedule (six to eight pages) The Work Plan describes work activities and deliverables associated with accomplishing the work described in Attachment C. **Refer to Attachment C for a Statement of Work and format associated with conducting a Stage 2 Detailed Engineering Design, Financial and Business Plan Assessment. Change to the Statement of Work contained in Attachment C to add other tasks considered essential to the analysis and/or eliminate tasks considered inapplicable must be accompanied by justification.** Such Work Plan and Schedule must include consideration of completing all activities associated with the interconnection of distributed generation within the microgrid and work activities associated with parallel and islanded operation of the microgrid pursuant to the New York State Standardized Interconnection Requirements or other Commission authorized interconnection rules/processes pertinent to microgrids in effect at the time.

The Work Plan shall describe each step or procedure required to accomplish the project objectives. Therefore, each action shall be identified, indicating who will perform it, how it will be performed and its intended result. Use active voice sentence structure to make clear who is responsible for specific actions; for example, use the following phrase to start the description of every task and subtask: “The Contractor shall . . . “

Schedule. Present a work schedule with a starting point and duration for each task and subtask contained in the Work Plan. Presentation of the schedule in a bar chart is preferred starting with “Month 1”, Month 2”, etc. The schedule should include timing of major milestones such as steps, showing progress toward project objectives and goals. Schedule for projects preferred to be completed within 12 months.

8. Milestone Budget (one page) – Include a project budget, associated with accomplishing the Work Plan described under the **Work Plan and Schedule**, showing total of project costs and proposer cost-share. Describe any other sources of funding available. The budget must include consideration of costs associated with the study of interconnecting microgrid components as set forth in the guidance in **Attachment H, Community Microgrid Joint Utilities Fee Schedule for NY Prize Stage 2 Analyses.**

Milestone Payments. NYSERDA will make payments to awarded proposals based on the achievement of project-related milestones. Provide a list of deliverables associated with each task with proposed milestone payments assigned to major deliverables. The magnitude of the milestone payments should be based on the amount of effort required to reach the deliverable.

Cost Sharing – The proposal should show non-NYSERDA funding of the total cost of the project. Cost sharing can be from the proposer, other team members, and other government or private sources. Contributions of direct labor (for which the laborer is paid as an employee) and purchased materials

may be considered "cash" contributions. Unpaid labor, indirect labor, or other general overhead may be considered "in-kind" contributions. NYSERDA will not pay for efforts that have already been undertaken or for equipment that may have already been purchased that is associated with the design and installation of the microgrid. The proposer or proposing team cannot claim as cost-share any expenses that have already been incurred. Complete the following table for **ALL PROPOSALS** (expand table as needed):

FUNDING SOURCE TABLE			
Funding Source	Project Total \$		
	Cash	In-Kind	Total (cash + in-kind)
NYSERDA	\$		\$
Proposer	\$	\$	\$
Co-Funder (identify)	\$	\$	\$
Co-Funder (identify)	\$	\$	\$
Total (\$)	\$	\$	\$

9. Appendices – Include any resumes, company qualifications, or ancillary information that is deemed necessary to support your proposal. If appropriate, also include:

- **Letters of Support or Commitment** – If you are relying on any other organization to do some of the work, provide services or equipment, otherwise support the work, act as a host demonstration site, or share in the non-NYSERDA cost, include a letter from that organization describing their planned participation. Also include letters of support or commitment from businesses or other organizations critical to the future commercialization, demonstration, or implementation of the project. Absence of letters of interest or commitment will be interpreted as the proposer not having support from the identified parties.
- Provide evidence (signed letters of commitments) from the Proposer and Project team members signifying their participation in all aspects of project implementation team activities and their commitment to providing resources necessary to successfully carry out the responsibilities for conducting a Stage 2 Detailed Engineering Design, Financial and Business Plan Assessment in accordance with the requirements set forth in Attachment C.
- Provide documentation of ownership, site control and/or permission of the property owner for proposed sites.
- Provide a copy of a completed Stage 1 Feasibility Assessment with benefit cost analysis as part of the Stage 2 proposal.

10. Legal Viability. NYSERDA wants to ensure that each applicant at Stage 2 has considered all applicable procurement laws that may apply through Stage 3 and beyond (e.g., contracting for services from or in connection with an operating microgrid). Therefore, as part of the Stage 2 application, NYSERDA is requiring that each participating municipality consider every step in the microgrid design, development and operation process that may require compliance with State or municipal procurement

and contracting rules. For any Stage 2 project that will include a contract between a municipality and a private party at any point in the process that will require the expenditure of municipal funds (whether for design or development, or for services to be provided after completion of the project (e.g., a power purchase agreement)), the application must include a Statement of Compliance affirming that the relationship between the municipality and the contracting party or parties was created lawfully under relevant State and municipal procurement and contracting laws and guidelines.⁵

In order to satisfy this requirement and be eligible for Stage 2 funding, applicant must submit a Statement of Compliance⁶:

- (1) indicating that the services (e.g., design, construction, supply of power) of the private party have been procured lawfully under State laws, and applicable municipal procurement and contracting laws and guidelines, indicating whether competitive selection was required;
- (2) setting forth the provision(s) of law under which the procurement was effected (i.e., General Municipal Law § 103 or § 104(b), Energy Law Article 9, or other) or under what legal authority no competitive procurement process is required; and
- (3) describing the path that the municipality has established for procuring the ultimate microgrid services, should the project advance through Stage 3.⁷

In performing this procurement analysis, parties may wish to take the following non-exclusive list of considerations into account:

- If municipalities intend to procure the services of a design firm at Stage 2 via a competitive process and intend to undertake another competitive process for a build partner at Stage 3, municipalities must consider and should consult with the Stage 2 design firm to identify what agreements and consents they will need, including licenses to use design documents and to disclose potentially ‘confidential’ or otherwise proprietary information, in order to provide prospective bidders with sufficient information for the Stage 3 bidding process.
- If there is an agreement for the same or related entities to perform both design services (requiring a professional license) and construction services (other than ordinary contract administration services incidental to design services), the municipality must consider whether such services can be performed lawfully by the same or related entities.
- For any services procured by a municipality at any stage where the procurement is based upon “best value,” the municipality should ensure that it has sufficient information to enable the municipality to make a “best value” determination.

PROPOSAL SUBMISSION:

⁵ This Statement of Compliance requirement does not apply to applicants seeking Stage 2 funding for projects that will not serve any municipal loads – i.e., those projects providing microgrid services to only private entities.

⁶ NYSERDA expects the Statement of Compliance to be made by officials or counsel of the municipality.

⁷ NYSERDA’s goal in this section is to foster communication between municipalities and private partners at this point in the competition such that impediments to procurement of ultimate microgrid services, if any, can be identified and addressed before they arise. NYSERDA does not provide legal advice on municipal procurement matters to local governments or private parties, but offers these considerations for discussion to ensure that parties have identified a clear path forward should their project advance through Stage 3.

Electronic submission is preferable. NYSERDA will also accept proposals by mail or hand-delivery. If submitting electronically, proposers must submit the proposal in either PDF or MS Word format with a completed and signed Proposal Checklist and Disclosure of Prior Findings of Non-Responsibility, in PDF format. Proposal PDFs should be searchable and should be created by direct conversion from MS Word, or other conversion utility, rather than scanning. For ease of identification, all electronic files must be named using the proposer's entity name in the title of the document. Proposals may be submitted electronically by following the link for electronic submissions found on this RFP's webpage, which is located in the "Current Opportunities" section of NYSERDA's website (<http://www.nysERDA.ny.gov/Funding-Opportunities/Current-Funding-Opportunities.aspx>). Instructions for submitting electronically are located in that section as Attachment G to this RFP

If mailing or hand-delivering, proposers must submit (2) paper copies of their proposal with a completed and signed Proposal Checklist, along with a CD or DVD containing either a PDF or MS Word digital copy of the proposal, following the above guidelines. Mailed or hand-delivered proposals must be clearly labeled and submitted to: **Roseanne Viscusi, RFP 3044, NYS Energy Research and Development Authority, 17 Columbia Circle, Albany, NY**

Proposals should not be excessively long or submitted in an elaborate format that includes expensive binders or graphics. Double-sided prints with a staple in the upper left corner is the preferred format. Unnecessary appendices beyond those sufficient to present a complete, comprehensive, and effective response will not influence the evaluation of the proposal. Each page of the proposal should state the name of the proposer, the RFP number, and the page number. **The proposal must be in the following format and sequence listed below** (suggested page limits for each section are shown in parentheses following the section title).

V. STAGE 2 PROPOSAL EVALUATION

Proposals that meet Program and Proposal Requirements will be reviewed by an Investment Evaluation Panel (IEP) using the Evaluation Criteria identified below. In addition to considering how project proposals satisfy the Evaluation Criteria listed below, NYSERDA reserves the right to make funding decisions on the basis of other programmatic reasons such as, but not limited to, NYSERDA's history/experience with particular contractors, geographic equity/distribution, customer diversity, scale of anticipated impacts, and prospects for learning opportunities.

After the proposals are reviewed, NYSERDA will issue a letter to each proposer indicating the proposal evaluation results. Proposers receiving favorable evaluations will be invited to enter into contract negotiations with NYSERDA to perform a Stage 2 Detailed Engineering Design, Financial and Business Plan Assessment consistent with the requirements specified in Attachment C. The proposer may also be asked to address specific questions or recommendations of the IEP before contract award.

Evaluation Criteria

Microgrid Capabilities and Technical Design

Microgrid Capabilities

- Does the microgrid serve at least one but preferably more, physically separated critical facilities located on one or more properties?
- Does the microgrid serve both critical and non-critical loads at those facilities?
- Does the microgrid design provide on-site power in both grid-connected and islanded mode?

- Does the microgrid distributed energy resources provide 24 hrs per day and 7 days per week utilization of the power?
- What percentage of the total power consumption in the microgrid will be supplied by resources in the microgrid? Local utility?
- Are microgrid resources designed to follow the electrical load while maintaining the voltage and frequency when running parallel connected to grid?
- Does the microgrid design provide a means for two-way communication and control between the distributed energy resources owner/operator and the local distribution utility through automated, seamless integration? Or, is the transition initiated by the microgrid operator?
- Does the microgrid design include secure control/communication systems from cyber-intrusions/disruptions and protect the privacy of sensitive data?
- Does the microgrid design include an uninterruptible fuel supply for DER for no less than one week?
- If generation in the microgrid is dependent to the supply of natural gas or other fuels, what are the arrangements for continuous access to these supplies? What agreements will be made for fuel supply under catastrophic events and for what duration would these supplies support microgrid operation?
- Does the microgrid design describe how many days of continuous operation can be achieved with current fuel storage capability? If additional fuel storage is required, provide a description of needs required for this or otherwise describe how fuel security is to be managed?
- How does the microgrid design provide resiliency to likely adverse weather and environment conditions that are the most likely to impact facilities (generation, delivery, and customer connections) at the specific location (community)?
- Does the microgrid design provide black-start capability?
- Does the microgrid design consider energy efficiency options that minimize the need for additional generation assets?
- Does the microgrid design address installation, operations, maintenance and communications for the electric system that serves all the generation and loads within the electrical boundary of the microgrid from commissioning of equipment and systems through system and operational testing of the microgrid controller and the distribution utility?
- To what extent does the microgrid design involve clean power supply sources that minimize environmental impacts, including local renewable resources, as measured by total percentage of community load covered by carbon-free energy generation?
- To what extent does the microgrid design demonstrate tangible community benefits, including but not limited to, (e.g. jobs created, number of customers served, number of buildings affected, scale of energy efficiency retrofits, support for emergency management personnel during catastrophic events most likely to occur in the area)?
- Does the microgrid design incorporate capabilities that improve the resiliency and reliability of the distribution system to which it is connected? Provide confirmation from the utility improvement in resiliency and reliability are expected.
- Does the microgrid provide capabilities to expedite power system restoration in adjacent areas (for customers other than those in the microgrid)?
- Are their proposed operational plans between the microgrid operator/owner and the distribution utility?

Technical Design

- Does the microgrid design provide an equipment layout diagram and a one-line diagram depicting new, updated or proposed equipment, including location of the distributed energy resources and utility interconnection point (Point of Common Coupling (PCC))?

- Does the microgrid design take into account interconnection issues at the PCC? Upgrades to the substation? Feeder?
- Has the local utility evaluated the interconnection impact on the feeder?
- Does the microgrid design meet with the local utilities requirements for communications?
- Does the microgrid design identify the locations of new and existing microgrid and building controls on the simplified equipment layout diagram?
- Does the microgrid design identify the electrical and thermal infrastructure on the simplified equipment layout and one-line diagrams and differentiate between new, updated and existing infrastructure?
- Does the microgrid design identify the new and existing information technologies and telecommunications infrastructure on the equipment layout diagram?
- Does the microgrid design provide approximate location and space available for microgrid equipment/resources?
- Does the microgrid design fully describe the electrical infrastructure (feeders, lines, relays, breakers, switches, current and potential transformers (CTs and PTs) and thermal infrastructure (steam, hot water, cold water pipes) that are a part of the microgrid?
- Does the microgrid design describe how the proposed microgrid will operate under normal and emergency conditions?
- Does the design include operating agreements, decisions rules and communication procedures between the microgrid operator and the utility necessary to operate the microgrid?
- Does the microgrid design describe the electrical and thermal loads served by the microgrid when operating in islanded and grid parallel modes?
- Does the microgrid design provide hourly load profile of the loads included in the microgrid and identify the source of the data? If hourly loads are not available, best alternative information shall be provided?
- Does the microgrid design provide a description of the sizing of the loads to be served by the microgrid including a description of any redundancy opportunities (ex: n-1) to account for equipment downtime?
- Does the microgrid design provide the distributed energy resources and thermal generation resources to continuously meet electrical and thermal demand in the microgrid?
- Does the microgrid design take into account providing the resiliency of the electrical and thermal infrastructure to the forces of nature that are typical to and pose the highest risk to the location/facilities? Describe how the microgrid design provides resiliency to disruption caused by such phenomenon and for what duration of time? Discuss the impact of severe weather on the electrical and thermal infrastructure?
- Does the microgrid design provide what additional investments in utility infrastructure may be required to allow the proposed microgrid to separate and isolate from the utility grid?
- Does the microgrid design provide the basic electrical system protection mechanism within the microgrid boundaries?
- Does the microgrid design provide the microgrid control architecture and how it interacts with distributed energy resources controls and building energy management systems, if applicable?
- Does the microgrid design provide for a controller to manage the microgrid functions?
- Does the microgrid design provide a brief written description of the services that could be provided by the microgrid controls including, but not limited to the following:
 - Automatically connecting to and disconnecting from the grid
 - Load shedding schemes
 - Black start and load addition
 - Performing economic dispatch and load following
 - Demand response
 - Storage optimization

- Maintaining frequency and voltage
 - Photovoltaic information and controllability; forecasting
 - Coordination of protection settings
 - Selling energy and ancillary services
 - Data logging features
- Does the microgrid design provide the information technologies and telecommunications infrastructure and protocols required for the microgrid?
 - Does the microgrid design provide the communications infrastructure required to support microgrid operations with the utility? Can the utility monitor the microgrid activity at the PCC? Does the communications allow for disconnection by the utility during emergencies or risk to the stability of the interconnected distribution system?
 - How vulnerable are the information technologies and telecommunications infrastructure to catastrophic events that are most likely to impact the microgrid?

Commercial, Financial and Legal Viability

Commercial Viability

- To what extent does the microgrid business plan leverage private capital to the maximum extent possible as measured by total private investment in the project and the ratio of public to private dollars invested in the project?
- Does the microgrid business plan identify the number of individuals affected by/associated with critical loads should these loads go unserved?
- Does the microgrid business plan identify any direct/paid services generated by microgrid operation?
- Does the microgrid business plan identify each of the microgrid customers expected to purchase services from the microgrid?
- Does the microgrid business plan identify other microgrid stakeholders; what customers will be directly or indirectly affected (positively or negatively) by the microgrid?
- Do the microgrid design and business plan take into account the relationship between the microgrid owner and the purchaser of the power?
- Does the microgrid business plan indicate which party/customers will purchase electricity during normal operation? During islanded operation?
- Does the microgrid business plan identify necessary contractual agreements with critical and non-critical load purchasers?
- How does the microgrid business plan plan to solicit and register customers (i.e. purchasers of electricity) to be part of their project?
- Does the microgrid business plan provide any other energy commodities (such as steam, hot water, chilled water) that the microgrid will provide to customers?
- How does the microgrid business plan provide value to its participants, to the community at large, the local electric distribution utility and the state of New York?
- What benefits and costs will the community realize by the construction and operation of this microgrid?
- How would installing this microgrid benefit the utility? Its customers? What costs would the utility incur as a result of this microgrid? Are these covered in the interconnection agreement with the utility?
- What is the proposed business model for this microgrid?

- Does the business plan include an analysis of strengths, weaknesses, opportunities and threats (SWOT)?
- What makes this project replicable? Scalable?
- What is the purpose and need for this project?
- Why is reliability/resiliency particularly important for this location? Will it meet a disaster recovery or unmet infrastructure need?
- Does the microgrid system provide an overall value proposition to each of its identified customers and stakeholders?
- Does the microgrid system provide added revenue streams, savings, and/or costs for the purchaser of its energy?
- Does this microgrid system promote new technologies?
- Does the microgrid system promote any public/private partnerships?
- Are any project financiers or investors identified in the microgrid team?
- Are any legal and/or regulatory advisors part of the microgrid team?
- Are the benefits and challenges of employing any new microgrid technologies listed?
- Has the microgrid design addressed the permitting and/or special permissions required to construct this project? Are they unique or would they be required of any microgrid?
- What is the proposed approach for developing, constructing and operating the microgrid system?
- How are benefits of the microgrid passed to the community?
- Is a project operational scheme (including, but not limited to, technical, financial, transactional and decision making responsibilities) developed that will be used to ensure this system operates as expected?
- How does the project owner plan to charge the purchasers of electricity services? How will the purchasers' use be metered?
- Are there business/commercialization and replication plans appropriate for the type of project?
- How significant are the barriers to market entry for microgrid participants?
- Does the proposer demonstrate a clear understanding of the steps required to overcome these barriers?

Financial Viability

- Does the microgrid design address the categories and relative magnitudes of the revenue streams and/or savings that will flow to the microgrid owner? Will they be fixed or variable?
- Does the microgrid system provide other incentives? How does the timing of those incentives affect the development and deployment of this project?
- Does the microgrid design identify categories and relative magnitudes of the capital and operating costs that will be incurred by the microgrid owner? Will they be fixed or variable?
- Does the business model for this project ensure that it will be profitable?
- Does the microgrid design include a description of a potential financing structure during development, construction and operation of the microgrid?
- Is the financial viability of the microgrid dependent on investment credits and subsidies?
- Is the operational viability of the microgrid dependent on special tariff arrangements?
- Does the financial viability of the microgrid depend on subsidies from the local utility or government or operating arrangements with customers served by the microgrid?

Legal Viability

- Does the microgrid design address and comply with the legal terms/conditions/requirements necessary to develop and operate the microgrid?

- If the project will include a contract between a municipality and a private party, has the project team considered all applicable State and municipal procurement and contracting laws and guidelines, and taken appropriate steps to ensure that such laws and guidelines have been or will be complied with?
- Does the microgrid design describe the potential project ownership structure and project team members that will have a stake in the ownership?
- Has the project owner been identified?
- Does the project owner (or owners) own the site(s) where microgrid equipment/systems are to be installed? If not, what is the plan to secure access to that/those site(s)?
- What is the approach to protecting the privacy rights of the microgrid customers, e.g. with respect to meter data?
- Does the microgrid design describe any known, anticipated, or potential regulatory hurdles, as well as their implications that will need to be evaluated and resolved for this project to proceed?

Benefit and Cost Analysis

- Does the cost/benefit analysis provide information from the community, utility and developer's perspective;
- Does the cost/benefit analysis indicate the facility's average annual electricity demand and peak electricity demand?
- Does the cost/benefit analysis indicate the percentage of the facility's average demand the microgrid would be designed to support during a major power outage?
- Does the cost/benefit analysis indicate the number of hours per day on average; the facility would require electricity from the microgrid?
- Does the cost/benefit analysis indicate the impact of the expected provision of peak load support on generating capacity requirements?
- Does the cost/benefit analysis indicate capacity of demand response that would be available by each facility the microgrid would serve?
- Does the cost/benefit analysis indicate impact (deferral or avoidance) on transmission or distribution capacity requirements?
- Does the cost/benefit analysis indicate ancillary services to the local utility (e.g., frequency or real power support, voltage or reactive power support, black start or system restoration support)?
- Does the cost/benefit analysis estimate annual energy savings from development of a new distributed energy resource system relative to the current heating system and current type of fuel being used by such system?
- Does the cost/benefit analysis provide environmental regulations mandating the purchase of emissions allowances for the microgrid (e.g., due to system size thresholds)?
- Does the cost/benefit analysis provide emission rates of the microgrid for CO₂, SO₂, NO_x, and PM?
- Does the cost/benefit analysis provide the fully installed costs and engineering lifespan of all capital equipment?
- Does the cost/benefit analysis provide for
 - initial planning and design costs?
 - fixed operations and maintenance costs?
 - variable operations and maintenance costs?
 - fuel/energy source of each existing backup generator?
 - the average daily electricity production for each generator in the event of a major power outage, and the associated amount of fuel required to generate that electricity?

- Does the cost/benefit analysis include any one-time costs (e.g., labor or contract service costs) associated with connecting and starting each backup generator?
- Does the cost/benefit analysis include any daily costs (e.g., maintenance costs) associated with operating each backup generator?
- Does the cost/benefit analysis provide an estimate of the costs of any emergency measures that would be necessary for each facility to maintain operations, preserve property, and/or protect the health and safety of workers, residents, or the general public?
- Does the cost/benefit analysis estimate the population served by each microgrid?
- Does the cost/benefit analysis provide how a power outage would impact each facility's ability to provide services?

Other

- To what extent does the proposer offer more than the minimum cost share?
- Are the qualifications and roles of the proposing team and subcontractors clearly defined and demonstrate the capability to successfully complete a Stage 2 Detailed Engineering Design, Financial and Business Plan Assessment?
- What are the potential utility distribution system benefits attributable to the projects planned operation relative to other competing projects in the utilities' service territory?
- Does the proposer provide evidence that a broad coalition of public interests have teamed up in support of project development (e.g., Regional Economic Development Council(s), low- to-moderate income tenants associations, local/regional emergency management, etc.)?
- Have letters of commitment for project support that is necessary to carrying out the work plan been secured from project participants?
- Does the microgrid project demonstrate advances in practices for project planning and development? Are there any unique or creative technology vendor commitments/ participation, ownership options, operating agreements with the local utility, plans to implement energy efficiency, leverage existing incentive programs, or propose new and innovative ones?
- Does the microgrid design increase the amount of actionable information available to customers—providing a platform for customers to be able to interact with the grid in ways that maximize its value?
- Does it serve a low to moderate income area or does it serve an urgent need for the community?
- Is the area being served in a presidentially declared county from a 2011-2013 disaster?
- Is it clear how the microgrid will assist in long term recovery of the area?
- To what extent does the microgrid design satisfy or support the Reforming the Energy Vision (REV) objectives?

Proposals that are judged to have best satisfied these evaluation criteria may be eligible for funding up to \$1,000,000, with 15% total project cost share, subject to entering a milestone-based contract to conduct a Stage 2 **Detailed Engineering Design, Financial and Business Plan Assessment** substantially in the form of Attachment C.

VI. GENERAL CONDITIONS

CONTRACTING

NYSERDA expects to issue multiple awards, and will determine and negotiate awards based on the information included in the proposals. Awardees will have 60 days to enter an agreement to conduct a Stage 2 **Detailed Engineering Design, Financial and Business Plan Assessment**, substantially in the form of Attachment C.

NOTE: NYSERDA reserves the right to negotiate scope of work, budget and funding levels on all awarded projects.

PROPRIETARY INFORMATION

Proposers will likely be required to abide by cybersecurity and non-disclosure terms established by the utility.

Careful consideration should be given before confidential information is submitted to NYSERDA as part of your proposal. Review should include whether it is critical for evaluating a proposal, and whether general, non-confidential information may be adequate for review purposes. The NYS Freedom of Information Law, Public Officers law, Article 6, provides for public access to information NYSERDA possesses. Public Officers Law, Section 87(2)(d) provides for exceptions to disclosure for records or portions thereof that "are trade secrets or are submitted to an agency by a commercial enterprise or derived from information obtained from a commercial enterprise and which if disclosed would cause substantial injury to the competitive position of the subject enterprise." Information submitted to NYSERDA that the proposer wishes to have treated as proprietary, and confidential trade secret information, should be identified and labeled "Confidential" or "Proprietary" on each page at the time of disclosure. This information should include a written request to exempt it from disclosure, including a written statement of the reasons why the information should be exempted. See Public Officers Law, Section 89(5) and the procedures set forth in 21 NYCRR Part 501 <http://www.nyserda.ny.gov/About/-/media/Files/About/Contact/NYSERDA-Regulations.ashx>. However, NYSERDA cannot guarantee the confidentiality of any information submitted.

OMNIBUS PROCUREMENT ACT OF 1992

It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority- and women-owned business enterprises, as bidders, subcontractors, and suppliers on its procurement Agreements.

Information on the availability of New York subcontractors and suppliers is available from:

Empire State Development
Division for Small Business
30 South Pearl Street
Albany, NY 12245

A directory of certified minority- and women-owned business enterprises is available from:

Empire State Development
Minority and Women's Business Development Division
30 South Pearl Street
Albany, NY 12245

State Finance Law sections 139-j and 139-k - NYSEDA is required to comply with State Finance Law sections 139-j and 139-k. These provisions contain procurement lobbying requirements which can be found at <http://www.ogs.ny.gov/aboutogs/regulations/advisoryCouncil/StatutoryReferences.html> The attached Proposal Checklist calls for a signature certifying that the proposer will comply with State Finance Law sections 139-j and 139-k and the Disclosure of Prior Findings of Non-responsibility form includes a disclosure statement regarding whether the proposer has been found non-responsible under section 139-j of the State Finance Law within the previous four years.

Tax Law Section 5-a - NYSEDA is required to comply with the provisions of Tax Law Section 5-a, which requires a prospective contractor, prior to entering an agreement with NYSEDA having a value in excess of \$100,000, to certify to the Department of Taxation and Finance (the "Department") whether the contractor, its affiliates, its subcontractors and the affiliates of its subcontractors have registered with the Department to collect New York State and local sales and compensating use taxes. The Department has created a form to allow a prospective contractor to readily make such certification. See, ST-220-TD (available at http://www.tax.ny.gov/pdf/current_forms/st/st220td_fill_in.pdf). Prior to contracting with NYSEDA, the prospective contractor must also certify to NYSEDA whether it has filed such certification with the Department. The Department has created a second form that must be completed by a prospective contractor prior to contacting and filed with NYSEDA. See, ST-220-CA (available at http://www.tax.ny.gov/pdf/current_forms/st/st220ca_fill_in.pdf). The Department has developed guidance for contractors which is available at <http://www.tax.ny.gov/pdf/publications/sales/pub223.pdf>

Contract Award - NYSEDA anticipates making multiple awards under this solicitation. It may award a contract based on initial applications without discussion, or following limited discussion or negotiations pertaining to the Statement of Work. Each offer should be submitted using the most favorable cost and technical terms. NYSEDA may request additional data or material to support applications. NYSEDA will use the Sample Agreement to contract successful proposals. NYSEDA, at its sole discretion, will decide whether to contract successful projects using time and material or milestone payment terms. NYSEDA reserves the right to limit any negotiations to exceptions to standard terms and conditions in the Sample Agreement to those specifically identified in the submitted proposal. NYSEDA expects to notify proposers as soon as practical whether their proposal has been selected to receive an award. **NYSEDA may decline to contract with awardees who are delinquent with respect to any obligation under any previous or active NYSEDA agreement.**

Metrics Reporting - The Contractor will be expected to submit, to NYSEDA's Project Manager, a prepared analysis and summary of metrics addressing no less than the anticipated energy, environmental and economic benefits that the completed **Detailed Engineering Design, Financial and Business Plan Assessment** anticipates will be realized by the project. All estimates shall reference credible sources and estimating procedures, and all assumptions shall be documented. The content of such report will be as specified by NYSEDA and incorporated into any agreement between NYSEDA and the Contractor that results from an award under the RFP. NYSEDA reserves the right to retain another contractor to assist in collecting project metrics.

NYSEDA may decline to contract with awardees who are delinquent with respect to metrics reporting for any previous or active NYSEDA agreement.

LIMITATION

This solicitation does not commit NYSEDA to award a contract, pay any costs incurred in preparing a proposal, or to procure or contract for services or supplies. NYSEDA reserves the right to accept or

reject any or all proposals received, to negotiate with all qualified sources, or to cancel in part or in its entirety the solicitation when it is in NYSERDA's best interest.

DISCLOSURE REQUIREMENT

The proposer shall disclose any indictment for any alleged felony, or any conviction for a felony within the past five years, under the laws of the United States or any state or territory of the United States, and shall describe circumstances for each. When a proposer is an association, partnership, corporation, or other organization, this disclosure requirement includes the organization and its officers, partners, and directors or members of any similarly governing body. If an indictment or conviction should come to the attention of NYSERDA after the award of a contract, NYSERDA may exercise its stop-work right pending further investigation, or terminate the agreement; the contractor may be subject to penalties for violation of any law which may apply in the particular circumstances. Proposers must also disclose if they have ever been debarred or suspended by any agency of the U.S. Government or the New York State Department of Labor.

VII. Attachments

Attachment A - Proposal Checklist

Attachment B - Disclosure of Prior Findings of Non-responsibility

Attachment C - Statement of Work

Attachment D – Proforma Spreadsheet

Attachment E - Sample Metrics Forms

Attachment F - Sample Agreement with Exhibits

Attachment G – Instructions for Electronic Proposal Submission

Attachment H – Community Microgrid Joint Utilities Fee Schedule for NY Prize Stage 2 Analyses

Attachment I – Stage 1 Feasibility Assessment Report Checklist



ATTACHMENT A

RFP No. 3044 Stage 2 **PROPOSAL CHECKLIST (MANDATORY)**

Proposal Title		Due Date	
Primary Contact (Prime Contractor)		Title	
Company		Phone	Fax
		e-mail	
<input type="checkbox"/> By checking this box I certify that the TIN number submitted is not a social security number. If your tax id number is your social security number please leave information blank and contact NYSERDA.		Federal Tax Identification Number:	
Address	City	State or Province	Zip
Secondary Contact		Title	
Company		Phone	Fax
		e-mail	
Address	City	State or Province	Zip
THE PRIME CONTRACTOR MUST SIGN THIS FORM BELOW and ANSWER THE FOLLOWING QUESTIONS:			
Do you accept all Terms & Conditions in the Sample Agreement? (If no, explain on separate page) (NYSERDA may or may not accept any of the listed exceptions; NYSERDA reserves the right to limit any negotiations to exceptions specifically identified herein.)			
			___ Yes ___ No
Do you wish to have any information submitted in your proposal package treated as proprietary or confidential trade secret information? If yes, you must identify and label on each applicable page "confidential" or "proprietary" (For additional information regarding this, please refer to the section entitled "Proprietary Information" in the solicitation document).			
			___ Yes ___ No
Have you been indicted/convicted for a felony within the past 5 years? (if yes, explain on separate pg.)			
			___ Yes ___ No
Are you a Minority or Women-Owned Business Enterprise?			
			___ Yes ___ No
Does your proposal contain Minority or Women-Owned Business enterprises as subcontractor?			
			___ Yes ___ No
Are you a certified Service-Disabled Veteran-Owned Business Enterprise?			
			___ Yes ___ No
Does your proposal contain certified Service-Disabled Veteran-Owned Business Enterprises as Subcontractors?			
			___ Yes ___ No
Are you submitting the required number of copies? (See proposal instructions.)			
			___ Yes ___ No
Is other public funding pending/awarded on this and/or very similar topic (prior and/or competing proposals)? (if yes, explain on separate page)			
			___ Yes ___ No
ON WHAT PAGE IN YOUR PROPOSAL CAN THESE ITEMS BE FOUND?			
Provide list of items consistent with Proposal Requirements section of solicitation:		Indictment/Conviction of Felony _____ (if applicable) NYSERDA Contracts Awarded _____ (if applicable) Prior and/or Competing Proposals _____ (if applicable) Exceptions to Terms & Conditions _____ (if applicable) Completed and Signed Contract Pricing Proposal Form(s) _____ Disclosure of Prior Findings of Non-responsibility Form _____	
AUTHORIZED SIGNATURE & CERTIFICATION			
I certify that the above information, and all information submitted in connection with State Finance Law §139-j and §139-k, is complete, true, and accurate, that I have read and reviewed the Standard Terms and Conditions set forth in the attached Sample Agreement and that I accept all terms unless otherwise noted herein, and that the proposal requirements noted have been completed and are enclosed. I affirm that I understand and will comply with NYSERDA's procedures under §139-j(3) and §139-j(6)(b) of the State Finance Law. I understand that this proposal may be disqualified if the solicitation requirements are not met. I, the undersigned, am authorized to commit my organization to this proposal.			
Signature		Name	
Title		Organization	
Phone			

NOTE: This completed form **MUST** be signed and attached to the front of all copies of your proposal.

Attachment B

**Disclosure of Prior Findings of Non-responsibility Form
(Mandatory)**

Name of Individual or Entity seeking to enter the procurement contract:		
Address:		
Date:		
Solicitation or Agreement Number:		
Name and Title of Person Submitting this Form:		
Has any Governmental Entity made a finding of non-responsibility regarding the Individual or Entity seeking to enter the Procurement Contract in the last four years?		Yes
		No
Was the basis for the finding of non-responsibility due to a violation of §139-j of the State Finance Law?		Yes
		No
Was the basis for the finding of non-responsibility due to the intentional provision of false or incomplete information to a Governmental Entity?		Yes
		No
If you answered yes to any of the above questions, please provide details regarding the finding of non-responsibility:		
Government Agency or Authority:		
Date of Finding of Non-responsibility:		



Has any Governmental Entity or other governmental agency terminated or withheld a Procurement Contract with the above-named Individual or Entity due to the intentional provision of false or incomplete information?		Yes
		No

If you answered yes, please provide details:

Government Agency or Authority:

Date of Termination or Withholding of Contract:

Offerer certifies that all information provided to NYSERDA with respect to State Finance Law §139-k is complete, true, and accurate.

Signature: _____

Date: _____

Print Name: _____

Title: _____

Attachment C

**STATEMENT OF WORK
Detailed Engineering Design, Commercialization, Financial and Business Plan Assessment**

Contract Title:
Contractor:
Project Number:

DEFINITIONS

1. The Project is defined as:

In this detailed engineering design and commercialization, financial and business plan assessment, [enter project sponsor name], along with its partners,[enter municipality name, local utility name, other participant names] shall provide a detailed assessment of microgrid options for [enter community name]. [Describe participating customers, critical public service facilities involved, populations impacted and other key attributes that reasonable characterize the project].

2. The Project Objectives are defined as:

The goal of the proposed project is to perform an audit-grade detailed engineering design and commercialization, financial and business plan for building and operating a community microgrid for the purpose of maintaining electric services for the participating customers/facilities and the community at large in [enter community name] at times when weather events or other emergencies severely disrupt the capacity of the local electrical distribution and transmission systems to serve essential customer needs. The proposed project will consist of three phases. The first phase will focus on the microgrid detailed technical design. This will include the distributed energy resources sizing, quantity, and location; identification of all required environmental and regulatory permits; identification of any real property or right-of-way acquisition; identification of the energy efficiency and demand response options; identification of electrical configuration; performance of steady state and transient voltage studies; impact of any renewable generation; system protection strategies, failure mode analysis, optimization analyses; and specification of microgrid communication and controls. This will also include the specification and cost design, including, but not limited to the preparation of cost estimates, system drawings and specifications for the microgrid's distributed energy resources, electric distribution, load management and microgrid communication and controls systems. The second phase will focus on the commercialization, financial, legal and business plans including project development planning associated with the construction, operations and management of the microgrid system. The final phase of the assessment will include a cost and benefit analysis for the final microgrid design.

3. Contractor is defined as:

4. Subcontractors are defined as:

Additions and/or Substitutes are allowed subject to written approval of Project Manager and formal modification to this Agreement.

Task 0 – Project Management and Progress Reporting

0.0 Responsibility

The Contractor shall provide all project management activities necessary for the performance of this Statement of Work, which shall include the following activities:

- a. Coordinate the work of the contractor's employees and those of sub-contractors and equipment vendors that are undertaking tasks described in this Statement of Work;
- b. Ensure control over the project budget and adherence to the project schedule; and
- c. Provide all project reporting to NYSERDA as specified in this Statement of Work.

0.1 Progress Reporting

The Contractor shall submit bi-monthly progress reports to NYSERDA's Project Manager no later than the 15th of the month following each reporting period. The Progress Reports shall include information on the following subjects, in the order indicated, with appropriate explanation and discussion:

- a. Name of contractor;
- b. Title of the project;
- c. Agreement number;
- d. Reporting period;
- e. Project progress including a summary of progress, findings, data, analysis, results and field-tests results from all tasks carried out in the covered period;
- f. Planned work for the next reporting period;
- g. Identification of problems;
- h. Planned or proposed solutions to identify problems described in (f) above;
- i. Ability to meet schedule, reasons for and solutions to, slippage in schedule;
- j. Schedule-percentage completed and projected percentage of completion of performance by calendar quarter-may be presented as a bar chart or milestone chart; and
- k. Budget- analysis of actual costs incurred in relation to the budget and analysis of projected costs anticipated in relation to budget.

Deliverable(s): Written Periodic Progress Reports.

0.2 Project Kick-off Meeting

The Contractor shall hold a project kick-off meeting **within thirty days** from the contract execution date. The Contractor shall coordinate with NYSERDA's Project Manager to arrange the meeting at a mutually convenient time and place. The Contractor is encouraged to invite representatives of sub-contractors and equipment vendors, if applicable. The purpose of this meeting shall be to finalize the strategies for accomplishing the objectives of this work. In a timely manner, the Contractor shall submit to NYSERDA's Project Manager a brief report summarizing the issues discussed and decisions made, if any, during this meeting.

Deliverable(s): A brief report regarding the project kickoff meeting.

0.3 Project Completion Meeting

The Contractor shall conduct a project completion meeting, which shall occur within a time period covering **15 days prior to and 15 days following** the submission of the draft Final Written Document.

The Contractor shall coordinate with NYSERDA's Project Manager to arrange the meeting at a mutually convenient time and place.

Deliverable(s): A brief report regarding the project completion meeting.

0.4 Project Metrics Reporting

The Contractor shall submit, to NYSERDA's Project Manager, a prepared analysis and summary of metrics addressing no less than the anticipated energy, environmental and economic benefits that the completed **Detailed Engineering Design, Financial and Business Plan Assessment** anticipates will be realized by the project. All estimates shall reference credible sources and estimating procedures, and all assumptions shall be documented. The Contractor shall make every effort to quantify and document benefits and incorporate them into the Final Report and technology transfer activities as required in this agreement.

Deliverable(s): Written Metrics Report

PROJECT TASKS

The detailed engineering design and commercialization, financial and business plan assessment must fully address a multitude of questions as delineated in the work tasks identified below. The technical analyses shall calculate the energy impacts through sound engineering practices such as modeling or spreadsheets. NYSERDA requires access to view assumptions used in the energy analysis. If utilizing proprietary software or spreadsheets please discuss with NYSERDA an appropriate solution to sharing assumptions and results.

Note: Estimation of the costs and benefits at this stage of the NY Prize competition (Detailed Engineering Design, Financial and Business Plan Assessment) is expected to be accurate within +/- 10%. The emphasis at this stage of analysis is on conducting a detailed, audit-grade engineering design and commercialization, financial and business plan analysis that establishes a compelling basis for competing for the financing, build out and operation of a community microgrid.

Task 1: Develop Detailed Technical Design Configuration and Costs

The Contractor shall conduct a detailed assessment of the technical design and system configurations for the proposed community microgrid in accordance with the following sub tasks:

Task 1.1 Microgrid Capabilities

The Contractor shall demonstrate that the proposed microgrid has the following minimum required capabilities:

- The primary generation source capacity cannot be totally diesel fueled generators.
- A combination of generation resources must provide on-site power in both grid-connected and islanded mode;
- Must be able to form an intentional island;
- Must be able to automatically separate from grid on loss of utility source and restore to grid after normal power is restored;

- Must comply with manufacturer’s requirements for scheduled maintenance intervals for all generation; plan on intermittent renewable resources that will be utilized toward overall generation capacity only if paired with proper generation and/or energy storage that will allow 24 hrs per day and 7 days per week utilization of the power produced by these resources.
- Generation must be able to follow the load while maintaining the voltage and frequency when running parallel connected to grid. It also needs to follow system load and maintain system voltage within ANSI c84-1 standards when islanded.
- Include a means for two-way communication and control between the Community Grid owner/operator and the local distribution utility through automated, seamless integration.
- Include processes to secure control/communication systems from cyber-intrusions/disruptions and protect the privacy of sensitive data.
- Provide power to at least one, but preferably more, physically separated critical facilities and a diverse group of customers connected directly to the microgrid—diversity should apply to customer type (e.g. residential, small commercial, industrial, institutional, etc.) and overall demand and load profile.
- Must include an uninterruptible fuel supply or minimum of one week of fuel supply on-site.
- Demonstrate that critical facilities, local generation and associated fuel supplies are resilient to the forces of nature that are projected to be typical to and pose the highest risk to the location/facilities in the community grid taking into consideration potential impacts as predicted in the 2011 ClimAID report and 2014 ClimAID update¹. Describe how the microgrid can remain resilient to disruption caused by such phenomenon and for what duration of time.
- Provide black-start capability.

The Contractor shall indicate to what degree the microgrid includes the following preferred capabilities:

- Integrate and demonstrate operation of advanced, innovative technologies in electric system design and operations, including, but not limited to, technologies that enable customer interaction with the grid such as, Microgrid Logic Controllers, Smart Grid Technologies, Smart Meters, Distribution Automation, Energy Storage, etc;
 - Include an active network control system that optimizes demand, supply and other network operation functions within the microgrid;
 - Include energy efficiency and demand response options to minimize new microgrid generation requirements; **Note: The contractor shall perform Level II energy efficiency audits and demand response options for all the major loads (ex: commercial and industrial buildings) in the microgrid.**
 - Address installation, operations and maintenance and communications for the electric system to which interconnection is planned (e.g., underground networks, overhead loops, radial overhead systems);
 - Coordinate with the Reforming the Energy Vision (REV) work to provide a platform for the delivery of innovative services to the end use customers;
 - Take account of a comprehensive cost/benefit analysis that includes, but is not limited to, the community, utility and developer’s perspective;
 - Leverage private capital to the maximum extent possible as measured by total private investment in the project and the ratio of public to private dollars invested in the project;

¹ <http://www.nyserda.ny.gov/-/media/Files/Publications/Research/Environmental/EMEP/climaid/ClimAID-Report.pdf> and <http://www.nyserda.ny.gov/-/media/Files/Publications/Research/Environmental/ClimAID/2014-ClimAid-Report.pdf>

- Involve clean power supply sources that minimize environmental impacts, including local renewable resources, as measured by total percentage of community load covered by carbon-free energy generation;
- Demonstrate tangible community benefits, including but not limited to, (e.g. jobs created, number of customers served, number of buildings affected, scale of energy efficiency retrofits, etc.)
- Incorporate innovation that strengthens the surrounding power grid and increases the amount of actionable information available to customers—providing a platform for customers to be able to interact with the grid in ways that maximize its value.

Task 1.1 Deliverables: Documentation of the work conducted under Task 1.1, Microgrid Capabilities.

Task 1.2 Microgrid Configuration and Design

The Contractor shall provide a detailed written description of the various components of the microgrid as defined below. The components shall include, but are not limited to, distributed energy resources (DER), electric power distribution infrastructure, site and load characterization including fuel specifications, site ambient operating conditions, water and other utility supplies, and associated controls and communications. The documentation shall describe how these components jointly work together in meeting the design objectives and performance criteria of the microgrid. This documentation shall include a description of the systems and sub-systems that are part of the microgrid and shall include descriptions of the sequences of operations and interaction between the various systems. Where possible, the design documentation shall reference the design intent. Design documentation shall include at a minimum, the following elements:

- Reference layout and one-line diagrams, piping and instrumentation, as well as a communications and controls schematics.
- Layout diagram document; that describes:
 - The location of the generating facilities, fuel sources, distribution equipment (e.g., transformers, switches, junction/pull boxes) and critical facilities using United States Geological Services (USGS) topographic map or other professional mapping systems;
 - All equipment and facilities properly labeled for clear cross-reference with the one-line electrical and system piping and instrumentation diagrams.
 - Proposed routing of wires, cables, piping, instrumentation, etc from the generating facility to all critical facilities (including estimated distances in feet);
 - Property lines, easements and boundary of public rights of way;
 - Existing underground and overhead (when applicable) utilities;
 - The point of common coupling recommended by the customer to the utility grid.
- A one-line electrical diagram that includes:
 - The complete microgrid system including all connections to critical facilities all generation sources and electric storage facilities using American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) standard electrical symbols;
 - Points of Common Coupling (PCC) recommended by the customer to the utility grid;
 - Transformer winding configuration and grounding method;
 - Clearly labeled states of all switch positions (ex: N.O./N.C.) when in utility mode;
 - Location and type of isolation switch;
 - Protection and control schemes including circuit breakers, switches and fuses;
 - Protective relaying with all active ANSI/IEEE protection functions shown using numerical designation;

- Generator grounding connection type and ground resistance in both parallel and island mode;
- All protection schemes as required in Interconnection Guidelines including but not limited to the following:
 - All instrument transformers (current and voltage) including ratios and polarity;
 - Instrument test and isolation switches;
 - All protection and control relays;
 - Utility revenue meters and instrument transformers including ratio and polarity;
 - Generator metering connections;
 - Panel meters, synchronization meters and synchronizing lights;
 - Supervisory Controls and Data Acquisition (SCADA) transducer connections and locations.
 - Location of the Microgrid Local Controller (MLC) and its connections to generators and switching devices.
- Communications and Controls Schematics that includes, but is not limited to the following:
 - Diagrams showing physical device location cabling and/or antenna mounting using USGS topographic map or other professional mapping systems
 - Drawings showing all interconnected devices, physical transfer medium (ex: copper, fiber, radio), protocols, information being transferred
 - Points of cyber interconnection recommended by the customer to the utility grid
- Piping and Instrumentation Diagrams that includes, but is not limited to the following:
 - Instrumentation and designations
 - Mechanical equipment with names and numbers
 - All valves and their identifications
 - Process piping, sizes and identification
 - Miscellaneous - vents, drains, special fittings, sampling lines, reducers, etc
 - Permanent start-up and flush lines
 - Flow directions
 - Interconnections references
 - Control inputs and outputs, interlocks
 - Interfaces for class changes
 - Seismic category
 - Quality level
 - Annunciation inputs
 - Computer control system input
 - Vendor and contractor interfaces
 - Identification of components and subsystems delivered by others
 - Intended physical sequence of the equipment

Sub Task 1.2.1 Site Characterization

The Contractor shall include documentation on topography, site size, elevation, environmental and ambient conditions, and other site considerations including, but not limited to the following:

- Site ambient weather conditions (outdoor design maximum and minimum, average temperature)
- Site access for heavy equipment deliveries
- Availability of natural gas or any other fuel resources (quantity, pressure, etc)
- Description of existing gas and electric distribution infrastructure (electrical system configuration types involved(e.g. spot network, looped system))
- Municipal services available (water, sewer, etc)

- General building code requirements
- Boundary noise limits
- Elevation above Sea Level
- Relative Humidity
- Design Wind Speed (Uniform Construction Code(UCC))
- Design Wind Exposure (UCC)
- Snow Load (New York Building Code)
- Seismic Coefficients (UCC)
- Design Wet Bulb Temperature

Sub Task 1.2.2 Fuel Specifications

The Contractor shall provide information on the fuel supply (if applicable) for the microgrid project including, but not limited to the following:

- Natural gas component analysis (ex: Methane, Ethane, Sulfur etc.)
- Other fuel types (ex: Diesel, Liquefied Propane, Kerosene, etc)
- Heating value
- Gas supply pressure
- Ignition point
- Theoretical flame temperature (ex: air/fuel ratio)
- Maximum Flame Velocity
- Relative density
- Security of fuel supply

Sub Task 1.2.3 Water and Other Utility Supplies

The Contractor shall document the availability and capacity of the water, sewer and any other utilities supplies necessary for operation of the microgrid including, but not limited to:

- Constituent/Parameter and concentration (hardness, total dissolved solids, alkalinity, minerals, pH etc.)
- Quantity and pressure available
- Sources of effluent
- Sources of supply
- Security of supply

Task 1.2 Deliverables: Documentation of the work conducted under Task 1.2, Microgrid Configuration and Design.

Task 1.3 Performance Criteria

The Contractor shall provide quantitative metrics or performance criteria associated with each objective of the proposed microgrid. This shall include, but not be limited to, characterizing the load that needs to be served by the microgrid, and operational performance of all systems and equipment. The Contractor shall also describe codes and standards and other compliance requirements that are, or are likely to be, applicable to the microgrid operation.

Sub Task 1.3.1 Electrical and Thermal loads to be served by the microgrid

The Contractor shall describe in detail the electrical and thermal loads being served by all/or a part of the microgrid and characterize such loads in terms of how they will be served in islanded mode:

- Critical Facility (a building/load that can never lose power)
- Discretionary Facility (a building/load which may or may not sustain power based on priority during outages)
- No power with islanding (a building/load that does not serve a role in maintaining public health and safety)
- Small/No automation (a load such as a parking lot light that is too small to justify cost of automation)

Sub Task 1.3.2 Quantitative Performance Requirements

The Contractor shall provide quantifiable metrics on the microgrid design and performance, such as:

- Maximum allowable capacity for DERs, such as PV and energy storage
- Allowed voltage and frequency variations in grid connected and islanded modes during normal operations and contingencies
- Transition time from grid-connected to islanded mode after a fault
- Does manufacturers and/or developers have guarantees or warranties on their equipment or systems. Note specific time periods and who is responsible for these warranties. (Distinguish between product and performance warranties)

Sub Task 1.3.3 Codes, Standards and Regulations

The Contractor shall describe all codes, standards and regulations that are or may be applicable to and impact on the operation of the proposed microgrid such as, but not limited to, the following:

- Applicable building codes
- ASME codes & standards
- ANSI/IEEE/IEC codes & standards
- FCC Codes and Standards
- OSHA and NYS Department of Health
- NERC and Utility Interoperability & Cyber Security
- NYISO Interconnection Standards, Methods & Procedures
- Utility Electric Transmission and Substation Design Standards
- Utility Gas Transmission, Metering & Regulating Station Standards
- National Fire Prevention Code
- NOx, SO2 and CO2 emission limits
- Proposed control technology(s) if known
- Potential NSR, NESHAP, SIP impacts
- NYS DEC regulations

Task 1.3 Deliverables: Documentation of the work conducted under Task 1.3, Performance Criteria.

Task 1.4 Distributed Energy Resources Analysis

The Contractor shall provide detailed documentation that describes the Distributed Energy Resources (DER) that comprise all or a part of the project microgrid configuration and document how such resource(s) interact(s) with the balance of microgrid system components, including, but not limited to, the characteristics identified below by resource type. The Contractor shall describe for each DER in the project, weather enclosure and any other needs for infrastructure hardening. Such description shall include, but not be limited to, documentation demonstrating that critical facilities, local generation and associated fuel supplies are resilient to the forces of nature that are typical to and pose the highest risk to the location/facilities in the community microgrid including the potential impacts as predicted in the

2011 ClimAID report and 2014 ClimAID update². Include documentation of any past and future measures that will improve the electrical infrastructure's resiliency to inclement weather and environmental conditions. This DER shall include, but not be limited to:

Solar - Photovoltaic

Site Characteristics

- Location, approximate area

Module Types

- Power output (DC/AC), AC Voltage, Type of panel, Design isolation, Tilt angle limitations
- Mounting and tracking system requirements, foundation requirements.

Inverters

- Peak output rating (KW), Nominal AC voltage, Power factor, Efficiency (MMPT)
- Single phase/three phase, Allowed total harmonic distortion (for example, THD <5%)
- Operating temperature range, Reactive power capability and sizing

Controls

- List of control functions performed by the controller, Curtail able power output
- Plant power factor control capabilities, Start/stop of equipment

Communication

- Type of communication technology (Fiber/wireless), Communication protocol
- Hardware for data collection and communication to the central SCADA server

Integration with Microgrid

- Commands received from the microgrid controller
- Data/information exchanged with the microgrid

Reciprocating Engine

Electrical Performance

- Standby and continuous ratings, Voltage, Power factor

Engine

- Engine type / design, Governor capability, Emission characteristics /controls

Alternator

- Alternator Design, Excitation system type (ex: brushless), Short-circuit capability

Controls

- Automatic remote starting/stopping, Frequency and voltage regulation, Isochronous and droop operation, Protection, Metering

Communication

- Type (ex: RS232, Modbus, etc)

Integration with Microgrid

- Commands received from the microgrid controller, Data/information exchanged with the microgrid, Operating requirements under different conditions

Gas Turbine

Electrical Performance

- Continuous rating, Voltage, Power factor, Start-up time, Part-load characteristics

² <http://www.nyserda.ny.gov/-/media/Files/Publications/Research/Environmental/EMEP/climaid/ClimAID-Report.pdf> and <http://www.nyserda.ny.gov/-/media/Files/Publications/Research/Environmental/ClimAID/2014-ClimAid-Report.pdf>

- Ramp rates, Black start capability

Turbine

- Engine design, Governor capability, Emission characteristics / controls, Multi-Fuel capability

Generator

- Generator Design, Excitation system type (ex: brushless), Short-circuit capability

Controls

- Automatic remote starting/stopping, Frequency and voltage regulation, Isochronous and droop operation, Protection, Metering

Communication

- Type (ex: RS232, Modbus, etc)

Integration with Microgrid

- Commands received from the microgrid controller, Data/information exchanged with the microgrid, Operating requirements under different conditions

Microturbine

Electrical performance

- Power output, Voltage, 3-phase/single phase, Frequency, Target efficiency

Fuel requirements

- Inlet pressure

Emission requirements

Required operating modes: (ex: Grid-parallel, dual-mode, or grid-isolated electrical generation)

Integration with Microgrid

- Commands received from the microgrid controller, Data/information exchanged with the microgrid, Operating requirements under different conditions

Fuel Cell

Electrical performance

- Power output, Target efficiency, Output Voltage, Output Frequency

Fuel requirements

- Input fuel pressure requirements

Water consumption requirements

Emission requirements

Integration with Microgrid

- Commands received from the microgrid controller, Data/information exchanged with the microgrid, Operating requirements under different conditions

Combined Heat and Power (CHP) System

Heat Recovery

- Exhaust temperature, Exhaust flow, Pressure, Available heat energy, Efficiency

Heating Hot Water System

- Hot water temperature, pressure and velocity

Chemical treatment system

Cooling water system

Piping and Instrumentation systems

Battery / Energy Storage

Sizes and ratings of the battery and PCS Inverter

- Power and Energy Rating, Voltage and current ranges, Target Roundtrip Efficiency ratings, Maximum ramp rate requirements, Maximum charge and discharge rates, Number of hours the system can operate at rated power , Power quality and voltage and current harmonic distortion levels

Required Operation Modes:

- Self-maintenance mode, standby mode, shutdown mode, islanding mode

Control and communications characteristics and capabilities

- Active power control, reactive power control, frequency and voltage control modes, high-voltage and low-voltage ride through, auto island functionality with synchronization back to grid, black start capability

Protection requirements

Grounding arrangements

Metering and monitoring

Integration with Microgrid

Commands received from the microgrid controller, Data/information exchanged with the microgrid,

Operating requirements under different conditions

Uninterruptable Power Supplies (UPS)

System Capacity - sufficient ampere-hour rating to maintain UPS output at full capacity

- Battery Capacity
- AC Input
 - Voltage (line-to-line), Number of phases, Voltage Range, Frequency
 - Total harmonic current distortion (primary line)

AC Output

General Description: Rectifier/charger unit, inverter, transformers, synchronizing equipment, input and output circuit breakers, and accessories as required for operation

Integration with Microgrid

- Commands received from the microgrid controller
- Data/information exchanged with the microgrid

Operating requirements under different conditions

Demand Response, Building, Energy and Lighting Management Systems

Type of Heating Ventilating and Air Conditioning (HVAC) system and demand response strategy for HVAC such as thermostat set-point adjustment, smart cycling etc.

Lighting fixtures and lighting control strategy employed such as wireless advanced lighting control systems or centralized dimming control system

Load shedding priority for demand response

Protocol for communication (ex: OpenADR) with the utility and rest of the microgrid

Protocol for communication (ex: BacNet) with building end-use equipment and wireless communication technologies (ex: WiFi, ZigBee)

Task 1.4 Deliverables: Documentation of the work conducted under Task 1.4, Distributed Energy Resources Analysis.

Task 1.5 Distributed Energy Resources Design

The Contractor shall provide the sizing and design for the DERs such as electrical generators, energy storage devices, Combined Heat and Power (CHP) systems, and Demand Response (DR) that are a part of the microgrid including information on the design procedures and tools used to evaluate the economic and technical feasibility of DER technology options considered. The Contractor shall provide the inputs and assumptions used in the analysis included, but not be limited to the following:

- Load profiles for non-curtail able and deferrable electrical and thermal loads
- Data for existing and proposed DERs and their source
 - Economic parameter (capital, fixed and variable Operation and Maintenance (O&M) costs)
 - Thermal Resource
 - Fuel costs
 - Heat rates for thermal plants
 - Emission characteristics
 - Hydro Resource
 - Stream flow or other information
 - PV and Wind Resource
 - Hourly profiles for PV and wind generation, data sources, if applicable
 - Electric Storage Resource
 - Efficiency, maximum charge/discharge rate, minimum and maximum state of charge, etc.
 - Demand response (Percentage of loads that can be curtailed, scheduled etc.)
 - Utility tariff (for grid-connected mode)
 - Other assumptions (electricity price in grid-connected mode, operating reserves, economic modeling assumptions etc.)

The Contractor shall provide supporting analysis that shows the adequacy of the DERs and thermal generation resources to continuously meet electrical and thermal demand during steady state operations.

Sub Task 1.5.1 Variable Output Resources

The Contractor shall show how variations in generation can be accommodated during steady state operations. If a variable generation source such as PV with a smart inverter is included as a part of the microgrid, the effect of the smart inverter functions within the steady-state analysis shall be documented. If energy storage is a part of the microgrid, storage system response (charge and discharge operations) shall be described.

Sub Task 1.5.2 CHP and Dispatchable Resources

The Contractor shall provide information pertaining to the modeling applied and data used in determining the size and capabilities of chosen resource options as follows:

- Information on the design procedures and tools used to design a CHP system, if applicable
- Detailed description of the dynamic modeling, including a description of the model used, key input assumptions, sensitivity runs, and model validation comparing modeling results with actual equipment performance, where possible.
- Summaries of individual case simulations along with detailed output reports underlying the summaries. Assessment of the relative accuracy for bandwidth/confidence interval of the modeling results.
- List of major thermal equipment and other gas consuming appliances existing within microgrid facilities.

- Documentation of data analysis employed to quantify thermal loads – using facility specific details, gas consumption, and Building Management System data, including any correlations to predict thermal loads as a function of outdoor temperature as well as weekly and daily operating patterns
- Present data indicating the relationships that determine the daily and hourly variations in thermal requirements across twelve (12) consecutive months
- Potential for CHP applications using combined thermal and electric load data – include several options for detailed dynamic system modeling
- Required and available space and physical electrical and thermal connections required for the CHP asset(s)
- Result from thermodynamic modeling used to develop the cycle design basis, heat and materials balances, and operating performance data forecasts for the CHP asset
- Ability for the CHP asset(s) to meet the following requirements/limitations:
 - Existing/planned fuel and electrical infrastructure
 - Efficiency requirements
 - Physical size limitations
 - Noise limitations
 - Emissions requirements
- Inputs and assumptions used in the analysis, such as
 - Recent, energy gas and electric bills.
 - Current and projected gas (or other fuel) and electric rates.
 - average hourly use patterns for each type of energy (on a seasonal basis if appropriate) with thermal energy uses segregated by type/quality (e.g., temperature, pressure, form [steam, hot water, hot air])
 - tables and/or graphs showing daily and annual use profiles for each form of energy (e.g., electric/steam/hot water/chilled water)
 - description of computer modeling methods used

Sub Task 1.5.3 Energy Efficiency (EE) and Demand Response (DR) Design Analysis

The Contractor shall document analyses showing baseline energy use characteristics of the building(s) such as non-coincident peak load, energy usage, energy intensity (ex: energy/sqft) by type of end use such as heating, cooling, lighting and other end uses. The Contractor shall describe all options to reduce building loads through energy efficiency as well as load shedding or other demand response schemes and their relationship to chosen distributed generation options. Such documentation shall include, but not be limited to, calculations showing load reductions assumed from energy efficiency, including loads shed by dimming lights and other lighting control measures, loads shed by cycling HVAC units and other HVAC demand response measures and loads shed by cycling refrigeration units and other refrigeration demand response measures. The Contractor shall describe how generation and demand-side resource options will be coordinated.

Task 1.5 Deliverables: Documentation of the work conducted under Tasks 1.5, Distributed Energy Resources Design.

Task 1.6 Power Distribution Systems Design

The Contractor shall design and specify all electrical distribution system components and equipment. The electrical distribution systems shall include, but not be limited to:

Power Distribution Equipment:

- Feeders (Overhead, Underground)

- Grounding Equipment
- Voltage Transformers
- Current Transformers
- Voltage Regulators
- Inverters
- Disconnects
- Manual, Automatic Transfer Switches
- Relays
- Capacitors
- Chokes/Inductors
- Harmonic Filters
- Meters (various)
- Sensors (various)

Power Distribution System Controls and Protection Equipment:

- Switch Gear
- Switches
- Circuit Breakers
- Protective Relays
- Reclosers
- Fuses
- Surge Arrestors
- Lighting Arrestors
- Transient Overvoltage Surge Suppressors

The Contractor shall identify and provide information on all electric distribution components and equipment that will be a part of the microgrid infrastructure, including basic system components, protection equipment, and meters and sensors as described in the subtasks below. Such documentation shall include pre-existing as well as new planned components. Include the following information in your design, as applicable, while describing the design of each component and how it interacts with the rest of the system.

Sub Task 1.6.1 Power Distribution Equipment

The Contractor shall provide information on basic equipment ratings, ranges, and specifications (vary by equipment):

- Voltage (input, output, control, operating, etc.)
- Current
- Frequency
- Reactive power
- Discharge current
- Capacitance
- Losses
- Thermal characteristics
- Electrical configuration
- Mechanical components
- Installation arrangement
- Other

The Contractor shall, where applicable, provide information on the functional specifications for control requirements.

- Bidirectional power flow control
- Reactive power support
- Power factor correction
- Ride-through (voltage, frequency)
- Harmonics mitigation
- Smoothing functions
- Peak power limiting
- Other

The Contractor shall, where applicable, document any non-standard and/or developmental features and requirements needed for microgrid operation.

Sub Task 1.6.2 Power Distribution System Controls and Protection Equipment

The Contractor shall provide information on the following equipment ratings, ranges, and specifications for that equipment selected to be used in the microgrid (vary by equipment):

- Voltage
- Current
- Reactive power
- Discharge current
- Capacitance
- Thermal characteristics
- Other

The Contractor shall, where applicable, provide information on the functional specifications for control and protection requirements that address the following:

- BIL
- Fault Withstand Capability
- Response time
- Surge capacity
- Breaking capacity
- Thermal characteristics
- Electrical configuration
- Mechanical components
- Installation arrangement
- Other

The Contractor shall document any non-standard and/or developmental features and requirements needed for microgrid operation.

Sub Task 1.6.3 Meters and Sensors

The Contractor shall provide a description of the design of metering and sensors required for the microgrid system, that includes documentation on how this equipment interacts with the balance of system components including, but not be limited to the following:

The Contractor shall provide information on basic specifications for monitoring requirements

- Meter/Sensor Type
- Data type(s) collected

- Data resolution
- Accuracy
- Sensitivity/Precision
- Other

The Contractor shall provide information on the functional specifications for communications requirements

- Communication protocol
- Data logging features
- Response time
- Reliability
- Alarms
- Other

The Contractor shall document any non-standard and/or developmental features and requirements needed for microgrid operation.

Task 1.6 Deliverables: Documentation of the work conducted under Task 1.6, Power Distribution Systems Design.

Task 1.7 Microgrid Control Functionality

Sub Task 1.7.1 Functionality

The Contractor shall conduct analyses on design options for the microgrid. These options should cover all the key controls and management capabilities of the microgrid under normal operations, as well as during disturbances. These operational scenarios shall cover capabilities including, but not limited to the following:

- Balancing supply and demand on different time-scales in islanded and grid-connected modes
- Management of energy storage in real time
- Demand side management such as load shedding and shifting
- Active and reactive power management of supply-side resources in different time scales
- Seamless transition or black start for loss of connection with the main grid
- Microgrid operation for loss of gas supply to the DERs
- Islanding and resynchronization with the main grid
- Provision of ancillary services

The Contractor shall also develop a sequence of operations to meet the microgrid's design intent and the options provided above. The sequence of operation should describe the response times and the interactions between the components of the microgrid for each case developed.

Task 1.7 Deliverables: Documentation of the work conducted under Tasks 1.7, Microgrid Controls Functionality.

Task 1.8 Microgrid Controls and Communications Design

The Contractor shall design the controls and communication functions of the microgrid controls identified in Task 1.7 Functionality, including, but not limited to, those functional areas identified in the sections below, the Contractor shall elaborate on the role of the controls and how it interacts with the rest of the system using system block diagrams, data flow diagrams, or control sequence diagrams

where possible to explain the operation of the microgrid controller. The Contractor shall outline any needs for controls and communication infrastructure hardening and describe in detail past and future measures that will secure the electrical infrastructure's resiliency to the forces of nature (inclement weather and environmental conditions) that are typical to and pose the highest risk to the location/facilities in the community grid including the potential impacts as predicted in the 2011 ClimAID report and 2014 ClimAID update³. Such document shall include a description of all pre-existing and new equipment, actions, and protocols.

Sub Task 1.8.1 Microgrid Monitoring and Protection

The Contractor shall document how the microgrid controller will monitoring system conditions including, but not limited to the following:

- Requirements for monitoring microgrid load, DERs and the status of the power distribution network, such as voltage, frequency etc.
- Requirements regarding data logging and alarm functions.
- Requirements regarding how long the data should be archived and stored.
- Requirements for coordination of protection settings.

Sub Task 1.8.2 Fault Response

The Contractor shall describe requirements regarding how the controls will sense faults in the microgrid and act/perform during and immediately after a fault including, but not limited to the following:

- Requirements on how the controller senses the microgrid voltage and frequency aberrations.
- Requirements regarding specific actions to be performed by the controller to correct faults, such as opening breakers to non-critical loads.
- Requirements regarding specific actions to be performed by the controller when restoring loads after a fault such as closing breakers in a priority order and maintaining stability of the grid.

Sub Task 1.8.3 Voltage and Frequency Control

The Contractor shall provide information on how the controls will monitor and regulate voltage and frequency of the microgrid including, but not limited to the following:

- Requirements regarding the voltage and frequency range to be maintained by the controller under normal conditions and after a fault, if different from ANSI standards.
- Requirements for alarms when voltage and frequency are outside the range.
- Requirements regarding actions to be performed by the controller (such as changing VARs from DERs, islanding and load shedding etc.) when voltage and frequency are not within the range.
- Requirements for how quickly the voltage and frequency deviations should be corrected.

Sub Task 1.8.4 Switchgear Management

³ <http://www.nyserda.ny.gov/-/media/Files/Publications/Research/Environmental/EMEP/climaid/ClimAID-Report.pdf> and <http://www.nyserda.ny.gov/-/media/Files/Publications/Research/Environmental/ClimAID/2014-ClimAid-Report.pdf>

The Contractor shall describe controls capabilities with respect to switchgear operations, the conditions under which switchgear needs to be operated and the speed of their operation.

Sub Task 1.8.5 Transition to Island Mode

The Contractor shall describe the microgrid system's controls capabilities required for seamless and non-seamless transition to islanded mode including, but not limited to the following:

- Requirements on how the controls will manage load and DERs for a seamless and non-seamless transition to islanded mode
- Requirements on how the controls will command the operation of DERs in transition to islanded mode
- Requirements regarding the sequence of load shedding and DER operations for non-seamless transition
- Requirements regarding the sequence of operations prior to and after a seamless transition.
- Requirements on how the microgrid controls will interact with DER controls and smart inverters in transition from grid-connected to islanded mode to maintain frequency and voltage

Sub Task 1.8.6 Black Start Sequence

The Contractor shall provide information on control capabilities for black start including, but not limited to the following:

- Requirements on how the low voltage network is energized using DERs
- Requirements regarding the sequence of operation of controllable generators and energy storage devices
- Requirements regarding the sequence of connecting controllable loads
- Requirements for synchronizing remaining generators and load pickup.

Sub Task 1.8.7 Island Mode Operation

The Contractor shall provide documentation on control capabilities required for operation in islanded mode including, but not limited to the following:

- Requirements on the sequence of generator operations for balancing load and generation.
- Requirements on demand side management and load shedding for balancing load and generation.
- Requirements on how the microgrid controls interacts with BMS and LCS, energy storage etc. during island mode

Sub Task 1.8.8 DER Optimization and Dispatch

The Contractor shall provide information on the capabilities of the microgrid controller to optimize and dispatch DER, Demand Response (DR) and other microgrid resources including, but not limited to the following:

- Requirements for load, renewable generation and electricity price forecasting.
- Requirements for maximizing the use of green energy.
- Requirements for integrating energy storage in the optimization and dispatch.

- Requirements for optimizing voltage settings for regulators and capacitors for minimizing losses.

Sub Task 1.8.9 Energy and Ancillary Service Market

The Contractor shall provide information on capabilities of the microgrid controller to enable participation in the New York Independent System Operator(NYISO) energy and ancillary service market including, but not limited to the following:

- Requirements for the microgrid controls to communicate with NYISO market system.
- Requirements for the microgrid controls to calculate bid prices for energy and ancillary services.
- Requirements for the microgrid controls for settlement support.

Sub Task 1.8.10 Communications Infrastructure

The Contractor shall describe communication functionality necessary for the safe and reliable operation of the microgrid including identifying communication equipment on the layout diagram and include a communications schematic including, but not limited to the following:

- Requirements for the microgrid controls or microgrid-attached components to interface with existing area networks
- Requirements for the microgrid controls or microgrid-attached components to interface with existing Advanced Metering Infrastructure (AMI) systems
- Requirements for the microgrid controls or microgrid-attached components to interface with existing wide area or backhaul networks
- Requirements for the microgrid controls or microgrid-attached components to support specific communications protocols or transport level data models

Sub Task 1.8.11 Integration with External Systems

The Contractor shall identify and describe the allowed communication protocol(ex: IP, DNP3, MODBUS, OPC, IEC 61850 etc.) for each controller and the commands to be exchanged (ex: for PV controller - low voltage ride through, frequency ride through, volt/VAR control, and frequency droop compensation commands to the Solar PV systems). Such description shall include a detailed narrative of how the microgrid controls will interface and communicate with the other controllers in the microgrid including, but not limited to the following:

- Building Management Systems
- Energy Management Systems
- Lighting Management Systems
- Distribution Management Systems
- Protective relays
- Photovoltaic controllers
- Fuel Cell controllers
- Energy Storage controllers
- CHP controllers
- Diesel generator controllers
- Load controllers
- Fire alarm systems
- SCADA

- Energy Market Systems, Energy Aggregators

Sub Task 1.8.12 Cyber-Security

The Contractor shall provide a detailed narrative describing cyber-security requirements including, but not limited to the following:

- Requirements with respect to security architecture and design
- Requirements(federal and State) for distributed energy resource providers to protect sensitive data
- Specific access control requirements, human and machine authentication and authorization
- Specific encryption requirements
- Specific physical security mechanisms

Sub Task 1.8.13 Hardware and Software Requirements

The Contractor shall provide a detailed narrative on the hardware and software requirements listed below for the microgrid controls including, but not limited to the following:

- Computers and servers
- Redundancy requirements
- UPS backup
- Operating system
- Monitors and peripherals
- Microgrid Administration and Configuration application
- Microgrid monitoring and control application
- Software Developer and integration toolkits
- Microgrid Energy Management System (MGEMS)

Sub Task 1.8.14 Application Requirements

The Contractor shall provide a detailed narrative of any specific application requirements including, but not limited to the following:

- Requirements regarding Human Machine Interface HMI requirements such logging, interactive help, alarming and system administration
- Requirements regarding visualization tools to visually monitor and control the microgrid.
- Requirements for historian and data storage. Specification regarding historian (ex: OSI Soft Pi Historian). Specifications with respect to scan rates, data archiving, event log etc.
- Requirements for specific screens for displaying of each component. Example, for LV Switchgear (Switchgear status, individual phase and ground currents, phase-to-phase and phase-to-neutral voltages, VARS, PF, Frequency, watts, watt demand, watt hours)
- Requirements for microgrid model for offline simulation

Task 1.8 Deliverables: Documentation of the work conducted under Tasks 1.8, Microgrid Controls and Communications Design.

Task 1.9 Microgrid Load Analysis

The Contractor shall perform a power quality analysis as well as load characterization to characterize the load served by the microgrid in islanded and grid-connected mode. This analysis should show that the power quality supplied by the microgrid will adequately serve critical loads. These results should also be used as a condition to determine when to island. The Contractor shall provide all the relevant data and analysis related to the electrical and thermal loads to be served by the microgrid including, but not limited to the following:

- Review of recent energy, gas and electric bills
- Review of current and projected gas (or other fuel) and electric rates.
- Provide sub-hourly profile (usage pattern) for the thermal and electrical loads served by the microgrid for one year (or typical one-week period by season) in grid-connected and islanded modes
- Provide any information on the load served by the microgrid, such as critical loads that need to be served, discretionary loads, curtailable loads and DSM
- Provide detailed information on the breakdown of energy usage, such as:
 - motor/inductive loads
 - heating and cooling
 - incandescent lighting
 - florescent/LED lighting
 - switch-mode power supply
 - For thermal loads - temperature, pressure, form (steam, hot water, hot air)
 - others
- If large motors are a part of the load, perform motor starting analysis
 - Inventory motors over 1 HP
 - Calculate starting current for large motors
 - Document operating schedules of motors
 - Calculate maximum possible starting current requirements
 - Otherwise, provide rationale on why such a study is not required
- Design a load shedding scheme
 - Perform steady-state power quality studies to evaluate the requirements at the point of common coupling (PCC) with customer-specified requirements for grid connected and islanded operations.
 - Provide a description of how the non-essential loads will be shed while going from grid-connected to islanded mode.
 - Finalize the priority of load shedding in islanded mode

Task 1.9 Deliverables: Documentation of the work conducted under Task 1.9, Microgrid Load Analysis.

Task 1.10 Power Distribution System Modeling and Simulation

The Contractor shall perform the required analysis pertinent to its project and describe why certain elements of modeling and simulation including, but not limited to the following:

Sub Task 1.10.1 Steady-state Load Flow Analysis

The Contractor shall perform a load-flow analysis assessing system behavior of a microgrid system during grid tied and islanded modes. Analysis should verify adequate equipment ratings and show that no voltage or thermal overload conditions occur during grid tied and islanded modes. The Contractor shall perform steady-state thermal, voltage, and frequency analyses using the power flow or a comparable program for summer and winter peak load conditions in the microgrid. The Contractor shall

provide all steady-state power flow simulations and modeling results for each category listed below to ensure all issues have been adequately addressed.

- Provide information of the steady-state models (DER device/feeder level). This will be used to establish baseline characterization and line and equipment loading
- Perform steady state simulation of the response of DER and microgrid controller during normal operations (grid tied and islanded mode). Document the generation and load matching capabilities of DER during normal operations (grid tied and islanded mode).
- Document maximum voltage drop (or rise) caused by DER along the distribution feeder during grid tied and islanded modes and for heavy and light loads.
- Document voltage and frequency control capabilities of the distribution feeder during grid tied and islanded modes.
- Provide results of steady-state calculations to corroborate the ratings of the electrical infrastructure.
- Performance steady state simulation to observe and document compliance with prevailing standards to maintain the voltage according to ANSI C84.1-2006 standards — specifically, the required voltage range for microgrid islanded steady-state operation is $0.95 \text{ pu} < V < 1.05 \text{ pu}$ at the PCC
- Describe the ability of the DER to control system voltage including multiple generators operating in parallel per standards.
- Perform a steady state simulation to observe and document frequency compliance with prevailing standards and ability to maintain the frequency in the range $59.3 \text{ Hz} < f < 60.5 \text{ Hz}$ — a range consistent with the frequency range for an area EPS and suitable for most loads — barring customer-specific requirements that may override this range
- Assess the impact of the microgrid on distribution system losses at point of interconnection in both grid-tied and islanded modes.
- Assess the impact of the microgrid on distribution system power factor in the study area at point of interconnection in both grid-tied and islanded modes

Sub Task 1.10.2 Short Circuit and Protection Analysis

The Contractor shall analyze how the proposed microgrid will provide required short circuit protection in both grid-connected and islanded states. This shall include the development of microgrid protection requirements within the Point of Common Coupling (PCC) with the utility and will need to be guided by the following three general principles, in order of priority:

- Prevent injury to personnel and ensure public safety.
- Prevent or minimize equipment damage.
- Minimize loss of load within the above identified constraints.

The Contractor shall conduct a Short Circuit analysis to evaluate the impact on system protection and demonstrate adequacy of existing circuit breakers, other fault current interrupting devices, and related equipment within the study area. Based on the protection studies conducted by the Contractor, the electrical distribution system upgrades, as well as additional switchgear modifications in terms of types and placement within the microgrid, shall be identified. The Contractor shall identify key parameters that will be metered and monitored (ex: voltage, frequency, real power, reactive power current, switch status points, relay status points, etc.). This analysis shall be performed in accordance with the serving utility's protection and interconnection requirements. This analysis shall address, including, but not limited to the, issues identified below:

- Provide detailed information on the transformer connections⁴ and the models that will be utilized.
- Identify the DER types (inverter or synchronous based) and document the models utilized for the analysis
- Provide results of short-circuit calculations that:
 - Determine the magnitude of fault current
 - Identify fault detection means within the microgrid
 - Identify overvoltage and over current sensing capabilities
 - Evaluate adequacy of protection devices (i.e. breakers, fuses, recloses, switches) to protect key circuit components and limit the extent of a grid outage
 - Determine the appropriate coordination and settings for protection devices
 - Microgrid system impacts to different fault types
 - System protection coordination for all operating modes.
 - Investigate the impact of reverse power flow, increased clearing times, and increased fault magnitudes from the use of certain variable DER (e.g. PV)
- Provide documentation/analysis that the following issues have been considered and addressed:
 - Unintentional islanding
 - Back-feed energization. Detection and clearance of all faults normally detected and cleared by the area electric power system (EPS) protection system e.g. downed conductors, open conductors, ground faults, etc.
 - Energization outside microgrid boundaries
 - Effective grounding for all operating modes, compatibility with utility system and effective detection
 - Temporary Overvoltage

Sub Task 1.10.3 System Dynamics study

The Contractor shall conduct dynamic stability and response analysis for summer peak and light load conditions to determine the impact of the microgrid during islanded mode. These studies shall be performed to demonstrate voltage and control, load-frequency control, and load-rejection as a result of voltage and frequency variations. These studies shall evaluate the performance of the system for contingencies, and address issues including, but not limited to, transient stability, dynamic stability (i.e. damping), critical clearing time, coordination of protection and control systems, and performance of any special protection devices that may be affected. The objective of these analyses is to characterize the level of distribution support provided by the microgrid and the impact of these technologies on interconnected distribution systems in both a short and long duration basis.

The Contractor shall provide any modeling and simulation results for each area of interest listed below; ensure all issues listed under the area of interest have been adequately addressed. The Contractor shall provide the test cases used to test adequate system capabilities and performance.

- Show the adequacy of the DERs and thermal generation resources to continuously meet electrical and thermal demand during steady state and dynamic operations.
- Identify equipment required to ensure safe and efficient operation under steady state, startup, shut down, and transient operations
- Include a detailed description of the dynamic modeling, including a description of the model used, key input assumptions, sensitivity runs, and model validation comparing modeling results with actual equipment performance, where possible.

- Include both summaries of individual case simulations along with detailed output reports underlying the summaries. Assess the relative accuracy for bandwidth/confidence interval of the modeling results.
- Develop a dynamic simulation model that can be used to validate and optimize the operational and control system design.

Sub Task 1.10.4 Grid Synchronization

The Contractor shall provide documentation describing the approach for synchronization (e.g. active sync, sync check, open transition), describing the equipment that would be needed to achieve safe synchronization, describing the microgrid's ability to protect both utility and microgrid equipment during synchronization, and describe the microgrid's ability to control voltage, frequency, and phase angle- pursuant of IEEE 1547-2003. The Contractor shall conduct an islanding study that demonstrates the ability to island and transition that addresses the following:

- Describes how desirable islanding conditions (e.g. microgrid failure) are detected.
- Demonstrates how disconnect and reconnect switching protocols for transitioning will be carried out (manual or automatic).
- Evaluates additional electrical infrastructure required for automatic operations. (For example, can isolation be achieved automatically using motorized breakers?)
- Indicates if over current protection, fuse or relay settings will be modified during islanded conditions
- Indicates if additional fault-current detection and mitigation measures will be required
- Describes any additional controls and possibly additional switching devices necessary to design a seamless transfer environment
- Indicates to what extent, if any, and under what conditions, ancillary services, such as black start, voltage or frequency support to the grid will be unavailable because of islanding

With respect to other key capabilities to operate seamlessly with the electric distribution grid, the Contractor shall conduct analyses and describe the following functionalities for the proposed microgrid:

- The ability to energize the microgrid from a de-energized state (black start capability), without help from an external source (even in microgrid's designed for seamless transitions, black starts may be needed in some cases)
- The microgrid's ability to perform cold-load pickup - the extra load following an extended interruption due to loss of the normal diversity between customers
- The microgrid's ability to provide inrush - many components draw a high, short-lived inrush; the largest component magnetizes the magnetic material in transformer; motors also draw inrush.
- The start-up reliability of each DER, where applicable.
- The ability of renewable generation's to provide black start capability (typically not a resource for black-start capability based upon its intermittent nature and lack of frequency support functionality), where applicable.
- The microgrid satisfies the start-up current requirements (e.g. stiffness) for loads.
- The microgrid accounts for part-load characteristics of each DER, if applicable.
- The schedules for the maintenance and forced outage rates of the DER, if applicable.
- The capability of each DER with respect to:
 - Accepting startup and shutdown commands
 - Accepting AGC and dispatch signal
 - Maintaining voltage
 - Operating in isochronous mode
 - Operating in droop mode

- Capabilities for full load unit trip, both manual and automatic
- Line tripping and reclosing operations
- Accounting for/accommodating single and three phase faults within and outside the microgrid
- Capacity for emergency load pick up
- Accounting for major equipment malfunctions

The Contractor shall perform and document the results from detailed dynamic analyses to determine the stability of the system during and after fault conditions, evaluating at a minimum, the following:

- For high renewable penetration, evaluate bulk system stability (grid-connected)
- For high system penetration of inverters, evaluate distribution stability under both no control and advanced control functionality

Task 1.10 Deliverables: Documentation of the work conducted under Tasks 1.10, Power Distribution System Modeling and Simulation.

Task 1.11 Harmonics and Flicker Studies

Sub Task 1.11.1 Harmonics Study

The Contractor shall conduct harmonic analysis to establish that the voltage and current harmonic levels within the microgrid are acceptable. Simulation results shall be compared with the IEEE 519 standards to check to see if voltage and current limits are within satisfactory levels. The Contractor shall conduct analyses that capture the resonance conditions within the microgrid.

Sub Task 1.11.2 Flicker Study

The Contractor shall conduct analysis of flicker. The Contractor shall include consideration of the following issues in such analysis:

- Flicker emissions should be measured against/compared with limits set forth by IEC 61000-3 and IEEE 1453.1 for corresponding voltage levels
- Flicker emissions for each DER asset
- Flicker emissions at the point of common coupling(s) (PCC)
- Allocation of emissions limits for each load or generation source that fluctuates
- Remediation devices used to reduce flicker

Deliverables: Documentation of the work conducted under Tasks 1.11, Harmonics and Flicker Studies.

Task 2: Microgrid Commercial/ Financial Business Plan

The Contractor shall conduct an audit-grade analysis of the commercial and financial feasibility of the proposed microgrid project as specified in the following set of tasks. The Contractor shall also develop a twenty (20) year business plan financial statement pro forma showing estimated yearly cash flows for the microgrid project.

Task 2.1 Project Team

The Contractor shall clearly delineate team members' and suppliers' roles and responsibilities associated with microgrid ownership, operation/administration and control. The Contractor shall specify what

organization(s) will act in the capacity of the microgrid project company or some other incorporated special purpose organization and define what responsibilities these organizations shall have with respect to the planning, development, financing, construction, commissioning, ownership, and operation of the microgrid project assets and project economics. To the extent there are numerous parties involved in aspects of microgrid project administration, the Contractor shall describe the contractual/business relationship between each party with respect to the microgrid project.

Task 2.2 Commercial Viability - Customers

The Contractor shall describe the commercial terms and relationships between the community, government and the purchasers of microgrid products and service including arrangements for sharing of benefits by addressing no less than the following questions:

- How is "community" defined for this project? This may include, but is not limited to local residents and local businesses that do not directly receive generation from the microgrid and may or may not use/purchase services provided by the microgrid.
- Who, within the community, is specifically expected to use the services provided by the microgrid during normal operation? During islanded operation? Conversely, are there members of the community that will specifically not use the services that the microgrid offers?
- Does the community have an agent acting on its collective behalf? Are there multiple agents representing multiple interests? How are the differing opinions of community stakeholders being considered throughout the project?
- Are there users or beneficiaries of the microgrid services that are not part of the local community? Specifically, does the user of the microgrid service have any customers that would be indirectly affected during normal or islanded operation?
- Who are rate-payers and/or government constituents/tax-payers outside of the local community affected by this microgrid project? In what ways are they directly or indirectly affected? How will society at large be affected by this project?
- Are there emissions or emissions reductions that can be realized by society? Are there other benefits or costs?
- Are there other stakeholders that are directly or indirectly affected by the microgrid? For example, this could include entities that are not part of the local community, do not purchase/use services from the microgrid, and/or are not ratepayers.
- In what way or form has the local government supported this project? Describe the legal relationship between the project developers and/or owners and the local government. What ongoing requirements does the project administrator have to the local government? Attach the letter of commitment from the local government.
- What role, if any, will the state and federal governments (other than regulators) play in supporting this specific project? What offices within these governments has the project engaged with?
- Describe each load that will be served during normal operation and during islanded mode. Identify the type of load (electricity, thermal), primary user of that load, who pays the bills, if and how the load will be reduced during islanding and the proportion of generation that will be attributed to that load.

- Who is acting on behalf of the loads that are served by the microgrid? This could include, but is not limited to, the owner of the building(s) served, tenant of the building(s), or agent of the building(s). What is the possibility that this entity could change throughout the lifetime of the project?
- Who is the counter-party on any electricity sale agreements for electricity generated by the microgrid? How is this counter-party related to the loads served by the microgrid? What is the credit worthiness of that entity? Is there any risk that their relationship to the loads could change (for example, if they move)?
- Does the microgrid have any customers that are simply purchasing net metering credits as a result of the generation? What is the purpose of this arrangement rather than directly providing electricity? Do these customers receive other services from the microgrid?

Task 2.3 Microgrid Services

The Contractor shall fully identify the products and services the microgrid will provide to the purchasers of microgrid power, community members, governing bodies, and the local distribution utility given the technologies involved by addressing no less than the following questions:

- What microgrid services are most important to the community in normal operation? During islanded operation? How was this determination made? How do the priorities differ amongst different members and stakeholders of the community? Are there any specific groups that are the target of this microgrid project's services?
- Does the government (local, state or federal) fund any of the loads that are served by the microgrid? This could include such things as health and safety or other public services. If yes, how does the government, directly or indirectly, benefit from the microgrid?
- Are the net metering credits held by the microgrid project company or are they sold to its users? Does the project company retain ownership of the net metering credits or are they passed directly to the user/customer? Is the recipient of the net metering credits also receiving direct electricity service from the microgrid or are they a remote purchaser?
- Does the microgrid provide any capacity services to loads under normal conditions or when islanded? If yes, how much and how often? How does providing such capacity affect the microgrid's ability to provide other services to its other users? How are decisions made as to when to provide capacity to the users versus other options? Does this differ between normal and islanded operation?
- Does the microgrid provide capacity services to other DER assets serving the user(s) of the microgrid? How does the capacity support those resources? What is the arrangement to provide such capacity?
- Does the microgrid sell electricity directly to the utility (or other macrogrid entities) through a bi-lateral agreement or other mechanism? Alternatively, does it sell in the wholesale market? What percentage of electricity is provided via these options? Why is electricity sold to the utility or wholesale market rather than to a direct customer?
- Is the microgrid providing any demand response services to the utility or New York Independent System Operator (NYISO) market? If yes, what services are being provided? Are these services under contract or provided simply as a bi-product of the microgrid's operation? Are the Demand Response (DR) services resulting directly from microgrid assets or is the microgrid a pass-through for customer-sited DR?

- Does the microgrid provide any capacity services to the utility or NYISO market? If yes, how much and how often? How does providing such capacity affect the microgrid's ability to provide services to its other users?
- Is the microgrid providing any ancillary services to the utility or NYISO market? If yes, what services are being provided? Are these services under contract or provided simply as a bi-product of the microgrid's operation?

Task 2.4 Value Proposition

Sub Task 2.4.1 Business Model

The Contractor shall develop a clearly defined, reasonable, and comprehensive business model that considers all participants, types of assets involved, relevant value streams, risks to operation and financial viability. The Contractor shall provide evidence and examples of where this business model has been employed prior to this project and alternatively, shall describe what new business models are being advanced and establishes an approach to verify assumptions/hypotheses.

Additionally, the Contractor shall:

- Describe the overall business model for the microgrid. How will the microgrid balance competing interests between the user, the community and the utility? How will different microgrid assets and other DER be balanced?
- Describe how the business model and the project's design facilitate participant learning and can be replicated.

Sub Task 2.4.2 Community Value Proposition

The Contractor shall present a clear and compelling case that the benefits to the local community outweigh associated costs and risks by addressing no less than the following questions:

- Does the microgrid help to provide any critical or non-critical services to the community during normal operation? If so, which? Why is the microgrid used to provide these services? How does this differ, if at all, from such operation that would occur without the microgrid?
- For loads served during islanded mode, how does the microgrid help to provide critical or non-critical services to the community that would otherwise not be available? What is the quantitative or qualitative measurement of benefit to the community from those services?
- Are there local residents or local businesses that will benefit directly or indirectly from the microgrid? If yes, how so and how many? How were the recipient residents selected?
- Does the presence of this microgrid and/or other microgrids affect the electricity supply, electric distribution service rates, or thermal service rates charged to ratepayers? This could include, but is not limited to, cost for interconnection, administration, or ownership of the microgrid. If rates increase, justify the cost given the context of the cost/benefit analysis completed for this analysis?
- Does this project provide any direct or indirect health, safety and security benefits? Would these benefits have been available to the community if the microgrid had not existed? If yes, at what cost? How is the microgrid a better option?
- Are there specific reliability issues that this microgrid is addressing (with respect to all rate-payers other than the customer of the microgrid user)? Are these issues specific to the utility feeder, substation, region, NYISO zone, or other?

- How will the community benefit from the microgrid? Identify specific values to the community and quantify such value in dollars or other meaningful metric. Who are the direct beneficiaries? Who are the indirect beneficiaries?
- What costs will the community incur from the construction (including construction management and administration) and operation of this microgrid? How are those costs monetized? How do the costs compare with the potential benefits?
- Does the community and/or society-at-large benefit from any reduced emissions due to the installation of the microgrid? How are these reductions in emissions quantified? What benefit is expected from the reductions? Which groups will directly, and indirectly benefit?
- Is the community and/or society-at-large affected by any emissions originating from the microgrid? How are these effects in emissions quantified? What is the impact to the community? Is the project taking any actions to mitigate these effects? Which groups will be directly and indirectly affected?
- Does the microgrid owner/operator or project/operating company (project company) receive any emissions allowances to offset emissions from its generation? If yes, are these services required? Why? Under what regulation or requirement? From whom? What form of emissions allowances are provided? What are the agreements required to receive these allowances?
- Does the project company receive any Renewable Energy Credits/Attributes to offset emissions from its microgrid generation? If yes, are these services required? Why? Under what regulation or requirement? From whom?
- How do tax payer funds that support the microgrid affect, directly or indirectly, the local community? Is the community in favor of such tax funds being used? Why?
- How will this project (including the microgrid and its suppliers) support job creation? What impacts will be realized by the local community? What impacts will be realized by the broader stakeholder community including state, national and international?
- What education is the microgrid administrator providing to the community stakeholders including, but not limited to, members of the local community, rate payers, and government constituents and society-at-large? How does this help the microgrid? What benefits does it provide to these stakeholders?

Sub Task 2.4.3 Grid Value Proposition

The Contractor shall present a clear and compelling case that the benefits to utility stakeholders outweigh associated costs and risks by addressing no less than the following questions:

- How much electricity does the loads to be served by the microgrid use from the utility or other supplier prior to connecting to the microgrid? How much will this electricity demand be decreased due to the installation of the microgrid? How will the load profile of participating customers change? How will such changes impact on the local distribution system?
- Will the microgrid affect the amount of electricity that the broader community and rate-payer base would use as provided by the utility or third-party suppliers? How would that affect that entity and their ability to operate?
- Will the microgrid help the utility or transmission operator defer upgrades to their system that would otherwise have been needed? If yes, in what way (be specific)? Are only some or all costs avoided? Which ones?
- Will the microgrid improve daily operations of the local distribution system or help mitigate strain on the local distribution system from local power outages? If yes, in what way (be

specific)? How is the use of the microgrid to improve operation better or worse than other alternatives available to the local distribution company (utility)?

- How will costs associated with interconnection and/or upgrade costs and administration costs (for contracts or during operation) be accounted for?
- Will the microgrid increase or decrease the amount of electricity that third-party suppliers sell directly to customers or impact revenues received by other load-serving entities? Are such impacts quantifiable? How will the amount of thermal services procured by loads now served by the microgrid be changed due to any thermal services provided by the microgrid? How will the microgrid affect the amount of thermal services that the broader community and rate-payer base would use as provided by the district heating company?
- Does the project qualify for any Renewable Energy Credits or other renewable attributes? In what market does the project qualify? Are the credits sold to load serving entities? Or are they retired and why was that decision made?
- If this project qualifies for renewable energy credits or attributes, are any provided to the utility? To others? If yes, under what arrangement are they provided? Why are such credits required?
- Does this project generate any emissions allowances that can be used or purchased by the utility or other generators to offset their emissions? Under what program(s) does this project qualify?
- Do the loads served by the microgrid provide any demand response services directly to the utility or in the NYISO market? Did the user provide such services before the microgrid was installed? If not, why is this now being provided?
- Is the microgrid acting as an aggregator of DR or other DER resources for the utility or NYISO? How does this support or help that entity's operations?
- Does the utility or NYISO currently use or plans to use a third party demand response aggregator? How will the operation of the microgrid change or affect the services that it will use from this aggregator? How could or would the microgrid provide those services instead?
- What costs does the utility or NYISO incur when using a third-party demand response aggregator? What funding is used to pay for these costs? Will these costs be increased or decreased with operation of the microgrid?
- Does any customer sited DER provide any benefits (including improved operation, deferred upgrade costs, other) directly to the utility or into NYISO? Any services (including capacity, ancillary services, DR)? Did the customer-sited DER provide such services before the microgrid was installed? If not, why is this now being provided?

Sub Task 2.4.3 Other Stakeholder Value Proposition

The Contractor shall present a clear and compelling case that the benefits to governing entities and project suppliers outweigh associated costs and risks by addressing no less than the following questions:

- How will this project support and demonstrate the New York's Reforming the Energy Vision (REV) goals? Is this project demonstrating any desired attributes beyond those specific to community microgrids?
- How is this project supported by the public policies of the federal, state, and local governments, authorities having jurisdiction (including environmental and energy regulators), and public funding agencies? Be specific about each agency involved and how this project meets those objectives.

- What are the suppliers getting out of their relationship with the project company (other than lessons learned or payment for products and services)? Do they have other strategic reasons for wanting to participate in this project? How will this project help grow their businesses?

Sub Task 2.4.4 Purchaser Value Proposition

The Contractor shall present a clear and compelling case that the benefits to purchasers of microgrid power outweigh associated costs and risks by addressing no less than the following questions:

- If the representative of the loads is purchasing electricity or thermal energy from the microgrid rather than from the utility or other third-party supplier, is the user saving money on its electricity/thermal supply/distribution purchases? What benefits is the microgrid providing to the representative of the load? How are these savings calculated? What is the likelihood that these savings will be maintained over the life of the project? Are there any contractual mechanisms to guarantee a savings?
- Does the user/purchaser of the microgrid's services use any fuel for their own thermal resource generation? Will the amount of fuel that they purchase change with the installation of the microgrid? How will this change affect the purchaser? Will there be any other indirect savings? Will the microgrid provide any energy services that will reduce the amount and/or cost of fuel to the loads?
- Do any of the loads served by the microgrid receive electricity or thermal energy from other DER during normal operation, either on-site or remote? During islanded operation? What is the nature of that agreement? How will that relationship and electricity flow affect the amount or timing of when the microgrid can provide electricity?
- What services does any other customer-sited DER provide? Are the services provided coincident with the microgrid or at other times? How will the delivery of that service be managed in conjunction with the microgrid's operation?
- Does the microgrid project company provide any incentive to the other on-site DER owners to adjust generation during normal operation? During islanded operation?
- Has or will the customer-sited DER be able to monetize the benefits (other than direct services) provided to the macrogrid? Is any of this compensation affected or adjusted due to the presence of the microgrid?
- Will the user of the microgrid provide any demand response services directly to the utility or NYISO? Did the user provide such services before the microgrid was installed? If not, why is this now being provided?
- If the loads served by the microgrid or other customer-sited DER previously provided DR services to the utility or NYISO, but now provides those to the microgrid, has the customer's financial payment or incentive for the DR from other programs been reduced? How does this affect the overall financial benefit to the user?
- For paid services that are made available during islanded mode (such as a store), what benefit does this provide to the owner or representative of the load? Is this benefit that would have been otherwise lost without the microgrid and/or benefit that is in addition to that which it receives normally?
- How much will the user of the microgrid reduce its usage from the utility? Is this a significant amount? What portion of its usage? Will the customer incur any penalties or changes in rates for this?

- Does the microgrid provide any other energy benefits directly to the loads (such as improved power quality, desired generation type) that would not be available from the utility?
- Is this project company, through an operating affiliate / administrator providing any energy management services to the loads served by the microgrid? To other loads? To other customer-sited DER? If yes, what are those services? What are the responsibilities of the microgrid administrator?
- How would the rates and price signals from the utility, or others, for supply and distribution services (including time of use or other) affect the way in which the loads are used? Will the microgrid monitor these price signals? How does it affect the operation?
- What education is the microgrid administrator providing to the users of the microgrid including, but not limited to the representative of the loads as well as representatives for other on-site energy resources? How does this help the microgrid? What benefits does it provide to these stakeholders?
- What costs does the representative of the load or other DER incur when using a third-party demand response aggregator? What is the basis for the cost? Is it a fee or some other basis? Will this cost be increased or decreased with operation of the microgrid?

Task 2.5 External Support

Sub Task 2.5.1 Community and Government Support

The Contractor shall identify the ways in which community and government stakeholders will contribute to the project by addressing no less than the following questions:

- Will the community and other stakeholders provide support to the development, construction, and/or operation of the microgrid? If so, please describe how these entities will help this project

Sub Task 2.5.2 Financiers

The Contractor shall identify financiers supporting the project and describe the process/criteria used in their selection by addressing no less than the following questions:

- Who is providing equity and debt to finance the project? Are they considered the primary owner or simply the investor? How were the equity investors and debt providers found and chosen? Describe how microgrid ownership and operations may be impacted by the structuring of investments?

Sub Task 2.5.3 Grid Support

The Contractor shall identify utility and non-utility stakeholders (e.g., NYISO, third party electric, heating and cooling service providers) and describe in some detail what each of their roles will be relative to the viable operation of the microgrid project by addressing no less than the following questions:

- Who is the local distribution company (i.e. utility)? Are they a regulated utility, a municipal utility, or other? What is their participation in the microgrid project team?
- Will NYISO be involved in the development, construction or operation of the microgrid project? If so, in what way? Are they simply a market facilitator or will they have an active role?

- Are there any load serving entities or other generators involved in or related to this microgrid project? This may include entities that currently serve the loads that will be served by the microgrid or that will serve the microgrid? What, if any, is their participation in the microgrid?
- Is there a district heating company involved or related to this microgrid project? This may include district heating companies that currently serve the loads to be served by the microgrid. What, if any, is their participation in the microgrid?
- Is the microgrid receiving any electricity from the utility or third party suppliers? How much electricity is expected to be used and when? What assets of the microgrid be affected if there were an outage? Why did the microgrid choose to purchase from that entity?

Sub Task 2.6 Project Planning and Construction Management Services

Sub Task 2.6.1 Project Planning

By addressing no less than the questions presented below, the Contractor shall develop a reasonable project schedule and project management plan to ensure the schedule is maintained and supplier and other work requirements are appropriately coordinated. Such plan shall include a scope of work and project approach that is reasonable, exhaustive, and extensive and executable upon any award to construct and operate a microgrid under a subsequent stage of this NY Prize competition.

- What is the project schedule and proposed plan of action to ensure the project meets proposed schedule?
- What is the scope of work for the project manager? What sort of reports will they prepare? On what interval? To whom?
- Has a project manager been involved in the development of the feasibility study or audit grade design? If no, who has been primarily responsible for management? If yes, is this project manager the same for this phase and the construction phase?
- Describe the scope of engineering services to be completed by each engineering firm.
- What engineering has been completed to date? What is left to be completed?
- Provide a detailed scope of work describing what the construction firm will be responsible for as well as who will complete each task.
- Has the construction firm provided any support or review of the audit-grade design? How has their feedback been incorporated?
- Which equipment will be provided directly by the construction company? I.e., which equipment is the construction company responsible for procuring?
- Who will the construction firm report to? What will they report and how regularly?
- What is the proposed construction schedule? How will the scheduled be managed to minimize delays?
- What development services have been completed to date? What are left to be completed? What is the schedule for completing any remaining services?
- What is the scope of work for the developer? For what duration of the project are they involved? To whom do they report?
- Describe the property which will be used for the microgrid installation? Is it suitable in its current state or will it need site improvements or civil work?

- What legal work has been completed to date and what is left to be completed? What is the timeline for completing all legal documents?
- What environmental permits or licenses are necessary to develop and operate the microgrid? What work has been completed to date and what is left to complete?

Sub Task 2.6.1.1 Construction Management Services

The Contractor shall prepare a Construction Management Services plan that includes tasks associated with the inspection and general supervision of construction to check the contractor's work for compliance with the drawings and specifications and quantity and quality control. For this task the Contractor's construction management services plan shall address no less than the following questions.

- Describe plans for conducting quality tests necessary to verify conformance with technical specifications concerning minimum quality requirements, including the verification of in-place quantities and other records reflecting any as-built facility(ies).
- Describe plans for preparing inspection reports, copies of field measurement notes, test results or other documentation that will be essential for verifying and otherwise certifying contractor's requests for payments.
- Describe all plans for monitoring construction to identify needed adjustments in design as dictated by actual field conditions, codifying such contract amendments and for changes affecting alignment and detail or dimensions shown on drawings, amending drawings accordingly.
- Describe other plans for managing construction including, but not limited to, providing horizontal and vertical control in the form of benchmarks and baselines to be used by the contractor in staking the construction, review and approval of shop drawings, and project coordination.

Sub Task 2.6.2 Suppliers

By addressing no less than the questions presented below, the Contractor shall identify selected suppliers of equipment, technologies, engineering and project management services, software and any other products and services necessary for the construction, testing/commissioning and operation of the microgrid, indicate ways in which each will contribute to the project and provide evidence that each have been thoroughly vetted according to appropriate criteria and have the qualifications necessary to implement the project as designed subject to any award to construct and operate a microgrid under a subsequent stage of this NY Prize competition.

- For each technology to be used (hardware or software), describe the state of its use in the market. I.e. how long has the product been on the market? How many have been installed and successfully used? Is this a pilot of the technology?
- Who are the equipment and software manufacturers for the microgrid? What is the financial strength of each manufacturer? What are their qualifications and track record? Provide any references.

- What equipment and/or software is provided by each manufacturer? Has any of that been ordered or supplied yet? Provide data sheets.
- Who are the fuel suppliers? What is the process for ensuring fuel supplies for the operation of the microgrid?
- Who will be the project manager for this project? What are their qualifications and track record? Provide references.
- Who is completing the engineering of the microgrid? Why were they chosen? What are their qualifications and track record? Provide any references.
- Who will be the general contractor for the construction of the project? What are their qualifications and track record? How local are they to the site? Provide references for similar projects.
- Who will be responsible for the day to day operation of the assets (excluding system control)? Who will receive and respond to system alarms/alerts? Who will be responsible for the ongoing maintenance of the assets? What are their qualifications and track record? Who will perform the labor?
- What services is the legal counsel providing? For example, are they simply preparing documents or are they providing advice on other matters such as business model or regulatory filings? What other services? Which legal firm has or will prepare the documents needed to establish legal ownership of the microgrid project? What are their qualifications and experience?
- For consultants retained what services are being acquired, what is the status of such work and what are their qualifications and track record for similar projects?
- Who owns the property on which the microgrid will be installed? Is the property owner-occupied or leased? If leased, what is the leasing arrangement?
- Who is providing insurance for this project? What are their qualifications?
- Is there a third party aggregator that is working with the microgrid project company, the users of the microgrid or the local distribution company? What is that company's qualifications for supporting this project? What services do they offer? What programs have they been a part of previously?

2.6.2.1 Supplier Agreements

By addressing no less than the questions presented below, the Contractor shall demonstrate that it has established written and contractual agreements with the suppliers to obtain explicit support and secure any needed services.

- What is the relationship between the developer and the administrator of the microgrid? Does this differ during the development phase versus construction versus operation? Are any of these relationships secured under contract?
- Describe the relationship and contractual arrangements with each equipment/software supplier. Specifically, have any commitments been made to ordering from a specific supplier?
- Describe the relationship and contractual arrangements with each equipment/software supplier. Specifically, have any commitments been made to ordering from a specific supplier?
- Describe the relationship and contractual arrangements with the project management. For example, will project management tasks be completed internal to the project administration or subcontracted? How will the quality of the project management be evaluated?

- Describe the relationship and contractual arrangements with each engineering and consulting firm. How does/will the contracts evaluate and manage quality of the engineering and consulting services? What risks exist to this agreement?
- Describe the relationship and status of the contractual arrangements with the construction firm. Are there any contractual mechanism to support the project schedule and quality of work?
- Will the construction firm provide a workmanship warranty? If yes, what is the guarantee?
- Describe the relationship and contractual arrangements with the system controller. For example, will the control tasks be completed internal to the project administration or subcontracted? How will the quality of the project management evaluated? What penalties if the system is not properly managed (however that is defined)?
- If Operations and Maintenance (O&M) is not completed by the project administrator, describe the relationship and contractual arrangements with the firm responsible for O&M. What are the risks and risk management measures taken in those agreements?
- What is the legal arrangement between the microgrid company and the property owner? What is the current status? Provide any letter of commitment, lease option, lease, license, or other evidence of site control.
- What is the relationship between the legal counsel and the project? Is this done by internal legal counsel or external? If external, what are the existing contracts or agreements for services?
- Is the fuel supply secured under contract or purchased as needed? If contracted? How long is the contract for? What are the conditions?
- What insurance coverage does this project have? Is it covered during construction? Is it covered during operation? What are the general terms and insurance services received from the provider?

Task 2.6.3 Engineering, Procurement and Construction (EPC) Costs

The Contractor, by addressing no less than the following questions, shall identify and quantify EPC and all supplier costs and justify their magnitude.

- Provide an itemized budget of all of the construction costs by scope item (e.g., engineering, permitting, procurement, construction. Provide an explanation as to how these costs were derived and by whom. For all costs inputs, identify those that are fixed and those that are estimated. For labor, provide estimates that align with the construction schedule. For equipment, will the project incur additional cost from ordering through another firm?
- Complete a project budget spreadsheet summarizing all upfront capital expenditures that are needed to construct the project. Add notes and descriptions as to what is included in each category.
- How does the cost of the equipment/software compare to other options available in the market? Justify any cost premiums.
- How will the developer be repaid for any development expense spent to day or to be spent prior to bringing in other sources of capital?
- Will the developer be reimbursed for their services if they are not the owner of the microgrid? Justify the costs of these development fees.
- Is the project administrator paid or given any budget for administering the project? If yes, how much and on what basis? If now, how will the project be managed and what is the expected costs for that administration?

- Provide a justification for the engineering costs. For example, how does this budget reflect the complexity of project design?
- Provide a justification for the consultant costs. For example, what services is the consultant providing that could not be provided by the project administrator?
- Describe the budget allocation for project management. How will costs be managed? What is the risk of cost overrun?
- What is the cost for legal services? What has been spent to date and what is expected to be spent?
- What upgrade/interconnection costs are known at this time? What is the possibility of interconnection cost increases? When are payments for interconnection costs due to the utility?
- Will the project incur any additional costs for local distribution system or transmission upgrade costs? How does this differ from other interconnection costs paid to the local distribution company? What is the justification for the cost? When are the amounts due? What is the expectation of staying within budget for these costs?
- What costs will the project incur for any interconnection application fees? This could include, but is not limited to initial application fees, study fees, or program entrance fees. How are these costs determined? What costs are known at this time? When must they be paid?
- What costs will the project incur for any environmental permits that it must secure? This could include, but is not limited to, local, state or federal permits. How are these costs determined? What costs are known at this time? When must they be paid?
- What costs will the project incur for any local permits that it must secure? This could include, but is not limited to building and electrical permits. How are these costs determined? What costs are known at this time? When must they be paid?
- What contingencies have been included in cost budgets?

Sub Task 2.6.4 Operating Costs

The Contractor, by addressing no less than the following questions, shall identify and quantify all operating costs and justify their magnitude.

- Describe the rate structure for that part of the microgrid project company responsible for Operations and Maintenance (O&M) or if applicable a third-party provider of O&M services. Is it fixed price or labor and materials? Why? How do these costs compare to other distributed generation projects?
- Describe the budget allocation for the administration of system controls. How will costs be managed? What fees does the project company pay to the administrator of the microgrid? Are these costs borne internally as general and administrative costs or are they paid to an outside entity? What are the cost expectations up through construction (part of EPC cost) and what are the costs throughout the operation of the project?
- Will the microgrid owner pay any lease payment or other to use the property for the microgrid? If yes, how was this price determined? How does it compare to other similar energy projects? Will a financial reserve be maintained to pay for any replacement parts in the future?
- Will a financial reserve be maintained to pay for any replacement parts or major maintenance in the future? How has this reserve been derived?
- How stable is the cost of fuel? What actions have been or will be taken to hedge against price fluctuations?

- How much is the microgrid project company expected to have to pay the utility or third-party suppliers for electricity supply and distribution service charges? How much of the rates are volumetric versus fixed? How will any fixed charges affect the economics of the microgrid? How will fixed charges support the utility? Are the rates fixed or variable? Is the usage under contract or subject to tariff?
- Are there administration costs for the interconnection agreements or other agreements with the utility that will be passed on to the microgrid? To what extent are those costs known now?
- What is the cost of the wheeling services provided to the microgrid to be able to transfer electricity to its customers? What is the basis for payment and how often are payments made? Are these costs passed through to the customer?
- Does the microgrid project company pay any incentives to the representatives/users of the loads for DR or other services? Any payments to representatives/owners of other DER? What is the form of those payments? Specifically, what is the cost and how often is it incurred by the microgrid?
- Does the microgrid company provide any incentive to the loads to adjust demand during normal operation? During islanded operation? What are the costs? At what level and what are the conditions in which payment is or is not required? How are these structured to promote desired behavior from user?
- What is the cost to the microgrid for incentives paid to other DERs' representatives for adjustment of their generation or load to meet the requirements of the microgrid? At what level, frequency and under what conditions are the payment required?
- What costs will the project incur for needing to buy emissions allowances or offsets from the utility or other sellers? Why is this purchase needed? What are the arrangements and contracts secured for these costs? What are the risks to cost changes?
- What costs will the project incur for needing to buy renewable energy credits or attributes from the utility or other sellers? Why is this cost stream needed? What are the arrangements and contracts secured for these costs? What are the risks to cost changes?
- What costs will the project incur if using a third-party demand response aggregator? What are the terms of those payments? Are they known via a contract or are they subject to change.
- What are the insurance premiums paid by the project company to insure the installation? Are there any costs during the construction phase? What value of equipment is covered by these cost?
- What financing costs or fees will be incurred?

Sub Task 2.7 Creating Value

Sub Task 2.7.1 Assets

By addressing no less than the questions presented below, the Contractor shall identify/define the assets that will be owned by the microgrid project company, and assets that will be used to serve purchasers of services that are not owned by the microgrid project company, describe the role that each asset will play in the project and provide evidence that such assets are feasible to implement.

- How is the microgrid defined? What assets are considered part of the microgrid, for the purpose of this assessment? What are the boundaries and delivery points of the project? What other switchgear is needed for the installation? What is the testing that has been done on the equipment to ensure it complies with interconnection requirements?

- For each asset in the microgrid, describe who the owner of that piece of equipment is. If there are multiple owners of the microgrid's assets, what are the relationships and/or contractual agreements between the owners to reconcile potentially differing interests?
- For each asset in the microgrid, describe its purpose and why it is needed for the microgrid to be able to provide the services it is contractually obligated to provide. For any equipment not needed for contractual obligations, describe why it is needed or included in the project? In summary, please justify the cost of all equipment in the microgrid.
- For each asset in the microgrid, describe where this equipment has been used before (i.e. on past microgrid projects). Is the product still in prototype phase? Is it commercial? What are the warranties? Are there any risks that manufacturer won't be able to meet warranty requirements over the lifetime of the project?
- What are the interconnection requirements of the utility for the microgrid? What is the status of the interconnection study? What upgrades or interconnection equipment are known to be required at this time and what items are still to be determined?
- Describe the generating assets. Are there designated generators for each load, are they dispatched as needed, or are they treated as a single generator? How are multiple generating assets balanced?
- What type of generators are used for this project? What is the split between renewable and fuel generators? What are the risks or shortcomings of each technology? What are the preferences and advantages of each technology?
- What, if any, storage types are used for this project? Why were they selected to be implemented? How will they be sited and used with respect to the other equipment and assets? What are the advantages of using storage? What are the disadvantages? What are the risks to using storage?
- What distribution equipment will be part of the microgrid? Will these be installed new or is there existing infrastructure to be used? Will the distribution be owned by the microgrid owner and/or by the local distribution company?
- Does this project include an investment-grade audit and plan for efficiency? Will such improvements improve the operation of the microgrid? Are these improvements considered part of the microgrid assets? If not, are they considered other on-site DER?
- Do any of the loads served by the microgrid provide DR services to the microgrid? If so, what loads provide such services and when? What, if any, action is required by the user of the loads to adjust usage?
- What is the other DER, either on-site or remote, that will interact with the microgrid project? This could include, but is not limited to, distributed generation, storage, distribution systems, building management systems, or smart metering. Will any of these resources be leveraged by the microgrid to create better value for the customer?
- Does any of the customer-sited DER provide any services (capacity, ancillary services) to the microgrid? If so, what DER provide such services and when? What, if any, action is required by the other DER owner to deliver such services?
- Is the user of the microgrid also served by any other DER during islanded operation? What services does that DER provide? Are the services provided coincident with the microgrid or at other times? How will the delivery of that service be managed in conjunction with the microgrid's operation?

- Who will act on behalf of the other DER that will interact with the microgrid? Do they have any experience in interfacing their equipment with a microgrid? Explain their understanding.
- Does the customer pay the representative of the DER for the services provided? If so, what is the structure of those payments?

Sub Task 2.7.2 Control & Monitoring

By addressing no less than the questions presented below, the Contractor shall describe the control schemes necessary to ensure that the microgrid will reliably provide all proposed services and is feasible given the available resources for system control and describe a clear and defensible strategy for measuring and verifying the flow of power and services between the microgrid, purchasers, and the grid.

- What are the control systems that are proposed to be used for this project? How does this technology support the control schemes desired by the contracts? Will the equipment include automatic DR controls or software?
- How will the system be monitored and operated on a day-to-day basis? Describe the protocol for receiving system alerts, assessing the problem, responding to the problem.
- How often is the system monitored and controlled by the system controller? Ongoing, hourly, daily? Is this supported with automatic systems? How periodic will the system publish a report on conditions?
- How does the control system (hardware/software) prioritize loads and generation in normal operation? In islanded operation? Is the prioritization based on technology? Contractual arrangements? Maximum revenue? Any other priorities?
- What is the energy mix generated in normal operation by the microgrid? In islanded operation? Is the mix of electricity, heating and cooling prioritized to one of those streams? If yes, why is that selection made and how is the system controlled for optimal operation?
- What control will the utility or transmission operator have over the microgrid? Why will such controls be required and/or preferred? How will the controls be managed with respect to the project company being able to serve its customers?
- Does the microgrid maintain any control of the loads served by the microgrid or other customer-sited DER? Is such control automatic, manual or a combination? What control functions are possible?
- If loads or other on-site DER are not controlled directly by the controls hardware and software, as managed by the system controller, how will the system controller notify the user of the loads/DER that they must adjust behavior?
- How are decisions made as to when to provide capacity to the utility or NYISO versus other options? Does this differ between normal and islanded operation?
- What control does the utility or transmission operator have over the loads served by the microgrid? For what reasons does such control exist? Will this control change once the microgrid is operating? If yes, in what way? How is this change being managed?
- What control does the utility or transmission operation have over other DER serving the users of the microgrid? Why does such control exist? Will this control change once the microgrid is operating? If yes, in what way? How is this change being managed?

- Does the representative of the loads or other customer-site DER currently use or plans to use a third party demand response aggregator? How will the operation of the microgrid change or affect the services that it will use from this aggregator?
- Is the microgrid using any demand response aggregation services from a third party provider? If yes, what do those services entail? What are the benefits and drawbacks to working with a third-party provider? How will the microgrid manage the requirements of the aggregator with the requirements of its customers/user?
- What is the proposed measurement and verification approach? How will the microgrid assets be adjusted if they are not performing as expected? Who will take responsibility for measurement and verification? To whom is this entity responsible for reporting?

Sub Task 2.7.3 Distribution Strategy

By addressing no less than the questions presented below, the Contractor shall describe technically feasible mechanisms for distributing electricity to loads, as well as balancing supply and demand, in both normal and islanded modes and describe processes to ensure that the data necessary to operate the microgrid economically and safely is available.

- Describe the electricity delivery services that are provided to loads during normal operation and islanded operation. Is the electricity delivered directly through microgrid distribution system or using the utilities' distribution system? What is the point of delivery? Is it delivered behind the meter of the load? Which specific loads.
- Describe the delivery of thermal services that are provided to loads during normal operation and islanded operation. Are such thermal services delivered directly through the microgrid distribution system or using a district heating/cooling system? What is the point of delivery? Which if any, specific loads are served?
- What is the electric and thermal load profile of the loads that are served in normal operation? In islanded operation? Does the microgrid provide electricity in a way to match the load profile? What, if any issues, could arise if they are not matched?
- How much electricity and/or thermal energy is purchased by the loads during normal operation? During islanded operation? Is the schedule for load from the microgrid fixed or variable? Does the customer have a preference in terms of which generation is used to meet their load? Are there any other requirements in how or when electricity is provided?
- What system impact studies have been completed by the local distribution company? What were the results of any completed studies? What studies are remaining to be completed and what are the issues left to resolve?
- Will the microgrid have access to the historical meter data and/or ongoing usage data? What access will the local distribution company need to provide for access to that data? How will the microgrid ensure that the data is protected and private?
- Is the utility providing any wheeling services for the electricity to be transferred to the customer of the microgrid? Describe the need and mechanics of those services.

Sub Task 2.7.4 Maintenance

The Contractor shall develop and describe a maintenance strategy that proactively addresses potential issues to ensure reliable operation and addresses no less than the following questions:

- Provide a scope of work for the preventative maintenance that will be performed on the microgrid assets? Provide a relative ranking of which preventative maintenance measures are most and less important.
- Describe the protocol of notifying the microgrid administrator/owner about any major issues related to the system's operation or maintenance? How often are reports generated and circulated?
- Does the microgrid carry, for its entirety, any workmanship warranties? Who is providing such warranties and to whom? What is covered by these warranties and for what term?
- What equipment replacements are expected over the life of the system? Which are major and planned for and which will be dealt with as problems arise?
- How will equipment be procured for ongoing maintenance? Will a spare parts inventory be held or will equipment be ordered as needed?

Sub Task 2.7.5 Reliability

The Contractor shall present evidence that the chosen equipment and operational strategies will ensure reliable delivery of power in both connected and islanded modes by addressing no less than the following questions:

- What is the expected time that the system is expected to operate in islanded mode? How long can the system operate in islanded mode? Is there any equipment that is specifically required to allow the microgrid to operate for that long?
- Are certain assets dedicated to certain loads, or may all loads be served from any generator? How does the pairing of generation and load support the microgrid's reliability? Are the other technologies or methods used to support reliability?
- What fuel (not electricity) is required to operate the microgrid? How reliable is the fuel source? What is the method for delivery?
- Describe how the microgrid can remain resilient to forces of nature that have the potential to become more typical to the area served by the microgrid and pose the highest risk to microgrid operation including the potential impacts as predicted in the 2011 ClimAID report and 2014 ClimAID update⁵.
- What fuel (not electricity) is used by the loads served when the microgrid is not operating (primarily for heating)? How reliable is the fuel source? What is the method for delivery?
- Describe approach or contractual mechanisms for ensuring reliability of the fuel source.

Sub Task 2.7.6 Taxes

By addressing no less than the following questions, the Contractor shall quantify all taxes that may be levied on the project and provide evidence that such levies are reasonable.

- Will the project company be required to pay state corporate income taxes? What is the basis for these tax calculations? What is the assumed tax rate and how was it assessed? Will any exemptions or credits be provided?

⁵ <http://www.nyserda.ny.gov/-/media/Files/Publications/Research/Environmental/EMEP/climaid/ClimAID-Report.pdf> and <http://www.nyserda.ny.gov/-/media/Files/Publications/Research/Environmental/ClimAID/2014-ClimAid-Report.pdf>

- Will the project company be required to pay federal corporate income taxes? What is the basis for these tax calculations? What is the assumed tax rate and how was it assessed? Will any exemptions or credits be provided?
- Will the project company be responsible for paying property taxes on the microgrid equipment and/or on the property where the microgrid will be installed? This may include, but is not limited to, real property and personal property taxes. Will the project pay the taxes as they are assessed or has the project company arranged any structured tax arrangement (such as a Payment In Lieu of Taxes, or PILOT for property taxes)?
- Will sales or services taxes be assessed on any of the products and services purchased by the microgrid project company? What are the regulations or laws that require or exempt sales tax on these items or services?
- Will the project company be responsible for paying taxes on the sale of energy services it sells, such as a gross receipts tax? Are these taxes due on sale of electricity and/or thermal energy services? What laws or regulations dictate that the project must or may not pay these taxes?
- Will this project benefit from any local, state, or federal tax incentives such as tax credits or tax exemptions? If so, what must be done to qualify for these incentives? When are these incentives or credits financially realized?

Task 2.8 Project Profit and Revenues

Sub Task 2.8.1 Profitability

The Contractor shall complete a project proforma spreadsheet (See Attachment D) summarizing all revenue and cost flows over the lifetime of the project. The completed proforma shall have appropriate notes and annotations as to what is included. The Contractor shall define profitability (examples include internal rate of return, net present value, payback period or return on equity), provide a basis for calculating profitability, indicate on whose basis these calculations are presented (e.g. project owner, project investor) and identify specific impediments (regulatory, legal and market-oriented) to profitability.

Sub Task 2.8.2 Revenue

By addressing no less than the questions presented below, the Contractor shall describe the revenue streams that are feasible given equipment, operational, legal, and other constraints, for times when the microgrid is operating in parallel with or connected to the macrogrid and at times when operating in islanded mode. Such assessment shall identify revenue streams that are clearly available and appropriate as well as identify revenue streams that have the potential to increase profitability but are not yet quantifiable and/or dependable.

- Is there a guaranteed minimum revenue stream for electricity in normal operation? In islanded operation? For example, is there a minimum load that the customer must use from the microgrid? Alternatively, is the off-taker responsible for purchasing all generation by the microgrid? Is there a maximum that they will purchase? Some other arrangement?
- Are there any penalty payments owed to the loads served by the microgrid or other customer-sited DER if the microgrid does not deliver the amount of electricity or thermal services it has committed to providing? How are these shortfall payments calculated? What are the risks that this will occur? What production guarantees are made and how likely is it that production models will vary?
- What is the rate structure for payment of electricity and thermal energy provided to the loads during normal operation? Does the customer pay a rate set in a contract or is it an index against

other rates (e.g. LDC electric rates, net metering credit, alternate thermal costs)? Does the rate have an escalation? If yes, is it fixed?

- Are there any premium payments for electricity or thermal energy provided during islanded operation? To what extent does the project financial success depend on a percentage of revenue coming from islanded operation?
- Is there some other structure by which the electricity or thermal energy generated by the microgrid supports the financials of the project? For example, if the microgrid is owned by the recipient of the electricity services, are the electricity savings considered?
- What revenue does the microgrid company earn from sale of electricity in the wholesale market or directly to the utility? Is this sale under contract or through some other mechanism? How firm is the pricing?
- Will any of the electricity provided to the utility be credited via net metering? How much net metering credits will the microgrid generate? How are these credits calculated (i.e. what tariff rate) and are the rates under contract or subject to tariff changes? What is the projection for net metering credit rates for the lifetime of the project? What is the total value of net metering credits that the project is expected to receive?
- What revenue does the microgrid project receive from sale of net metering credits to its users/customer? How is the price for the net metering credit determined? Is it fixed or variable? What are the risks in to the revenue streams due to changes in net metering credit rate?
- Is the owner of the loads or other customer-sited DER charged a penalty if they do not adjust demand as requested during normal operation? During islanded operation? At what price level and under what conditions will there be a penalty charge?
- What revenue does the microgrid earn from providing energy management services to the loads served by the microgrid? To other customer-sited DER? To other? What is the structure of the payments? What are the terms of the agreements?
- Is the microgrid project company paid for capacity services provided to its users? To the utility? Into NYISO? What is the form of those payments? Are they under contract or other? What is the amount of the payment and how often is it received?
- Is the project company receiving financial payment or incentive for demand response and/or ancillary services provided to the utility or into NYISO? If yes, describe the structure of those payments, including, but not limited to, a summary of the frequency and risk to payments. If no, is it anticipated that any payments will be available in the future and describe the likelihood of that occurring?
- Does the utility or transmission operator provide any financial incentive for siting the microgrid in particular areas that would help defer transmission upgrades? What is the amount of the incentive and when is it paid?
- What revenue, if any, will the microgrid company receive from the sale of renewable energy credits? Are these revenue streams secured under contract or will they be sold on some other basis? What is the likelihood that the project will receive the REC revenue outlined in the proforma? What are the risks? Who is the counter-party? Are they sold directly to a buyer or through some other intermediary or broker?
- What revenue, if any, will the microgrid company receive from the sale of emissions allowances? Are these revenue streams secured under contract or will they be sold on some other basis? What is the likelihood that the project will receive the associated revenue outlined

in the proforma? What are the risks? Who is the counter-party? Are they sold directly to an LDC or through some other intermediary or broker?

- Will the microgrid be able to monetize the benefits (other than direct services) provided to the macrogrid (such as improved operation, deferred upgrades, mitigated system strain during outages)? What is the form of direct or indirect payment? Is this under contract?

Task 2.9 Project Financing

Sub Task 2.9.1 Government Financing

By addressing no less than the questions presented below, the Contractor shall describe sources of government financing that effectively leverage NY Prize funds and present no conflict with NY Prize objectives.

- How much funding is the applicant going to match? What guarantees does the microgrid project provide to NYSERDA that those project funds will be secured so that the project is able to progress?
- What will design prize money be used for? How will it help to progress this project? Could the project have been completed without the NY Prize funding?
- Is this project being funded or financed from public programs other than from NY Prize? From whom is this project receiving public funding and/or financing? This may include, but is not limited to, NYSERDA, DOE, or the local government. What percentage of total project budget is funded by incentives? Would the project move forward without such incentives?
- Have the incentives been secured? What is the timing for those incentives and does it align with the timing of the NY Prize incentives? If these funds are not secured yet, what is the likelihood and process for securing such funds?
- What ongoing requirements does the project have to comply with as a result of incentives it has received? What are the consequences if the project administrator does not complete these requirements?
- Is this project dependent on receiving government incentives that are funded by taxes? If so, what is the likelihood that those funding sources will exist or change with government budget changes?
- Is the project utilizing any public financing, such as municipal bonds, loan guarantees or other? If yes, how did this project secure those funds? What portions of the project are supported by such funding?
- If the project is utilizing public financing, what are the terms and rates of repayment? What are the risks to not being able to repay?

Sub Task 2.9.2 Private Financing

By addressing no less than the questions presented below, the Contractor shall describe all agreements with financiers to secure financing, including describing sources of debt and equity financing, including any project financing provided by the project developer or project suppliers, and identify the terms of such financing.

- Describe the contractual relationship between the equity provider(s) and the project company. Are the equity providers in any way considered owners of the project company?
- What is the contractual agreement between the equity provider and the project administrator? Does the equity investor exercise any control over the administration of the microgrid?

- What are the contracting and financing vehicles used to secure debt? What are the terms and conditions of receiving and repayment of debt?
- In what way is the equity firm providing funding/financing to the project company? Are they providing capital or other? When are these funds dispersed?
- What is the financial return of the project to the equity investor(s)? Is this paid back in annual dividends or will the equity providers earn a return as owner(s) of the project?
- What is the status of receiving all equity funding for the project? Has any been provided to fund development of the project? What is remaining to be secured? What are the steps necessary to secure such funding?
- Is this project receiving debt services to finance this project? If yes, how much debt is provided? Is capital provided in one lump sum, based on milestones achieved, or regular payments?
- What is the interest rate of the debt? What fees and costs apply? What is the schedule for repayment? What are the risks to not being able to repay? What is the likelihood of those risks?
- What is the status of receiving all debt funding for the project? Has any been provided to fund development of the project? What is remaining to secure? What are the steps necessary to secure such funding?
- Has the "developer" funded any of the development costs of this project (outside of funding provided by NY Prize)? What is the source of such funding? How much has been spent to date and how much is expected to be spent prior to construction starting?

Task 2.10 Legal Terms and Conditions

Sub Task 2.10.1 Management of Regulation

By addressing no less than the following questions, the Contractor shall provide evidence that it understands the regulatory environment, can identify significant regulatory barriers/risks that would impede implementation of the proposed project, and presents options or measures to consider to mitigate such risks.

- What are the current policies driving this project? How will the project be affected, on an ongoing basis, due to changes in leadership within the federal, state, or local governments and funding agencies? What are the most severe and/or most likely risks to policy changes that could unexpectedly affect the projects operation and/or economics now or in the future?
- What are the energy regulators that have jurisdiction over this project? This may include FERC, NY DPS, or other local authorities? Under what authority to do they (or do they not) have jurisdiction?
- What are the regulatory requirements that the members of the "macrogrid" must comply with in being involved in this microgrid? Are there any regulations that pose barriers to the utilities or others being involved in the project? How does the project propose to address these barriers?
- How will the project be affected, on an ongoing basis, due to changes in energy regulation? What are the most severe and/or most likely risks to regulatory changes that could unexpectedly affect the projects operation and/or economics now or in the future?
- What are the current energy regulations (at federal, state, or local level) that are relevant to this project? How does this project address and satisfy all of those regulations?
- Where is this system to be installed? Does it require crossing right-of-ways to deliver electricity? Please be as clear as possible and include diagrams.

- Is this project located on a single parcel or address or does it span multiple parcels? If the latter, does that pose any issue or benefit in terms of interconnection standards? Are there any legal or regulatory reasons why this would be a problem?
- What are the environmental regulators that have jurisdiction over this project? This may include EPA, NY Dept. of Environmental Conservation (DEC), or other local authorities? Under what authority to do they (or do they not) have jurisdiction?

Sub Task 2.10.2 Ownership Structure

The Contractor, by addressing no less than the following questions, clearly articulates an ownership structure for the microgrid project, provides evidence that such structure is legally allowed, and contractually binding for all assets, electricity and thermal product.

- Who is the owner of the microgrid? If it is a special purpose entity or some other project company, which entities or companies have equity interest in that project company? Are there other entities that would be considered part of the project company that would be separate from the project administration? Who is responsible for managing the budget and financial performance of the microgrid project company?
- What is the governance structure for the project company?
- What is the legally defined boundaries of the microgrid project? Are they all owed by the same entity? If not, how are the agreements arranged such that different ownership is accommodated for a single project?
- Which entity or entities own the project company? Through what mechanism or contract do they own the project company? Will ownership change throughout the course of the project (e.g. from development/construction to operation)? What is the planned or potential unplanned change in ownership?
- Describe the ownership of the electricity generated by the microgrid. At what point is it owned by the microgrid company? At what point is its ownership transferred? What is the delivery point? Is it transferred to any other third party?
- Who owns the distribution lines that will deliver the electricity? If it is the LDC, does the microgrid have permission to operate on those lines and what are the agreements required to be allowed to do that? If it is the microgrid owner (other than the LDC), are there any restrictions on where these wires can be installed?

Sub Task 2.10.3 Rights to Operate/Permits and Approvals

By addressing no less than the following questions, the Contractor demonstrates that the requisite permits and approvals necessary to legally implement and operate the proposed project can be obtained.

- What special approvals, if any, are required from energy and environmental regulators for this project to be constructed or operated? Will there be any approval or review process with any local authorities/committees? What is the status of the permit applications and what is the likelihood or risks to receiving such approvals? Are there any ongoing compliance documents to file?
- What local permits will be required for the construction or operation of the microgrid? This may include, but is not limited to, building, electrical, or zoning permits. What is the schedule and likelihood of securing such permits? Are there any ongoing compliance documents to file?

- Is the property properly zoned to be able to install the microgrid project? If not, what permits or approvals are necessary?
- Has a title search been completed for the property where the microgrid is to be installed? If no, are there any risks that the project would not have legal authority to be installed on the desired site? If yes, what was the result of the title search and are there any specific or special requirements with which must be complied?

Task 2.11 Operating Agreements

Sub Task 2.11.1 Energy Service Agreements

By addressing no less than the questions presented below, the Contractor shall demonstrate that it has established written and contractual agreements with the utility stakeholders and microgrid service purchasers to obtain explicit support and secure any needed services.

- What contractual relationships exist between the microgrid and the entities of the macrogrid (including, but not limited to, the Local Distribution Company (LDC), the Regional Transmission Owners (RTO), Load Serving Entities (LSE), and District Heating Companies)? These may include, but are not limited to, interconnection agreements and contracts for electricity and other energy services. Which agreements are executed at this point and which must be executed? Which agreements are for the full project lifetime and which are for shorter terms?
- Describe the contractual relationship between the microgrid owner and the purchaser of the electricity and/or thermal energy. Is there a contract for the sale of electricity or are the entities related? What are the major terms and conditions of the contract? Are there any generation guarantees and/or penalties for not delivering? Are there other guarantees (workmanship, other) or conditions and possible penalties? How does the contract(s) address prioritization of loads served in normal and islanded operation?
- What contractual relationships exist to account for the ownership of net metering credits? Are the credit recipients subject to change? What is the likelihood that they would be changed?
- What is the relationship between the load representative (i.e. the counterparty on any agreements with the microgrid company) and the loads? How is the relationship secured (by contract or other? What is the risk that this relationship could change?
- What is the contractual relationship between the representatives of the other DER and the loads? Are they the same entity? Do they have an agreement for sale of services? Are they a nearby entity? Is there some other arrangement? Will those arrangements need to be adjusted due to the new microgrid? If so, in what way and are there any obstacles to those changes?
- Describe the contractual relationship between the other DER representative and the microgrid? How will the two sets of assets interface to serve the customer/user? Do the contracts outline ways in which the resources are prioritized? In the event that the customer cannot pay both, which resources have priority to receive payment for services?
- Describe the relationship between the other DER representative and the DER equipment. Are they the project owner and/or operator? Is the customer acting on behalf of other equipment they use? Is there another piece of the microgrid that is considered, for whatever reason, separate from that which is applying for NY Prize funding?

2.11.2 Other Stakeholder Agreements

By addressing no less than the questions presented below, the Contractor shall demonstrate that it has

established written and contractual agreements with the local community and governing bodies to obtain explicit support and secure any needed services.

- Describe all local support that has been formalized. Attach any letters of commitment or support for this project from community representatives or organizations.
- If the community has an agent acting on their behalf, what is the relationship between the agent and the community? What are the responsibilities of the agent and what authority do they have to act on behalf of the community?
- For incentives not yet secured, has the application for incentive been submitted? Summarize the list of requirements. Do they vary in any way from the requirements of NY Prize?
- Describe the contractual relationship for public financing? Has it been secured? Who are the counter parties? How are risks managed within the agreements? What obligations does the microgrid have other than repayment?

Deliverable: Documentation of all work conducted under Task 2, Microgrid Commercial/ Financial Business Plan.

Task 3: Develop Information for Benefit Cost Analysis

The Contractor shall develop and provide the information for the data capture and facility questionnaire information sheets required to support an independent evaluation of project costs and benefits for this stage of analysis.

Sub Task 3.1 Facility and Customer Description

The Contractor shall list and describe all facilities that will be served by the microgrid. For each facility:

- Indicate the rate class to which the facility belongs (i.e., residential, small commercial/industrial, large commercial/industrial).
- Indicate the economic sector to which the facility belongs (e.g., manufacturing, wholesale and retail trade, etc.).
- Indicate whether multiple ratepayers are present at the facility (e.g., multi-family apartment buildings).
- Indicate the facility's average annual electricity demand (MWh) and peak electricity demand (MW). For facilities with multiple ratepayers, indicate average annual and peak demand per customer, rather than for the facility as a whole.
- Indicate the percentage of the facility's average demand the microgrid would be designed to support during a major power outage.
- In the event of a multi-day outage, indicate the number of hours per day, on average, the facility would require electricity from the microgrid.
- Provide the information for the data capture and facility questionnaire information sheets required

Sub Task 3.2 Characterization of Distributed Energy Resources

The Contractor shall describe the Distributed Energy Resources (DER) the microgrid would incorporate, including for each:

- Energy/fuel source.

- Nameplate capacity.
- Estimated average annual production (MWh) under normal operating conditions.
- Average daily production (MWh/day) in the event of a major power outage.
- For fuel-based DER, fuel consumption per MWh generated (MMBtu/MWh).

Sub Task 3.3 Capacity Impacts and Ancillary Services

The Contractor shall provide estimates of the following services/value the microgrid is expected to provide, as applicable:

- The impact of the expected provision of peak load support on generating capacity requirements (MW/year).
- Capacity (MW/year) of demand response that would be available by each facility the microgrid would serve.
- Associated impact (deferral or avoidance) on transmission capacity requirements (MW/year).
- Associated impact (deferral or avoidance) on distribution capacity requirements (MW/year).
- Ancillary services to the local utility (e.g., frequency or real power support, voltage or reactive power support, black start or system restoration support)
- Estimates of the projected annual energy savings from development of a new combined heat and power (CHP) system relative to the current heating system and current type of fuel being used by such system
- Environmental regulations mandating the purchase of emissions allowances for the microgrid (e.g., due to system size thresholds)
- Emission rates of the microgrid for CO₂, SO₂, NO_x, and PM (emissions/MWh).

Sub Task 3.4 Project Costs

The Contractor shall provide the following cost information for the microgrid:

- Fully installed costs and engineering lifespan of all capital equipment.
- Initial planning and design costs.
- Fixed operations and maintenance (O&M) costs (\$/year).
- Variable O&M costs, excluding fuel costs (\$/MWh).
- What is the maximum amount of time each DER would be able to operate in islanded mode without replenishing its fuel supply? How much fuel would the DER consume during this period?

Sub Task 3.5 Costs to Maintain Service during a Power Outage

For each facility the microgrid would serve, the Contractor shall describe its current backup generation capabilities, if any, by providing the following information:

- Fuel/energy source of each existing backup generator.
- Nameplate capacity of each existing backup generator.
- The percentage of nameplate capacity at which each backup generator is likely to operate during an extended power outage.
- Average daily electricity production (MWh/day) for each generator in the event of a major power outage, and the associated amount of fuel (MMBtu/day) required to generate that electricity.
- Any one-time costs (e.g., labor or contract service costs) associated with connecting and starting each backup generator.

- Any daily costs (\$/day) (e.g., maintenance costs) associated with operating each backup generator, excluding fuel costs.
- Given a widespread power outage (i.e., a total loss of power in the surrounding area), describe and estimate the costs of any emergency measures that would be necessary for each facility to maintain operations, preserve property, and/or protect the health and safety of workers, residents, or the general public. Please include costs for one-time measures (e.g., total costs for connecting backup power) and any ongoing measures (expressed in terms of average costs per day). Specify these costs for two scenarios: (1) when the facility is operating on backup power, if applicable, and (2) when backup power is not available.

Sub Task 3.6 Services Supported by the Microgrid

For facilities that provide fire, emergency medical, hospital, police, wastewater, or water services, the Contractor shall:

- Estimate the population served by each facility.
- Describe how a power outage would impact each facility's ability to provide services. If possible, estimate a percentage loss in the facility's ability to serve its population during a power outage, relative to normal operations (e.g., 20% service loss during a power outage), both when the facility is operating on backup power and when backup power is not available.

For residential facilities, the Contractor shall:

- Describe the type of housing the facility provides (e.g., group housing, apartments, dormitory, nursing home, assisted living, etc.).
- Estimate the number of residents that would be left without power during a power outage.

Deliverable: Documentation of the work conducted under each sub-task under Task 3, Develop Information for Benefit Cost Analysis.

Metrics Reporting Guide

Information Dissemination

On an annual basis, the Contractor shall submit, to NYSERDA's Project Manager, a prepared analysis and summary of metrics addressing the anticipated energy, environmental and economic benefits that are realized by the project. All estimates shall reference credible sources and estimating procedures, and all assumptions shall be documented.

Reporting shall commence the first calendar year after the contract was executed. Reports shall be submitted by January 31st for the previous calendar years activities (i.e. reporting period). Reports shall continue to be submitted for **two** consecutive calendar years after the project is completed. The Contractor shall make every effort to quantify and document benefits and incorporate them into the Final Report and technology transfer activities as required in this agreement.

A form will be provided to you to submit the following metrics:

Information Dissemination

Name of Presentation or Event	<i>Names of the presentation or event where information was communicated about the product, company or research</i>
Organization that hosted the event	<i>Name of the organization that hosted the event</i>
Type of event	<i>The type of event where information was communicated about your company, product or research (e.g. conference, workshop, media event, etc.)</i>

Publications

Publication Date	<i>Date information is published (month & year)</i>
Publication Title	<i>Name of publication written as a result of research performed under contract with NYSERDA</i>
Publication Type	<i>Examples: Citation, Final/Technical Report, Newsletter, Trade Publication etc.</i>
Periodical Name	<i>Name of periodical the publication appeared in (if applicable)</i>
Policy Development	<i>State if this publication been cited in government policy development</i>
Names of Authors	<i>Author First & Last Names</i>

Attachment F

**New York State Energy Research and Development Authority
("NYSERDA")**

AGREEMENT

1. Agreement Number:
2. Contractor:
3. Project Director:
4. Effective Date:
5. Total Amount of Award:
6. Project Period: **[Optional for defined-scope R&D projects]**
7. Commitment Terms and Conditions

This Agreement consists of this form plus the following documents:

- Exhibit A, Statement of Work;
- Exhibit B, General Contract Provisions, Terms and Conditions;
- Exhibit C, Standard Terms and Conditions;
- Exhibit D, Prompt Payment Policy Statement;
- Exhibit E, NYSERDA Report Format and Style Guide.

8. ACCEPTANCE. THIS AGREEMENT SHALL NOT BECOME EFFECTIVE UNLESS EXECUTED BELOW BY NYSERDA.

[CONTRACTOR]

**NEW YORK STATE ENERGY
RESEARCH AND
DEVELOPMENT AUTHORITY**

By _____

By _____

Name _____

Jeffrey J. Pitkin
Treasurer

Title _____

STATE OF)
) SS.:
COUNTY OF)

On the ____ day of _____ in the year _____, before me, the undersigned, a Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individuals(s), or the person upon behalf of which the individual(s) acted, executed the document.

Notary Public

3
EXHIBIT B

GENERAL CONTRACT PROVISIONS, TERMS AND CONDITIONS

Article I

Definitions

Section 1.01. Definitions. Unless the context otherwise requires, the terms defined below shall have, for all purposes of this Agreement, the respective meanings set forth below, the following definitions to be equally applicable to both the singular and plural forms of any of the terms defined.

(a) General Definitions:

Agreement: This Agreement shall consist of Page One and Exhibits A, B, C, D, and E hereto, all of which are made a part hereof as if set forth here in full.

Budget: The Budget set forth at Exhibit A hereto.

Cash-based Expenses: Those obligations of Contractor that shall be settled in cash.

Contract Administrator: NYSERDA's Director of Contract Management, Cheryl L. Earley, or such other person who may be designated, in writing, by NYSERDA.

Contract Information: Recorded information regardless of form or characteristic first produced in the performance of this Agreement, that is specified to be compiled under this Agreement, specified to be delivered under this Agreement, or that is actually delivered in connection with this Agreement, and including the Final Report delivered by Contractor pursuant to Exhibit A, Statement of Work, if applicable.

Proprietary Information: Recorded information regardless of form or characteristic, produced or developed outside the scope of this Agreement and without NYSERDA financial support, provided that such information is not generally known or available from other sources without obligation concerning their confidentiality; has not been made available by the owner to others without obligation concerning its confidentiality; and is not already available to NYSERDA without obligation concerning its confidentiality. Under no circumstances shall any information included in the Final Report delivered by Contractor pursuant to Exhibit A, Statement of Work, if applicable, be considered Proprietary Information.

Person: An individual, a corporation, an association or partnership, an organization, a business or a government or political subdivision thereof, or any governmental agency or instrumentality.

Responsible: Responsible or Responsibility means the financial ability, legal capacity, integrity and past performance of Contractor and as such terms have been interpreted relative to public procurements. See NYS Finance Law § 163(1)(c).

Statement of Work: The Statement of Work attached hereto as Exhibit A.

Subcontract: An agreement for the performance of Work by a Subcontractor, including any purchase order for the procurement of permanent equipment or expendable supplies in connection with the Work.

Subcontractor: A person who performs Work directly or indirectly for or on behalf of the Contractor (and whether or not in privity of contract with the Contractor) but not including any employees of the Contractor or the Subcontractors.

Work: The Work described in the Exhibit A (including the procurement of equipment and supplies in connection therewith) and the performance of all other requirements imposed upon the Contractor under this Agreement.

[If Sections 8.02 and 8.03 of this Sample Agreement are applicable, the following Definitions shall be included:]

(b) Payments to NYSERDA Definitions:

Practical Application: To manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system, under conditions indicating that the benefits of the invention are available to the public on reasonable terms.

Product: [PRODUCT OR TECHNOLOGY DEFINITION], and including any improvements, enhancements or modifications thereto.

New York State Product: The Product will be considered a New York State Product if Contractor demonstrates that either: (1) in excess of 50% of the value or value added to such Product was added within the geographical boundaries of the State of New York; "value added" means any separable component of the Product, contributed by the Contractor or paid for by the Contractor to others, for parts, components, and services, and all manufacturing costs, including but not limited to labor, labor overhead, materials, and G&A, but excluding profit; or (2) in excess of 75% of the nonmanufacturing selling and administrative costs, allocated on a per unit basis for the Product, derive from within the geographic boundaries of New York State; such costs include those associated with the selling of the Product, shipping, administrative salaries, executive salaries, administrative office expenses, sales commissions, advertising, marketing, and research and development, but excluding: (a) any separable component of the Product paid for by the Contractor to others for parts, components, and services, and (b) and any other manufacturing or product costs. Qualification as a New York State Product shall be

determined using generally accepted accounting principles and shall be capable of being proven by an audit conducted in accordance with generally accepted auditing standards.

License/Franchise: A grant of authority by Contractor to another person to make, use, or sell the Product.

Licensing Revenue: Gross revenue of any kind or character derived by Contractor from a Licensing or Franchising of the Product.

Sale: A sale or lease of the Product by the Contractor or any parent, subsidiary, affiliate or assignee thereof.

Sales Revenue: Gross revenue, excluding returns and allowances such as sales tax, freight, and insurance, if applicable, derived from Sales.

Article II

Performance of Work

Section 2.01. Manner of Performance. Subject to the provisions of Article XII hereof, the Contractor shall perform all of the Work described in the Statement of Work, or cause such Work to be performed in an efficient and expeditious manner and in accordance with all of the terms and provisions of this Agreement. The Contractor shall perform the Work in accordance with the current professional standards and with the diligence and skill expected for the performance of work of the type described in the Statement of Work. The Contractor shall furnish such personnel and shall procure such materials, machinery, supplies, tools, equipment and other items as may reasonably be necessary or appropriate to perform the Work in accordance with this Agreement.

Section 2.02. Project Personnel. It is understood and agreed that the Project Director identified at Item 3, Page One of this Agreement shall be responsible for the overall supervision and conduct of the Work on behalf of the Contractor and that the persons described in the Statement of Work shall serve in the capacities described therein. Any change of Project Director by the Contractor shall be subject to the prior written approval of NYSERDA. Such approval shall not be unreasonably withheld, and, in the event that notice of approval or disapproval is not received by the Contractor within thirty (30) days after receipt of request for approval by NYSERDA, the requested change in Project Director shall be considered approved. In the event that NYSERDA requires additional time for considering approval, NYSERDA shall notify the Contractor within thirty (30) days of receipt of the request for approval that additional time is required and shall specify the additional amount of time necessary up to thirty (30) days.

Section 2.03. Title to Equipment. Title shall vest in the Contractor to all equipment purchased hereunder.

[OR, if specific equipment has been identified by the Project Manager for NYSERDA to retain title in, then use the following:]

Section 2.03. Title to Equipment. Title shall vest in NYSERDA to all of the following equipment purchased hereunder:

- 1)
- 2)
- 3)
- 4)

Upon the request of NYSERDA, the Contractor shall execute, acknowledge, deliver and perform, or cause to be executed, acknowledged, delivered or performed, all such bills of sale, assignments, conveyances or other documents or acts as NYSERDA may reasonably request in order to assure the better vesting in and confirming to NYSERDA, its successor and assigns, of title to and possession of such equipment. If, after six (6) months following the later of (a) Contractor's completion of these obligations, (b) completion of the Work, or (3) the termination of this Agreement, NYSERDA has not removed any such equipment, it will be deemed abandoned and become the property of the Contractor. Any such removal of equipment by NYSERDA shall be at NYSERDA's expense.

Article III

Deliverables

Section 3.01. Deliverables. All deliverables shall be provided in accordance with the Exhibit A, Statement of Work.

Article IV

Payment

Section 4.01. Payment Terms. **[If cost-share is applicable, insert - It is understood and agreed that NYSERDA and the Contractor are sharing the costs for the Work to be performed.]** In consideration for this Agreement and as NYSERDA's full payment for the costs of the performance of all Work, and in respect of all other direct and indirect costs, charges or expenses incurred in connection therewith, NYSERDA shall pay to the Contractor amounts not to exceed the maximum amount set forth in Item 5, Page One of this Agreement for the cost elements identified in the Budget to be funded with NYSERDA funds, subject to the provisions and restrictions contained herein, including, without limitation, the Prompt Payment Policy Statement attached hereto as Exhibit D. NYSERDA's payments shall be on a reimbursement basis, and shall be paid only to the extent that Cash-based Expenses are incurred by the Contractor in performance of the Work in accordance with the provisions of this Agreement, and the following:

[CASE I: Cost Reimbursable]

(a) Staff Charges: To the extent Cash-based Expenses are incurred by the Contractor, Contractor shall be reimbursed for amounts paid to its employees for the services performed by its employees under the terms of this Agreement at the lesser of the employee's wage rate as shown in the Budget or the actual wages paid to the employee and applicable at the time the Work is performed.

(b) Direct Charges: To the extent Cash-based Expenses are incurred by the Contractor, the Contractor shall be reimbursed for reasonable and necessary actual direct costs incurred (e.g., equipment, supplies, travel and other costs directly associated with the performance of the Agreement) to the extent required in the performance of the Work and to the extent such costs are anticipated in the Budget. Travel, lodging, meals and incidental expenses shall be reimbursed for reasonable and necessary costs incurred. Costs shall not exceed the daily per diem rates published in the Federal Travel Regulations. Reimbursement for the use of personal vehicles shall be limited to the Internal Revenue Service business standard mileage rate in effect at the time the expense was incurred.

(c) Indirect Costs: The Contractor shall be reimbursed for fringe benefits, overhead, general and administrative (G&A), and other indirect costs, all at the fixed rate as shown in the Budget. Contractor hereby warrants and guarantees, in accordance with Section 9.01(k) hereto, that its rates for the foregoing indirect costs charged herein have been determined based on the Contractor's reasonably anticipated indirect costs during the term of the Agreement and calculated consistent with generally accepted accounting principles.

[For consultant services contracts, where appropriate, insert:]

(d) Profit: The Contractor shall be paid a profit at a fixed rate as shown in the Budget applied to costs incurred in the performance of the Statement of Work. The percentage for profit shall be applied to all items in the Budget with the exception of travel costs.

[CASE II: Billing Rates]

(a) Billing Rates: The Contractor shall be reimbursed for the services performed by its employees under the terms of this Agreement at the lesser of employee's billing rate set forth in the Budget or the employee's billing rate applicable at the time the Work is performed. Such billing rates shall be inclusive of actual Cash-based Expenses in the form of wages paid the employee, fringe benefits, overhead, general and administrative (G&A), and other indirect costs. Contractor hereby warrants and guarantees that the billing rates charged herein are Contractor's customary billing rates for performance of work of the type described in the Statement of Work attached hereto.

(b) Direct Charges: To the extent Cash-based Expenses are incurred by the Contractor, the Contractor shall be reimbursed for reasonable and necessary actual direct costs incurred (e.g., equipment, supplies, travel and other costs directly associated with the performance of the Agreement) to the extent required in the performance of the Work and to the extent such costs are anticipated in the Budget. Travel, lodging, meals and incidental expenses shall be reimbursed for reasonable and necessary costs incurred. Costs should generally not exceed the daily per diem rates published in the Federal Travel Regulations. Reimbursement for the use of personal vehicles shall be limited to the Internal Revenue Service business standard mileage rate in effect at the time the expense was incurred.

[Case III – Fixed Fee/Milestone]

Subject to any applicable provisions set forth in Exhibit A, Statement of Work, at the completion of each Milestone Event so identified, the Contractor may submit invoices, including documentation reasonably sufficient to demonstrate completion, requesting payment by NYSERDA of the amounts corresponding to the amounts indicated in Exhibit A, Statement of Work, including evidence of the Contractor's cost share, if applicable.

Section 4.02. Progress Payments.

(a) Invoicing: The Contractor may submit invoices for progress payments no more than once each month and no less than once each calendar quarter for Work performed during such period. Invoices shall be addressed to NYSERDA, "Attention: Accounts Payable," or submitted electronically to invoices@nyserda.ny.gov. Such invoices shall make reference to the Agreement number shown at Item 1 on page 1 of this Agreement. Invoices shall be inclusive of the total project costs incurred, delineated into NYSERDA's Funding share and the Cost-Share and Other Co-funding share, if applicable, and they shall be in a format consistent with the cost categories set forth in the Budget. Invoices shall be itemized and provide reasonable documentation for the above to provide evidence of costs incurred. If a wage rate or billing rate is used, Contractor must certify on its invoice that such rate represents the lesser of: (i) the actual rate at the time the Work was performed, and (ii) the rate listed for each such employee listed in the Budget. NYSERDA may adjust amounts payable to correlate the proportion of NYSERDA's funding share paid to the proportion of the Work completed.

[For Milestone contracts , delete the following:]

(b) Retainage: In accordance with and subject to the provisions of Exhibit D, NYSERDA shall pay to the Contractor, within the prescribed time after receipt of an invoice for a progress payment, 90% of NYSERDA's share of the amount so requested, unless NYSERDA should determine that any such payment or any part thereof is otherwise not properly payable pursuant to the terms of the Agreement or the Budget.

Section 4.03. Final Payment. Upon final acceptance by NYSERDA of all deliverables contained in Exhibit A, Statement of Work, pursuant to Section 6.02 hereof, the Contractor shall submit an invoice for final payment with respect to the Work, together with such supporting information and documentation as, and in such form as, NYSERDA may require. All invoices for final payment hereunder must, under any and all circumstances, be received by NYSERDA within six (6) months following Acceptance of Work pursuant to Section 6.02 hereof. In accordance with and subject to the provisions of NYSERDA's Prompt Payment Policy Statement, attached hereto as Exhibit D, NYSERDA shall pay to the Contractor within the prescribed time after receipt of such invoice for final payment, the total amount payable pursuant to Section 4.01 hereof, less all progress payments/milestone payments previously made to the Contractor with respect thereto and subject to the maximum commitment set forth in Section 4.06 hereof.

Section 4.04. Release by the Contractor. The acceptance by the Contractor of final payment shall release NYSERDA from all claims and liability that the Contractor, its representatives and assigns might otherwise have relating to this Agreement.

Section 4.05. Maintenance of Records. The Contractor shall keep, maintain, and preserve at its principal office throughout the term of the Agreement and for a period of three years after acceptance of the Work, full and detailed books, accounts, and records pertaining to this Agreement, including without limitation, all data, bills, invoices, payrolls, time records, expense reports, subcontracting efforts and other documentation evidencing, or in any material way related to, Contractor's performance under this Agreement.

Section 4.06. Maximum Commitment. The maximum aggregate amount payable by NYSERDA to the Contractor shall be the amount appearing at Item 5 of page one of this Agreement. NYSERDA shall not be liable for any costs or expenses in excess of such amount incurred by the Contractor in the performance and completion of the Work.

Section 4.07. Audit. NYSERDA shall have the right from time to time and at all reasonable times during the term of this Agreement and for the maintenance period set forth in Section 4.05 hereof to inspect and audit any and all books, accounts and records related to this Agreement or reasonably necessary to the performance of an audit at the office or offices of the Contractor where they are then being kept, maintained and preserved pursuant to Section 4.05 hereof. Any payment made under the Agreement shall be subject to retroactive reduction for amounts included therein which are found by NYSERDA on the basis of any audit of the Contractor by NYSERDA, the State of New York or an agency of the United States not to constitute an allowable charge or cost hereunder.

Article V

Assignments, Subcontracts and Purchase Orders

Section 5.01. General Restrictions. Except as specifically provided otherwise in this Article, the assignment, transfer, conveyance, subcontracting or other disposal of this Agreement or any of the Contractor's rights, obligations, interests or responsibilities hereunder, in whole or in part, without the express consent in writing of NYSERDA shall be void and of no effect as to NYSERDA.

Section 5.02. Subcontract Procedures. Without relieving it of, or in any way limiting, its obligations to NYSERDA under this Agreement, the Contractor may enter into Subcontracts for the performance of Work or for the purchase of materials or equipment. Except for a subcontractor or supplier specified in a team arrangement with the Contractor in the Contractor's original proposal, and except for any subcontract or order for equipment, supplies or materials from a single subcontractor or supplier totaling less than \$50,000, the Contractor shall select all subcontractors or suppliers through a process of competitive bidding or multi-source price review. A team arrangement is one where a subcontractor or supplier specified in the Contractor's proposal is performing a substantial portion of the Work and is making a substantial contribution to the management and/or design of the Project. In the event that a competitive bidding or multi-source price review is not feasible, the Contractor shall document an explanation for, and justification of, a sole source selection. The Contractor shall document the process by which a subcontractor or supplier is selected by making a record summarizing the nature and scope of the work, equipment, supplies or materials sought, the name of each person or organization submitting, or requested to submit, a bid or proposal, the price or fee bid, and the basis for selection of the subcontractor or supplier. An explanation for, and justification of, a sole source selection must identify why the work, equipment, supplies or materials involved are obtainable from or require a subcontractor with unique or exceptionally scarce qualifications or experience, specialized equipment, or facilities not readily available from other sources, or patents, copyrights, or proprietary data. All Subcontracts shall contain provisions comparable to those set forth in this Agreement applicable to a subcontractor or supplier, and those set forth in Exhibit C to the extent required by law, and all other provisions now or hereafter required by law to be contained therein. Each Subcontract shall make express reference to this Agreement, and shall state that in the event of any conflict or inconsistency between any Subcontract and this Agreement, the terms and conditions of this Agreement shall control as between Subcontractor and Contractor. If this Agreement includes a provision requiring Contractor to make Payments to NYSERDA for the Sale or Licensing of a Product, each Subcontract shall include the provisions of Section 8.02, suitably modified to identify the parties. The Contractor shall submit to NYSERDA's Contract Administrator for review and written approval any subcontract(s) specified in the Statement of Work as requiring NYSERDA approval, including any replacements thereof.

Section 5.03. Performance. The Contractor shall promptly and diligently comply with its obligations under each Subcontract and shall take no action that would impair its rights thereunder. The Contractor shall take no action, and shall take all reasonable steps to prevent its Subcontractors from taking any action, that would impair NYSERDA's rights under this Agreement. The Contractor shall not assign, cancel or terminate any Subcontract without the prior written approval of NYSERDA's Contract Administrator as

long as this Agreement remains in effect. Such approval shall not be unreasonably withheld and, in the event that notice of approval or disapproval is not received by the Contractor within thirty days after receipt of request for approval by NYSERDA, the requested assignment, cancellation, or termination of the Subcontract shall be considered approved by NYSERDA. In the event that NYSERDA requires additional time for considering approval, NYSERDA shall notify the Contractor within thirty (30) days of receipt of the request for approval that additional time is required and shall specify the additional amount of time necessary up to sixty (60) days.

Article VI

Schedule; Acceptance of Work

Section 6.01. Schedule. The Work shall be performed as expeditiously as possible in conformity with the schedule requirements contained herein and in the Statement of Work. The draft and final versions of all deliverables shall be submitted by the dates specified in the Exhibit A Schedule. It is understood and agreed that the delivery of the draft and final versions of such deliverables by the Contractor shall occur in a timely manner and in accordance with the requirements of the Exhibit A Schedule.

Section 6.02. Acceptance of Work. The completion of the Work shall be subject to acceptance by NYSERDA in writing of all deliverables as defined in Exhibit A, Statement of Work.

Article VII

Force Majeure

Section 7.01. Force Majeure. Neither party hereto shall be liable for any failure or delay in the performance of its respective obligations hereunder if and to the extent that such delay or failure is due to a cause or circumstance beyond the reasonable control of such party, including, without limitation, acts of God or the public enemy, expropriation or confiscation of land or facilities, compliance with any law, order or request of any Federal, State, municipal or local governmental authority, acts of war, rebellion or sabotage or damage resulting therefrom, fires, floods, storms, explosions, accidents, riots, strikes, or the delay or failure to perform by any Subcontractor by reason of any cause or circumstance beyond the reasonable control of such Subcontractor.

Article VIII

Rights in Information; Confidentiality

CASE I: For implementation-type contracts:

Section 8.01. Rights in Contract and Proprietary Information.

(a) All Contract Information shall be the property of NYSERDA. The Contractor shall not use Contract Information for any purpose other than to implement its obligations under this Agreement.

(b) All Proprietary Information shall be the property of Contractor.

(c) The use, public performance, reproduction, distribution, or modification of any materials used by Contractor in the performance of this Agreement does not and will not violate the rights of any third parties, including, but not limited to, copyrights, trademarks, service marks, publicity, or privacy. The Contractor shall be responsible for obtaining and paying for any necessary licenses to use any third-party content.

(d) The Contractor agrees that to the extent it receives or is given any information from NYSERDA or a NYSERDA contractor or subcontractor, the Contractor shall treat such data in accordance with any restrictive legend contained thereon or instructions given by NYSERDA, unless another use is specifically authorized by prior written approval of the NYSERDA Project Manager. Contractor acknowledges that in the performance of the Work under this Agreement, Contractor may come into possession of personal information as that term is defined in Section 92 of the New York State Public Officers Law. Contractor agrees not to disclose any such information without the consent of NYSERDA.

CASE II: Advertising and Marketing contracts:

Section 8.01. Rights in Materials.

(a) All Contract Information shall be the property of NYSERDA. The Contractor shall not use Contract Information for any purpose other than to implement its obligations under this Agreement. Title to any and all now known or hereafter known tangible and intangible intellectual property rights in such materials, including but not limited to copyrights, trademarks, and service marks, is with and shall remain with NYSERDA. For purposes of this Article, the term “materials” shall include everything produced pursuant to this Agreement for the purpose of marketing NYSERDA’s programs, including, but not limited to, all images, text, sounds, and music contained in any media whatsoever.

(b) The Contractor may not take any action, including signing any agreement, that has the effect of restricting or limiting in any way NYSERDA’s absolute ownership and use of the materials unless it receives prior written approval from NYSERDA.

Section 8.02. Representations.

(a) All materials have been or will be created solely by the Contractor’s full-time employees during the course of their employment, or independent contractors who assigned or will assign all right, title, and interest worldwide to the Contractor.

(b) The use, public performance, reproduction, distribution, or modification of the materials does not and will not violate the rights of any third parties, including, but not limited to, copyrights, trademarks, service marks, publicity, or privacy.

Section 8.03. Licenses. The Contractor shall be responsible for obtaining and paying for any necessary licenses to use any third-party content contained in the materials.

Section 8.04. Assignment of Rights. The Contractor hereby irrevocably assigns, conveys and otherwise transfers to NYSERDA, and its respective successors and assigns, all rights, title and interests worldwide in and to the materials and all copyrights, trade secrets, patents, trademarks, service marks and other intellectual property rights and all contract and licensing rights, and all claims and causes of action of any kind with respect to any of the foregoing, whether now known or hereafter to become known. In the event the Contractor has any rights in and to the materials that cannot be assigned to NYSERDA, the Contractor hereby unconditionally and irrevocably waives the enforcement of all such rights, and all claims and causes of action of any kind with respect to any of the foregoing against NYSERDA, its distributors and customers, whether now known or hereafter to become known and agrees, at the request and expense of NYSERDA and its respective successors and assigns, to consent to and join in any action to enforce such rights and to procure a waiver of such rights from the holders of such rights. In the event the Contractor has any rights in and to the materials that cannot be assigned to NYSERDA and cannot be waived, the Contractor hereby grants to NYSERDA, and its respective successors and assigns, an exclusive, worldwide, royalty-free, perpetual license to reproduce, distribute, modify, publicly perform and publicly display, with the right to sublicense through multiple tiers of sublicensees and assign such rights in and to the materials including, without limitation, the right to use in any way whatsoever the materials and the Contractor retains no rights to use the materials and agrees not to challenge the validity of the copyright ownership by NYSERDA in the materials. In the event that any development of any materials under this Agreement is to be performed by a subcontractor, the Contractor agrees to include the provisions contained in this section in any such subcontract.

Section 8.05. Restriction on Use. The Contractor agrees that to the extent it receives or is given any information from NYSERDA or a NYSERDA contractor or subcontractor, the Contractor shall treat such data in accordance with any restrictive legend contained thereon or instructions given by NYSERDA, unless another use is specifically authorized by prior written approval of the NYSERDA Project Manager. Contractor acknowledges that in the performance of the Work under this Agreement, Contractor may come into possession of personal information as that term is defined in Section 92 of the New York State Public Officers Law. Contractor agrees not to disclose any such information without the consent of NYSERDA.

CASE III: R&D-type contracts:

Section 8.01. Rights in Contract and Proprietary Information; Confidentiality.

(a) NYSERDA shall have the right to use, duplicate, or disclose Contract Information, in whole or in part, in any manner and for any purpose whatsoever, and to permit others to do so.

(b) The Contractor shall have the right to use Contract Information for its private purposes, subject to the provisions of this Agreement.

(c) NYSERDA shall have no rights to any Proprietary Information.

(d) No information shall be treated by NYSERDA as confidential unless such information is clearly so marked by Contractor at the time it is disclosed to NYSERDA; see Exhibit C, Section 6 regarding NYSERDA's obligations under the Freedom of Information Law. Under no circumstances shall any information included in the Final Report delivered by Contractor pursuant to Exhibit A, Statement of Work, be considered confidential or Proprietary Information.

(e) The Contractor agrees that to the extent it receives or is given any information from NYSERDA or a NYSERDA contractor or subcontractor, the Contractor shall treat such data in accordance with any restrictive legend contained thereon or instructions given by NYSERDA, unless another use is specifically authorized by prior written approval of the NYSERDA Project Manager. Contractor acknowledges that in the performance of the Work under this Agreement, Contractor may come into possession of personal information as that term is defined in Section 92 of the New York State Public Officers Law. Contractor agrees not to disclose any such information without the consent of NYSERDA.

[If recoupment applies, include the following Sections 8.02 & 8.03:]

Section 8.02. Rights in the Product.

(a) The Contractor shall have the right to make, use and sell the Product.

(b) Should NYSERDA, or any political subdivision or instrumentality of the State of New York (each, a "New York Purchaser") desire to purchase the Product from Contractor or any parent, subsidiary, affiliate, assignee, licensee or franchisee thereof ("Seller"), Seller shall grant such New York Purchaser terms, including price, that are at least as favorable as the terms granted by Seller to any buyer of the Product within the previous year. During the period of performance of the agreement between New York Purchaser and Seller, if Seller enters into an agreement with any other party that includes terms more favorable than those granted to the New York Purchaser, then the terms granted by Seller to such New York Purchaser shall automatically be deemed to be modified to provide the New York Purchaser with those more favorable terms as of the date such more favorable terms were offered to the other party. Contractor shall notify the New York Purchaser promptly of the existence of such more favorable terms and the New York Purchaser shall have the right to receive the more favorable terms

immediately. If requested in writing by the New York Purchaser, Contractor shall amend the agreement with such New York Purchaser to contain the more favorable terms and conditions. Contractor shall include these terms in any distribution, licensing or franchising agreement concerning the Product.

The sale price for any Sale made to NYSERDA pursuant to this Section shall be discounted by the applicable amount due to NYSERDA by Contractor pursuant to Section 8.03(a) or (b) hereof. The amount of this discount shall be credited towards the aggregate amount due by Contractor to NYSERDA pursuant to Section 8.03(c) hereof.

(c) Should a patent application be filed related to the Product, Contractor shall forward to NYSERDA's Project Manager a copy of the United States Patent and Trademark Office filing receipt bearing the patent application number. The Contractor or any assignee acting on behalf of the Contractor shall include, within the specification of any patent application and any patent or certificate issuing thereon related to the Product the following statement: "This invention was made with the support of the New York State Energy Research and Development Authority (NYSERDA) under Agreement Number [Item 1 from Page One] and NYSERDA may have rights in this invention."

(d) Contractor shall notify NYSERDA within three (3) months after a patent is issued related to the Product, and shall provide the patent title, issuance number and a generalized description of the claims set forth therein. If within three (3) years after the issuance date for any patent related to the Product, Contractor fails to demonstrate that Contractor has taken effective steps to bring said patent to the point of Practical Application, then NYSERDA may, by written notice to Contractor, require the Contractor to grant a non-exclusive or exclusive license to such patent to responsible applicants under terms that are commercially reasonable under the circumstances. If Contractor has not executed such license with a responsible applicant within ninety (90) days after such notice, then NYSERDA shall have the right to grant responsible applicants, on Contractor's behalf, a non-exclusive or exclusive license under terms that are commercially reasonable under the circumstances.

(e) The Contractor shall include the foregoing clauses, suitably modified to identify the parties, in all subcontracts which involve the performance of Work under this Agreement. The Subcontractor shall retain all rights provided for the Contractor, and the Contractor shall retain all rights provided for NYSERDA, as set forth above.

(f) The Contractor shall enforce Sections 8.02 and 8.03 hereof against all current or former employees to the extent necessary to protect NYSERDA's rights herein.

Section 8.03. Calculation of Payments to NYSERDA.

(a) New York State Product: Upon a Sale of a New York State Product, or at such time as Licensing Revenue become due to the Contractor with respect to a New York State Product, Contractor agrees to pay to NYSERDA: (i) one and one half percent

(1.5%) of the Sales Revenue, or (ii) thirty percent (30%) of all License Revenue accruing to the Contractor.

(b) Non - New York State Product: Upon a Sale of a Product that does not qualify as a New York State Product, or at such time as Licensing Revenue become due to the Contractor with respect to a Product that does not qualify as a New York State Product, Contractor shall pay to NYSERDA: (i) five percent (5%) of the Sales Revenue, or (ii) sixty percent (60%) of all Licensing Revenues accruing to the Contractor.

(c) Duration of Payments to NYSERDA: The Contractor's obligation to make payments to NYSERDA shall extend (i) from the date the Contractor first receives Sales Revenue or Licensing Revenue and continue for a period of fifteen (15) years thereafter; or (ii) until the amount paid by Contractor to NYSERDA attributable to actual Sales Revenue or Licensing Revenue from a New York State Product is equal to one times the amount of funds actually paid by NYSERDA to the Contractor under this Agreement; or (iii) until the amount paid by Contractor to NYSERDA, whether or not derived from any Sales Revenue or Licensing Revenue, is equal to three times the amount of funds actually paid by NYSERDA to the Contractor under this Agreement; whichever occurs first.

(d) Due Date of Payments. Such payments shall be payable in annual installments and shall be paid by the first day of March in the calendar year immediately following the year during which the Contractor receives revenues as described above (the "Due Date"). Any payment not received by the applicable Due Date shall be deemed delinquent. A delinquent payment shall be made with interest with such interest computed commencing with the Due Date of such payment. The annual interest rate payable shall be the "Prime Rate" existing as of the Due Date of such payment plus five (5) percentage points. Such interest shall be compounded on a monthly basis.

(e) Annual Reports. The Contractor shall provide to NYSERDA a written Annual Report detailing the status of development and utilization of the Product. The Annual Report shall provide detail as to all Sales, identifying each buyer or lessee, the number of items sold or leased, the Sales Revenue and/or Licensing Revenue, and calculating the resultant amount earned by, and paid or due to NYSERDA in accordance with paragraph (a) hereof. If the amount due to NYSERDA is calculated in whole or in part in accordance with paragraph (a) hereof, the Annual Report shall include documentation or substantiating information reasonably sufficient to establish that that such Product qualifies as a New York State Product. The Annual Report shall be furnished to NYSERDA not later than February 1 following the calendar year covered by the Report. The Contractor's obligation to provide Annual Reports shall commence on February 1 of the calendar year following either the Contractor's receipt of Final Payment pursuant to Section 4.03 hereto, at such time as Licensing Revenues become due to the Contractor or upon the first Sale, whichever event occurs first. In the event that, for a period of five consecutive years, the Annual Reports indicate that no Sales are made and no payment is due to NYSERDA, the Contractor may cease submittal of annual reports. If, however, Sales are made in subsequent years, or Licensing Revenues

become due to the Contractor, the Contractor's obligation to submit Annual Reports shall resume.

(f) Maintenance and Audit of Records. Until such time as the Contractor's payment obligations to NYSERDA pursuant to this Section 8.03 have been met, the Contractor shall keep, maintain, and preserve at its principal office, full and detailed books, accounts, and records in connection with Sales, including any licenses or franchises granted, and the Contractor shall provide to NYSERDA, on a reasonable basis, access to all books and records related thereto.

(g) Licensing or Franchise Agreements. The Contractor shall not enter into any agreement with any party with respect to the licensing, franchising, or assignment of rights in the Product that contains provisions inconsistent with the Contractor's obligation as set forth in this Article VIII. Further, any such agreement shall specifically provide NYSERDA the right to review the books and records of any party to such agreement to assure compliance with the payment provisions contained in Section 8.03(a) and (b) hereof. The Contractor shall provide copies of any proposed licensing or franchise agreements to NYSERDA and shall not execute any such agreements without the prior written consent of NYSERDA. Such consent shall not be unreasonably withheld, and, in the event that notice of consent or disapproval is not received by the Contractor within thirty (30) days after receipt of request for approval by NYSERDA, such licensing or franchise agreement shall be considered approved. In the event that NYSERDA requires additional time for considering approval, NYSERDA shall notify the Contractor within thirty days of receipt of the request for approval that additional time is required and shall specify the additional amount of time necessary up to thirty (30) days after the lapse of the original review period.

(h) Modification of Payment Terms. Should Contractor provide to NYSERDA a copy of a proposed licensing or franchise agreement under subsection (g), NYSERDA agrees to negotiate, upon Contractor's execution of such licensing or franchise agreement, a modification of the Licensing Revenue terms in subsections (a)(i) and (b)(i) such that the amount of payment due to NYSERDA by Contractor will approximate the amount that would have been due upon a Sale of the Product.

Article IX

Warranties and Guarantees

Section 9.01. Warranties and Guarantees. The Contractor warrants and guarantees that:

(a) all information provided and all representations made by Contractor as a part of the Proposal Checklist or application, if any, submitted to NYSERDA in order to obtain this Agreement were, to the best of Contractor's knowledge, complete, true and accurate when provided or made;

(b) as of the Effective Date, it is financially and technically qualified to perform the Work, and is qualified to do business and is in good standing in all jurisdictions necessary for Contractor to perform its obligations under this Agreement;

(c) it is familiar with and will comply with all general and special Federal, State, municipal and local laws, ordinances and regulations, if any, that may in any way affect the performance of this Agreement;

(d) the design, supervision and workmanship furnished with respect to performance of the Work shall be in accordance with sound and currently accepted scientific standards and engineering practices;

(e) all materials, equipment and workmanship furnished by it and by Subcontractors in performance of the Work or any portion thereof shall be free of defects in design, material and workmanship, and all such materials and equipment shall be of first-class quality, shall conform with all applicable codes, specifications, standards and ordinances and shall have service lives and maintenance characteristics suitable for their intended purposes in accordance with sound and currently accepted scientific standards and engineering practices;

(f) neither the Contractor nor any of its employees, agents, representatives or servants has actual knowledge of any patent issued under the laws of the United States or any other matter which could constitute a basis for any claim that the performance of the Work or any part thereof infringes any patent or otherwise interferes with any other right of any Person;

(g) to the best of Contractor's knowledge, there are no existing undisclosed or threatened legal actions, claims, or encumbrances, or liabilities that may adversely affect the Work or NYSERDA's rights hereunder;

(h) it has no actual knowledge that any information or document or statement furnished by the Contractor in connection with this Agreement contains any untrue statement of a material fact or omits to state a material fact necessary to make the statement not misleading, and that all facts have been disclosed that would materially adversely affect the Work;

(i) all information provided to NYSERDA with respect to State Finance Law Sections 139-j and 139-k is complete, true and accurate;

(j) Contractor is familiar with and will comply with NYSERDA's Code of Conduct for Contractors, Consultants, and Vendors with respect to the performance of this Agreement;¹ and

¹http://www.nyserda.ny.gov/~media/Files/About/Board%20Governance/CodeConduct.ashx?sc_database=web

(k) its rates for the indirect costs charged herein have been determined based on the Contractor's reasonably anticipated indirect costs during the term of the Agreement and calculated consistent with generally accepted accounting principles.

(j) Contractor shall at all times during the Agreement term remain Responsible, and Contractor agrees, if requested by NYSERDA, to present evidence of its continuing legal authority to do business in New York State, integrity, experience, ability, prior performance, and organizational and financial capacity.

Article X

Indemnification

Section 10.01. Indemnification. The Contractor shall protect, indemnify and hold harmless NYSERDA and the State of New York from and against all liabilities, losses, claims, damages, judgments, penalties, causes of action, costs and expenses (including, without limitation, attorneys' fees and expenses) imposed upon or incurred by or asserted against NYSERDA or the State of New York resulting from, arising out of or relating to Contractor's or its Subcontractors' performance of this Agreement. The obligations of the Contractor under this Article shall survive any expiration or termination of this Agreement, and shall not be limited by any enumeration herein of required insurance coverage.

Article XI

Insurance

[Under NYSERDA'S risk management program, projects are defined according to the following categories: Category A (low risk; no insurance required); Category B (medium risk; "standard" insurance requirements); and Category C (high risk; insurance to be negotiated on a case-by-case basis). The following language represents NYSERDA'S "standard" insurance requirements.]

Section 11.01. Maintenance of Insurance; Policy Provisions. The Contractor, at no additional direct cost to NYSERDA, shall maintain or cause to be maintained throughout the term of this Agreement, insurance of the types and in the amounts specified in the Section hereof entitled Types of Insurance. All such insurance shall be evidenced by insurance policies, each of which shall:

(a) except policies in evidence of insurance required under Section 11.02(b), name or be endorsed to cover NYSERDA, the State of New York and the Contractor as additional insureds;

(b) provide that such policy may not be cancelled or modified until at least 30 days after receipt by NYSERDA of written notice thereof; and

(c) be reasonably satisfactory to NYSERDA in all other respects.

Section 11.02. Types of Insurance. The types and amounts of insurance required to be maintained under this Article are as follows:

(a) Commercial general liability insurance for bodily injury liability, including death, and property damage liability, incurred in connection with the performance of this Agreement, with minimum limits of \$1,000,000 in respect of claims arising out of personal injury or sickness or death of any one person, \$1,000,000 in respect of claims arising out of personal injury, sickness or death in any one accident or disaster, and \$1,000,000 in respect of claims arising out of property damage in any one accident or disaster; and

(b) Workers Compensation, Employers Liability, and Disability Benefits as required by New York State.

[For contracts containing recoupment, insert:] (c) Upon commencement of marketing of the Product, product liability insurance for bodily injury liability, including death and property damage liability arising out of the use of the Product with minimum limits of \$1,000,000 in respect of claims arising out of personal injury or sickness or death of any one person, \$1,000,000 in respect of claims arising out of personal injury, sickness or death in any one accident or disaster, and \$1,000,000 in respect of claims arising out of property damage in any one accident or disaster. Product liability insurance naming the NYSERDA and State of New York as additional insureds required under this Agreement shall remain in effect for as long as the payment obligation pursuant to Section 8.03 of this Agreement is in effect.

Section 11.03. Delivery of Policies; Insurance Certificates. Prior to commencing the Work, the Contractor shall deliver to NYSERDA certificates of insurance issued by the respective insurers, indicating the Agreement number thereon, evidencing the insurance required by Article XI hereof. **[For contracts containing recoupment, insert:** Upon commencement of marketing of the Product, the Contractor shall deliver to NYSERDA certificates of insurance issued by the respective insurers, indicating the Agreement number thereon, evidencing the insurance required by Section 11.02 (c) hereof and bearing notations evidencing the payment of the premiums thereon or accompanied by other evidence of such payment satisfactory to NYSERDA.] In the event any policy furnished or carried pursuant to this Article will expire on a date prior to acceptance of the Work by NYSERDA pursuant to the section hereof entitled Acceptance of Work, the Contractor, not less than 15 days prior to such expiration date, shall deliver to NYSERDA certificates of insurance evidencing the renewal of such policies, and the Contractor shall promptly pay all premiums thereon due. In the event of threatened legal action, claims, encumbrances, or liabilities that may affect NYSERDA hereunder, or if deemed necessary by NYSERDA due to events rendering a review necessary, upon request the Contractor shall deliver to NYSERDA a certified copy of each policy.

Stop Work Order; Termination; Non-Responsibility

Section 12.01. Stop Work Order.

(a) NYSERDA may at any time, by written Order to the Contractor, require the Contractor to stop all or any part of the Work called for by this Agreement for a period of up to ninety (90) days after the Stop Work Order is delivered to the Contractor, and for any further period to which the parties may agree. Any such order shall be specifically identified as a Stop Work Order issued pursuant to this Section. Upon receipt of such an Order, the Contractor shall forthwith comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the Work covered by the Order during the period of work stoppage consistent with public health and safety. Within a period of ninety (90) days after a Stop Work Order is delivered to the Contractor, or within any extension of that period to which the parties shall have agreed, NYSERDA shall either:

- (i) by written notice to the Contractor, cancel the Stop Work Order, which shall be effective as provided in such cancellation notice, or if not specified therein, upon receipt by the Contractor, or
- (ii) terminate the Work covered by such order as provided in the Termination Section of this Agreement.

(b) If a Stop Work Order issued under this Section is cancelled or the period of the Order or any extension thereof expires, the Contractor shall resume Work. An equitable adjustment shall be made in the delivery schedule, the estimated cost, the fee, if any, or a combination thereof, and in any other provisions of the Agreement that may be affected, and the Agreement shall be modified in writing accordingly, if:

- (i) the Stop Work Order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this Agreement, and
- (ii) the Contractor asserts a claim for such adjustments within 30 days after the end of the period of Work stoppage; provided that, if NYSERDA decides the facts justify such action, NYSERDA may receive and act upon any such claim asserted at any time prior to final payment under this Agreement.

(c) If a Stop Work Order is not cancelled and the Work covered by such Order is terminated, the reasonable costs resulting from the Stop Work Order shall be allowed by equitable adjustment or otherwise.

(d) Notwithstanding the provisions of this Section 12.01, the maximum amount payable by NYSERDA to the Contractor pursuant to this Section 12.01 shall not be increased or deemed to be increased except by specific written amendment hereto.

Section 12.02. Termination.

(a) This Agreement may be terminated by NYSERDA at any time during the term of this Agreement with or without cause, upon ten (10) days prior written notice to the Contractor. In such event, payment shall be paid to the Contractor for Work performed and expenses incurred prior to the effective date of termination in accordance with the provisions of the Article hereof entitled Payment and in reimbursement of any amounts required to be paid by the Contractor pursuant to Subcontracts; provided, however, that upon receipt of any such notice of termination, the Contractor shall cease the performance of Work, shall make no further commitments with respect thereto and shall reduce insofar as possible the amount of outstanding commitments (including, to the extent requested by NYSERDA, through termination of subcontracts containing provisions therefor). Articles VIII, IX, and X shall survive any termination of this Agreement, and Article XVI shall survive until the payment obligations pursuant to Article VIII have been met.

(b) NYSERDA specifically reserves the right to terminate this agreement in the event that the certification filed by the Contractor in accordance with State Finance Law Sections 139-j and 139-k is found to have been intentionally false or intentionally incomplete, or that the certification filed by the Contractor in accordance with New York State Tax Law Section 5-a is found to have been intentionally false when made. Terminations under this subsection (b) will be effective upon Notice.

(c) Nothing in this Article shall preclude the Contractor from continuing to carry out the Work called for by the Agreement after receipt of a Stop Work Order or termination notice at its own election, provided that, if the Contractor so elects: (i) any such continuing Work after receipt of the Stop Work Order or termination notice shall be deemed not to be Work pursuant to the Agreement, and (ii) NYSERDA shall have no liability to the Contractor for any costs of the Work continuing after receipt of the Stop Work Order or termination notice.

12.03 Suspension or Termination for Non-Responsibility.

(a) Suspension. NYSERDA, in its sole discretion, reserves the right to suspend any or all activities under this Agreement, at any time, when it discovers information that calls into question the Responsibility of the Contractor. In the event of such suspension, the Contractor will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, the Contractor must comply with the terms of the suspension order. Contract activity may resume at such time as NYSERDA issues a written notice authorizing a resumption of performance under the Contract.

(b) Termination. Upon written notice to the Contractor, and a reasonable opportunity to be heard with appropriate NYSERDA officials or staff, this Agreement may be terminated by NYSERDA at the Contractor's expense where the Contractor is determined by NYSERDA to be non-Responsible. In such event, NYSERDA may

complete the contractual requirements in any manner it may deem advisable and pursue available legal or equitable remedies for breach.

Article XIII

Independent Contractor

Section 13.01. Independent Contractor. (a) The status of the Contractor under this Agreement shall be that of an independent contractor and not that of an agent, and in accordance with such status, the Contractor, the Subcontractors, and their respective officers, agents, employees, representatives and servants, including the Project Director, shall at all times during the term of this Agreement conduct themselves in a manner consistent with such status and by reason of this Agreement shall neither hold themselves out as, nor claim to be acting in the capacity of, officers, employees, agents, representatives or servants of NYSERDA nor make any claim, demand or application for any right or privilege applicable to NYSERDA, including, without limitation, vicarious liability, professional liability coverage or indemnification, rights or privileges derived from workers' compensation coverage, unemployment insurance benefits, social security coverage and retirement membership or credit. It is understood and agreed that the personnel furnished by Contractor to perform the Work shall be Contractor's employee(s) or agent(s), and under no circumstances are such employee(s) to be considered NYSERDA's employee(s) or agent(s), and shall remain the employees of Contractor, except to the extent required by section 414(n) of the Internal Revenue Code.

(b) Contractor expressly acknowledges NYSERDA's need to be advised, on an immediate basis, of the existence of any claim or event that might result in a claim or claims against NYSERDA, Contractor and/or Contractor's personnel by virtue of any act or omission on the part of NYSERDA or its employees. Accordingly, Contractor expressly covenants and agrees to notify NYSERDA of any such claim or event, including but not limited to, requests for accommodation and allegations of harassment and/or discrimination, immediately upon contractor's discovery of the same, and to fully and honestly cooperate with NYSERDA in its efforts to investigate and/or address such claims or events, including but not limited to, complying with any reasonable request by NYSERDA for disclosure of information concerning such claim or event even in the event that this Agreement should terminate for any reason.

Article XIV

Compliance with Certain Laws

Section 14.01. Laws of the State of New York. The Contractor shall comply with all of the requirements set forth in Exhibit C hereto.

Section 14.02. All Legal Provisions Deemed Included. It is the intent and understanding of the Contractor and NYSERDA that each and every provision of law required by the laws of the State of New York to be contained in this Agreement shall be

contained herein, and if, through mistake, oversight or otherwise, any such provision is not contained herein, or is not contained herein in correct form, this Agreement shall, upon the application of either NYSERDA or the Contractor, promptly be amended so as to comply strictly with the laws of the State of New York with respect to the inclusion in this Agreement of all such provisions.

Section 14.03. Other Legal Requirements. The references to particular laws of the State of New York in this Article, in Exhibit C and elsewhere in this Agreement are not intended to be exclusive and nothing contained in such Article, Exhibit and Agreement shall be deemed to modify the obligations of the Contractor to comply with all legal requirements.

Article XV

Notices, Entire Agreement, Amendment, Counterparts

Section 15.01. Notices.

(a) All notices, requests, consents, approvals and other communications which may or are required to be given by either party to the other under this Agreement shall be in writing and shall be transmitted either:

- (i) via certified or registered United States mail, return receipt requested;
- (ii) by facsimile transmission;
- (iii) by personal delivery;
- (iv) by expedited delivery service; or
- (v) by e-mail, return receipt requested.

Such notices shall be addressed as follows, or to such different addresses as the parties may from time-to-time designate as set forth in paragraph (c) below:

NYSERDA

Name: Cheryl L. Earley
Title: Director of Contract Management
Address: 17 Columbia Circle, Albany, New York 12203
Facsimile Number: (518) 862-1091
E-Mail Address: cle@nyserda.ny.gov
Personal Delivery: Reception desk at the above address

[Contractor Name]

Name:
Title:
Address:
Facsimile Number:
E-Mail Address:

(b) Any such notice shall be deemed to have been given either at the time of personal delivery or, in the case of expedited delivery service or certified or registered United States mail, as of the date of first attempted delivery at the address and in the manner provided herein, or in the case of facsimile transmission or email, upon receipt.

(c) The parties may, from time to time, specify any new or different address in the United States as their address for purpose of receiving notice under this Agreement by giving fifteen (15) days written notice to the other party sent in accordance herewith. The parties agree to mutually designate individuals as their respective representatives for the purposes of receiving notices under this Agreement. Additional individuals may be designated in writing by the parties for purposes of implementation and administration/billing, resolving issues and problems and/or for dispute resolution.

Section 15.02. Entire Agreement; Amendment. This Agreement embodies the entire agreement and understanding between NYSERDA and the Contractor and supersedes all prior agreements and understandings relating to the subject matter hereof. Except as otherwise expressly provided for herein, this Agreement may be changed, waived, discharged or terminated only by an instrument in writing, signed by the party against which enforcement of such change, waiver, discharge or termination is sought.

Section 15.03. Counterparts. This Agreement may be executed in counterparts each of which shall be deemed an original, but all of which taken together shall constitute one and the same instrument.

Article XVI

Publicity

Section 16.01. Publicity.

(a) The Contractor shall collaborate with NYSERDA's Director of Communications to prepare any press release and to plan for any news conference concerning the Work. In addition the Contractor shall notify NYSERDA's Director of Communications regarding any media interview in which the Work is referred to or discussed.

(b) It is recognized that during the course of the Work under this Agreement, the Contractor or its employees may from time to time desire to publish information regarding scientific or technical developments made or conceived in the course of or under this Agreement. In any such information, the Contractor shall credit NYSERDA's funding participation in the Project, and shall state that "NYSERDA has not reviewed the information contained herein, and the opinions expressed in this report do not necessarily reflect those of NYSERDA or the State of New York." Notwithstanding anything to the contrary contained herein, the Contractor shall have the right to use and freely disseminate project results for educational purposes, if applicable, consistent with the Contractor's policies.

(c) Commercial promotional materials or advertisements produced by the Contractor shall credit NYSERDA, as stated above, and shall be submitted to NYSERDA for review and recommendations to improve their effectiveness prior to use. The wording of such credit can be approved in advance by NYSERDA, and, after initial approval, such credit may be used in subsequent promotional materials or advertisements without additional approvals for the credit, provided, however, that all such promotional materials or advertisements shall be submitted to NYSERDA prior to use for review, as stated above. Such approvals shall not be unreasonably withheld, and, in the event that notice of approval or disapproval is not received by the Contractor within thirty days after receipt of request for approval, the promotional materials or advertisement shall be considered approved. In the event that NYSERDA requires additional time for considering approval, NYSERDA shall notify the Contractor within thirty days of receipt of the request for approval that additional time is required and shall specify the additional amount of time necessary up to 180 days. If NYSERDA and the Contractor do not agree on the wording of such credit in connection with such materials, the Contractor may use such materials, but agrees not to include such credit.

[If Section 8.03 applies, the following Article XVII is required:]

Article XVII

Business Reorganizations

Section 17.01. Business Reorganizations. In the event the Contractor proposes to consolidate or merge into or with another corporation or entity, or to sell or dispose of all or a majority of the assets of the Contractor, or to otherwise undertake a reorganization which alters or changes the rights of NYSERDA as provided in this Agreement, before any such action shall be taken, the Contractor shall either:

(a) buy out its obligation to make payments to NYSERDA as described in Section 8.03 of this Agreement by paying NYSERDA an amount equal to three (3) times the amount of funds actually paid by NYSERDA to the Contractor under this Agreement, such aggregate buyout amount to be reduced by the amount(s) credited to Contractor pursuant to Section 8.03, if applicable; or

(b) assign or otherwise transfer to a new entity the Contractor's obligations under this Agreement, including, but not limited to, the obligation to make payments to NYSERDA as described in Section 8.03 of this Agreement. Such assignment or transfer shall be subject to the prior written approval of NYSERDA. Such approval shall not be unreasonably withheld, and, in the event that notice of approval or disapproval is not received by the Contractor within thirty days after receipt of request for approval, the assignment or transfer shall be considered approved. In the event that NYSERDA requires additional time for considering approval, NYSERDA shall notify the Contractor within thirty (30) days of receipt of the request for approval that additional time is required and shall specify the additional amount of time necessary up to thirty (30) days after the lapse of the original review period.

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EXHIBIT C

REVISED 5/12

STANDARD TERMS AND CONDITIONS
FOR ALL NYSERDA AGREEMENTS

(Based on Standard Clauses for New York State Contracts and Tax Law Section 5-a)

The parties to the Agreement agree to be bound by the following clauses which are hereby made a part of the Agreement:

1. NON-DISCRIMINATION REQUIREMENTS. To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, national origin, sexual orientation, age, disability, genetic predisposition or carrier status, or marital status. Furthermore, in accordance with Section 220-e of the Labor Law, if this is an Agreement for the construction, alteration or repair of any public building or public work or for the manufacture, sale or distribution of materials, equipment or supplies, and to the extent that this Agreement shall be performed within the State of New York, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, disability, sex or national origin: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this Agreement. If this is a building service Agreement as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. Contractor is subject to fines of \$50.00 per person per day for any violation of Section 220-e or Section 239 as well as possible termination of this Agreement and forfeiture of all moneys due hereunder for a second subsequent violation.

2. WAGE AND HOURS PROVISIONS. If this is a public work Agreement covered by Article 8 of the Labor Law or a building service Agreement covered by Article 9 thereof, neither Contractor's employees nor the employees of its subcontractors may be required or permitted to work more than the number of hours or days stated in said statutes, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law. Additionally, effective April 28, 2008, if this is a public work contract covered by Article 8 of the Labor Law, the Contractor understands and agrees that the filing of payrolls in a

manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by NYSERDA of any NYSERDA-approved sums due and owing for work done upon the project.

3. NON-COLLUSIVE BIDDING REQUIREMENT. In accordance with Section 2878 of the Public Authorities Law, if this Agreement was awarded based upon the submission of bids, Contractor warrants, under penalty of perjury, that its bid was arrived at independently and without collusion aimed at restricting competition. Contractor further warrants that, at the time Contractor submitted its bid, an authorized and responsible person executed and delivered to NYSERDA a non-collusive bidding certification on Contractor's behalf.

4. INTERNATIONAL BOYCOTT PROHIBITION. If this Agreement exceeds \$5,000, the Contractor agrees, as a material condition of the Agreement, that neither the Contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated, is participating, or shall participate in an international boycott in violation of the Federal Export Administration Act of 1979 (50 USC App. Sections 2401 et seq.) or regulations thereunder. If such Contractor, or any of the aforesaid affiliates of Contractor, is convicted or is otherwise found to have violated said laws or regulations upon the final determination of the United States Commerce Department or any other appropriate agency of the United States subsequent to the Agreement's execution, such Agreement, amendment or modification thereto shall be rendered forfeit and void. The Contractor shall so notify NYSERDA within five (5) business days of such conviction, determination or disposition of appeal. (See and compare Section 220-f of the Labor Law, Section 139-h of the State Finance Law, and 2 NYCRR 105.4).

5. SET-OFF RIGHTS. NYSERDA shall have all of its common law and statutory rights of set-off. These rights shall include, but not be limited to, NYSERDA's option to withhold for the purposes of set-off any moneys due to the Contractor under this Agreement up to any amounts due and owing to NYSERDA with regard to this Agreement, any other Agreement, including any Agreement for a term commencing prior to the term of this Agreement, plus any amounts due and owing to NYSERDA for any other reason including, without limitation, tax delinquencies, fee delinquencies or monetary penalties relative thereto.

6. PROPRIETARY INFORMATION. Notwithstanding any provisions to the contrary in the Agreement, Contractor and NYSERDA acknowledge and agree that all information, in any format, submitted to NYSERDA shall be subject to and treated in accordance with the NYS Freedom of Information Law ("FOIL," Public Officers Law, Article 6). Pursuant to FOIL, NYSERDA is required to make available to the public, upon request, records or portions thereof which it possesses, unless that information is statutorily exempt from disclosure. Therefore, unless the Agreement specifically requires otherwise, Contractor should submit information to NYSERDA in a non-confidential, non-proprietary format. FOIL does provide that NYSERDA may deny access to records or portions thereof that "are trade secrets or are submitted to an agency by a commercial

enterprise or derived from information obtained from a commercial enterprise and which if disclosed would cause substantial injury to the competitive position of the subject enterprise.” [See Public Officers Law, § 87(2)(d)]. Accordingly, if the Agreement specifically requires submission of information in a format Contractor considers a proprietary and/or confidential trade secret, Contractor shall fully identify and plainly label the information “confidential” or “proprietary” at the time of disclosure. By so marking such information, Contractor represents that the information has actual or potential specific commercial or competitive value to the competitors of Contractor. Without limitation, information will not be considered confidential or proprietary if it is or has been (i) generally known or available from other sources without obligation concerning its confidentiality; (ii) made available by the owner to others without obligation concerning its confidentiality; or (iii) already available to NYSERDA without obligation concerning its confidentiality. In the event of a FOIL request, it is NYSERDA’s policy to consider records as marked above pursuant to the trade secret exemption procedure set forth in 21 New York Codes Rules & Regulations § 501.6 and any other applicable law or regulation. However, NYSERDA cannot guarantee the confidentiality of any information submitted. More information on FOIL, and the relevant statutory law and regulations, can be found at the website for the Committee on Open Government (<http://www.dos.state.ny.us/coog/foil2.html>) and NYSERDA’s Regulations, Part 501 (<http://www.nyserda.ny.gov/en/About/~media/Files/About/Contact/NYSERDARegulations.ashx>).

7. **IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION.** (a) **FEDERAL EMPLOYER IDENTIFICATION NUMBER and/or FEDERAL SOCIAL SECURITY NUMBER.** As a condition to NYSERDA’s obligation to pay any invoices submitted by Contractor pursuant to this Agreement, Contractor shall provide to NYSERDA its Federal employer identification number or Federal social security number, or both such numbers when the Contractor has both such numbers. Where the Contractor does not have such number or numbers, the Contractor must give the reason or reasons why the payee does not have such number or numbers.

(b) **PRIVACY NOTIFICATION.** The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by Contractor to the State is mandatory. The principal purpose for which the information is collected is to enable the State to identify individuals, businesses and others who have been delinquent in filing tax returns or may have understated their tax liabilities and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law.

8. **CONFLICTING TERMS.** In the event of a conflict between the terms of the Agreement (including any and all attachments thereto and amendments thereof) and the terms of this Exhibit C, the terms of this Exhibit C shall control.

9. GOVERNING LAW. This Agreement shall be governed by the laws of the State of New York except where the Federal supremacy clause requires otherwise.

10. NO ARBITRATION. Disputes involving this Agreement, including the breach or alleged breach thereof, may not be submitted to binding arbitration (except where statutorily required) without the NYSERDA's written consent, but must, instead, be heard in a court of competent jurisdiction of the State of New York.

11. SERVICE OF PROCESS. In addition to the methods of service allowed by the State Civil Practice Law and Rules ("CPLR"), Contractor hereby consents to service of process upon it by registered or certified mail, return receipt requested. Service hereunder shall be complete upon Contractor's actual receipt of process or upon NYSERDA's receipt of the return thereof by the United States Postal Service as refused or undeliverable. Contractor must promptly notify NYSERDA, in writing, of each and every change of address to which service of process can be made. Service by NYSERDA to the last known address shall be sufficient. Contractor will have thirty (30) calendar days after service hereunder is complete in which to respond.

12. CRIMINAL ACTIVITY. If subsequent to the effectiveness of this Agreement, NYSERDA comes to know of any allegation previously unknown to it that the Contractor or any of its principals is under indictment for a felony, or has been, within five (5) years prior to submission of the Contractor's proposal to NYSERDA, convicted of a felony, under the laws of the United States or Territory of the United States, then NYSERDA may exercise its stop work right under this Agreement. If subsequent to the effectiveness of this Agreement, NYSERDA comes to know of the fact, previously unknown to it, that Contractor or any of its principals is under such indictment or has been so convicted, then NYSERDA may exercise its right to terminate this Agreement. If the Contractor knowingly withheld information about such an indictment or conviction, NYSERDA may declare the Agreement null and void and may seek legal remedies against the Contractor and its principals. The Contractor or its principals may also be subject to penalties for any violation of law which may apply in the particular circumstances. For a Contractor which is an association, partnership, corporation, or other organization, the provisions of this paragraph apply to any such indictment or conviction of the organization itself or any of its officers, partners, or directors or members of any similar governing body, as applicable.

13. PERMITS. It is the responsibility of the Contractor to acquire and maintain, at its own cost, any and all permits, licenses, easements, waivers and permissions of every nature necessary to perform the work.

14. PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS. The Contractor certifies and warrants that all wood products to be used under this Agreement will be in accordance with, but not limited to, the specifications and provisions of State Finance Law Section 165 (Use of Tropical Hardwoods), which prohibits purchase and use of tropical hardwoods, unless specifically exempted by NYSERDA.

15. OMNIBUS PROCUREMENT ACT OF 1992. It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority and women-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts.

Information on the availability of New York State subcontractors and suppliers is available from:

NYS Department of Economic Development
Division for Small Business
625 Broadway
Albany, New York 12207
Telephone: 518-292-5200
Fax: 518-292-5884
<http://www.esd.ny.gov>

A directory of certified minority and women-owned business enterprises is available from:

NYS Department of Economic Development
Division of Minority and Women's Business Development
625 Broadway
Albany, New York 12207
Telephone: 518-292-5200
Fax: 518-292-5803
<http://www.empire.state.ny.us>

The Omnibus Procurement Act of 1992 requires that by signing this Agreement, Contractors certify that whenever the total amount is greater than \$1 million:

(a) The Contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority and women-owned business enterprises, on this project, and has retained the documentation of these efforts to be provided upon request to the State;

(b) The Contractor has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended;

(c) The Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Service Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The Contractor agrees to document these efforts and to provide said documentation to the State upon request; and

(d) The Contractor acknowledges notice that the State may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with the State in these efforts.

16. RECIPROCITY AND SANCTIONS PROVISIONS. Bidders are hereby notified that if their principal place of business is located in a country, nation, province, state or political subdivision that penalizes New York State vendors, and if the goods or services they offer will be substantially produced or performed outside New York State, the Omnibus Procurement Act 1994 and 2000 amendments (Chapter 684 and Chapter 383, respectively) require that they be denied contracts which they would otherwise obtain. NOTE: As of May 15, 2002, the list of discriminatory jurisdictions subject to this provision includes the states of South Carolina, Alaska, West Virginia, Wyoming, Louisiana and Hawaii. Contact NYS Department of Economic Development for a current list of jurisdictions subject to this provision.

17. COMPLIANCE WITH NEW YORK STATE INFORMATION SECURITY BREACH AND NOTIFICATION ACT. Contractor shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law Section 899-aa; State Technology Law Section 208).

18. PROCUREMENT LOBBYING. To the extent this Agreement is a “procurement contract” as defined by State Finance Law Sections 139-j and 139-k, by signing this Agreement the Contractor certifies and affirms that all disclosures made in accordance with State Finance Law Sections 139-j and 139-k are complete, true and accurate. In the event such certification is found to be intentionally false or intentionally incomplete, NYSERDA may terminate the agreement by providing written notification to the Contractor in accordance with the terms of the agreement.

19. COMPLIANCE WITH TAX LAW SECTION 5-a. The following provisions apply to Contractors that have entered into agreements in an amount exceeding \$100,000 for the purchase of goods and services:

- a) Before such agreement can take effect, the Contractor must have on file with the New York State Department of Taxation and Finance a Contractor Certification form (ST-220-TD).
- b) Prior to entering into such an agreement, the Contractor is required to provide NYSERDA with a completed Contractor Certification to Covered Agency form (Form ST-220-CA).
- c) Prior to any renewal period (if applicable) under the agreement, the Contractor is required to provide NYSERDA with a completed Form ST-220-CA.

Certifications referenced in paragraphs (b) and (c) above will be maintained by NYSERDA and made a part hereof and incorporated herein by reference.

NYSERDA reserves the right to terminate this agreement in the event it is found that the certification filed by the Contractor in accordance with Tax Law Section 5-a was false when made.

20. IRANIAN ENERGY SECTOR DIVESTMENT. In accordance with Section 2879-c of the Public Authorities Law, by signing this contract, each person and each person signing on behalf of any other party certifies, and in the case of a joint bid or partnership each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each person is not on the list created pursuant to paragraph (b) of subdivision 3 of [section 165-a of the State Finance Law](#) (See www.ogs.ny.gov/about/regs/ida.asp).

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EXHIBIT D

NYSERDA PROMPT PAYMENT POLICY STATEMENT

504.1. Purpose and Applicability. (a) The purpose of this Exhibit is to provide a description of Part 504 of NYSERDA’s regulations, which consists of NYSERDA’s policy for making payment promptly on amounts properly due and owing by NYSERDA under this Agreement. The section numbers used in this document correspond to the section numbers appearing in Part 504 of the regulations.²

(b) This Exhibit applies generally to payments due and owing by the NYSERDA to the Contractor pursuant to this Agreement. However, this Exhibit does not apply to Payments due and owing when NYSERDA is exercising a Set-Off against all or part of the Payment, or if a State or Federal law, rule or regulation specifically requires otherwise.

504.2. Definitions. Capitalized terms not otherwise defined in this Exhibit shall have the same meaning as set forth earlier in this Agreement. In addition to said terms, the following terms shall have the following meanings, unless the context shall indicate another or different meaning or intent:

(a) “Date of Payment” means the date on which NYSERDA requisitions a check from its statutory fiscal agent, the Department of Taxation and Finance, to make a Payment.

(b) “Designated Payment Office” means the Office of NYSERDA’s Controller, located at 17 Columbia Circle, Albany, New York 12203.

(c) “Payment” means payment properly due and owing to Contractor pursuant to Article IV, Exhibit B of this Agreement.

(d) “Prompt Payment” means a Payment within the time periods applicable pursuant to Sections 504.3 through 504.5 of this Exhibit in order for NYSERDA not to be liable for interest pursuant to Section 504.6.

(e) “Payment Due Date” means the date by which the Date of Payment must occur, in accordance with the provisions of Sections 504.3 through 504.5 of this Exhibit, in order for NYSERDA not to be liable for interest pursuant to Section 504.6.

(f) “Proper Invoice” means a written request for Payment that is submitted by a Contractor setting forth the description, price or cost, and quantity of goods, property or services delivered or rendered, in such form, and supported by such other substantiating documentation, as NYSERDA may reasonably require, including but not limited to any

² This is only a summary; the full text of Part 504 can be accessed at:
<http://www.nyserda.ny.gov/en/About/~media/Files/About/Contact/NYSERDARegulations.ashx>

requirements set forth in Exhibits A or B to this Agreement; and addressed to NYSERDA's Controller, marked "Attention: Accounts Payable," at the Designated Payment Office.

(g)(1) "Receipt of an Invoice" means:

(i) if the Payment is one for which an invoice is required, the later of:

(a) the date on which a Proper Invoice is actually received in the Designated Payment Office during normal business hours; or

(b) the date by which, during normal business hours, NYSERDA has actually received all the purchased goods, property or services covered by a Proper Invoice previously received in the Designated Payment Office.

(ii) if the Agreement provides that a Payment will be made on a specific date or at a predetermined interval, without having to submit a written invoice the 30th calendar day, excluding legal holidays, before the date so specified or predetermined.

(2) For purposes of this subdivision, if the Agreement requires a multifaceted, completed or working system, or delivery of no less than a specified quantity of goods, property or services and only a portion of such systems or less than the required goods, property or services are working, completed or delivered, even though the Contractor has invoiced NYSERDA for the portion working, completed or delivered, NYSERDA will not be in Receipt of an Invoice until the specified minimum amount of the systems, goods, property or services are working, completed or delivered.

(h) "Set-off" means the reduction by NYSERDA of a payment due a Contractor by an amount equal to the amount of an unpaid legally enforceable debt owed by the Contractor to NYSERDA.

504.3. Prompt Payment Schedule. Except as otherwise provided by law or regulation or in Sections 504.4 and 504.5 of this Exhibit, the Date of Payment by NYSERDA of an amount properly due and owing under this Agreement shall be no later than thirty (30) calendar days, excluding legal holidays, after Receipt of a Proper Invoice.

504.4. Payment Procedures.

(a) Unless otherwise specified in this Agreement, a Proper Invoice submitted by the Contractor to the Designated Payment Office shall be required to initiate payment for goods, property or services. As soon as any invoice is received in the Designated Payment Office during normal business hours, such invoice shall be date-stamped. The invoice shall then promptly be reviewed by NYSERDA.

(b) NYSERDA shall notify the Contractor within fifteen (15) calendar days after Receipt of an Invoice of:

- (1) any defects in the delivered goods, property or services;
- (2) any defects in the invoice; or
- (3) suspected improprieties of any kind.

(c) The existence of any defects or suspected improprieties shall prevent the commencement of the time period specified in Section 504.3 until any such defects or improprieties are corrected or otherwise resolved.

(d) If NYSERDA fails to notify a Contractor of a defect or impropriety within the fifteen (15) calendar day period specified in subdivision (b) of this section, the sole effect shall be that the number of days allowed for Payment shall be reduced by the number of days between the 15th day and the day that notification was transmitted to the Contractor. If NYSERDA fails to provide reasonable grounds for its contention that a defect or impropriety exists, the sole effect shall be that the Payment Due Date shall be calculated using the original date of Receipt of an Invoice.

(e) In the absence of any defect or suspected impropriety, or upon satisfactory correction or resolution of a defect or suspected impropriety, NYSERDA shall make Payment, consistent with any such correction or resolution and the provisions of this Exhibit.

504.5. Exceptions and Extension of Payment Due Date. NYSERDA has determined that, notwithstanding the provisions of Sections 504.3 and 504.4 of this Exhibit, any of the following facts or circumstances, which may occur concurrently or consecutively, reasonably justify extension of the Payment Due Date:

(a) If this Agreement provides Payment will be made on a specific date or at a predetermined interval, without having to submit a written invoice, if any documentation, supporting data, performance verification, or notice specifically required by this Agreement or other State or Federal mandate has not been submitted to NYSERDA on a timely basis, then the Payment Due Date shall be extended by the number of calendar days from the date by which all such matter was to be submitted to NYSERDA and the date when NYSERDA has actually received such matter.

(b) If an inspection or testing period, performance verification, audit or other review or documentation independent of the Contractor is specifically required by this Agreement or by other State or Federal mandate, whether to be performed by or on behalf of NYSERDA or another entity, or is specifically permitted by this Agreement or by other State or Federal provision and NYSERDA or other entity with the right to do so elects to have such activity or documentation undertaken, then the Payment Due Date shall be extended by the number of calendar days from the date of Receipt of an Invoice

to the date when any such activity or documentation has been completed, NYSERDA has actually received the results of such activity or documentation conducted by another entity, and any deficiencies identified or issues raised as a result of such activity or documentation have been corrected or otherwise resolved.

(c) If an invoice must be examined by a State or Federal agency, or by another party contributing to the funding of the Contract, prior to Payment, then the Payment Due Date shall be extended by the number of calendar days from the date of Receipt of an Invoice to the date when the State or Federal agency, or other contributing party to the Contract, has completed the inspection, advised NYSERDA of the results of the inspection, and any deficiencies identified or issues raised as a result of such inspection have been corrected or otherwise resolved.

(d) If appropriated funds from which Payment is to be made have not yet been appropriated or, if appropriated, not yet been made available to NYSERDA, then the Payment Due Date shall be extended by the number of calendar days from the date of Receipt of an Invoice to the date when such funds are made available to NYSERDA.

504.6. Interest Eligibility and Computation. If NYSERDA fails to make Prompt Payment, NYSERDA shall pay interest to the Contractor on the Payment when such interest computed as provided herein is equal to or more than ten dollars (\$10.00). Interest shall be computed and accrue at the daily rate in effect on the Date of Payment, as set by the New York State Tax Commission for corporate taxes pursuant to Section 1096(e)(1) of the Tax Law. Interest on such a Payment shall be computed for the period beginning on the day after the Payment Due Date and ending on the Date of Payment.

504.7. Sources of Funds to Pay Interest. Any interest payable by NYSERDA pursuant to Exhibit shall be paid only from the same accounts, funds, or appropriations that are lawfully available to make the related Payment.

504.8. Incorporation of Prompt Payment Policy Statement into Contracts. The provisions of this Exhibit shall apply to all Payments as they become due and owing pursuant to the terms and conditions of this Agreement, notwithstanding that NYSERDA may subsequently amend its Prompt Payment Policy by further rulemaking.

504.9. Notice of Objection. Contractor may object to any action taken by NYSERDA pursuant to this Exhibit that prevents the commencement of the time in which interest will be paid by submitting a written notice of objection to NYSERDA. Such notice shall be signed and dated and concisely and clearly set forth the basis for the objection and be addressed to the Vice President, New York State Energy Research and Development Authority, at the notice address set forth in Exhibit B to this Agreement. The Vice President of NYSERDA, or his or her designee, shall review the objection for purposes of affirming or modifying NYSERDA's action. Within fifteen (15) working days of the receipt of the objection, the Vice President, or his or her designee, shall notify the Contractor either that NYSERDA's action is affirmed or that it is modified or that, due to the complexity of the issue, additional time is needed to

conduct the review; provided, however, in no event shall the extended review period exceed thirty (30) working days.

504.10. Judicial Review. Any determination made by NYSERDA pursuant to this Exhibit that prevents the commencement of the time in which interest will be paid is subject to judicial review in a proceeding pursuant to Article 78 of the Civil Practice Law and Rules. Such proceedings shall only be commenced upon completion of the review procedure specified in Section 504.9 of this Exhibit or any other review procedure that may be specified in this Agreement or by other law, rule, or regulation.

504.11. Court Action or Other Legal Processes.

(a) Notwithstanding any other law to the contrary, the liability of NYSERDA to make an interest payment to a Contractor pursuant to this Exhibit shall not extend beyond the date of a notice of intention to file a claim, the date of a notice of a claim, or the date commencing a legal action for the payment of such interest, whichever occurs first.

(b) With respect to the court action or other legal processes referred to in subdivision (a) of this section, any interest obligation incurred by NYSERDA after the date specified therein pursuant to any provision of law other than Public Authorities Law Section 2880 shall be determined as prescribed by such separate provision of law, shall be paid as directed by the court, and shall be paid from any source of funds available for that purpose.

Exhibit E
NYSERDA Report Format and Style Guide

ATTACHMENT G

NYSERDA - INSTRUCTIONS FOR SUBMITTING ELECTRONIC PROPOSALS (January 2014)

Please read the following instructions before submitting a proposal.

1. Locate the Funding Opportunity (PON, RFP, RFQ) on the “**Current Funding Opportunities**” page of NYSERDA’s website at:
<http://www.nyserda.ny.gov/Funding-Opportunities/Current-Funding-Opportunities.aspx>
2. While on the “**Current Funding Opportunities**” page, click the link/title of the individual Funding Opportunity.
3. While on the individual Funding Opportunity page, click the “**Submit Proposal Online**” button.
4. Enter your e-mail address and click the “Validate Email” button.
5. You will receive an automatic email containing a link to validate your email address. Click the link to be taken back to the Funding Opportunity to begin the online submission process.
6. Upload as many files as needed, one at a time. The electronic file names should include the proposing entity’s name in the title of the document.
7. After clicking the “Upload File” button, a list of your files will appear on the web page. You can delete files from this list if needed.
8. After all necessary files have been uploaded; review the list of documents to ensure that your proposal is complete and accurate.
9. Click the “Submit Proposal button.”
10. You will then be brought to a confirmation page listing the files received. Please print and save the confirmation page.
11. An auto-generated confirmation e-mail will be sent to the e-mail address you entered. Please save this e-mail.
12. When choosing to submit files electronically, the award/non-award notification letter will be sent to the e-mail address used to submit the proposal.

Important Reminders:

1. Submit only one proposal for each session
2. You may submit Word, Excel, Zip, or PDF files. PDF files must be searchable and therefore should be converted directly from an electronic document to PDF, rather than scanned.
3. E-mail or facsimile submittals will not be accepted.

If you make an error:

If after you click “Submit Proposals” you discover that the document(s) you submitted are incomplete or inaccurate follow these instructions:

1. Start the process over again and **resubmit the entire proposal**. You will receive another confirmation e-mail.
2. Immediately forward both confirmation e-mails (original and resubmission) to proposals@nyserda.ny.gov with the subject line of “**Resubmittal**” and the PON/RFP/RFQ number.
3. NYSERDA will accept the second submission as your proposal. The first submission will be disregarded.

If you need help: If you need help with this electronic proposal submission process, please contact Rosanne Viscusi at Roseanne.viscusi@nyserda.ny.gov or 518-862-1090 ext. 3418.

Attachment H

Community Microgrid Joint Utilities Fee Schedule for NY Prize Stage 2 Analyses

Please see the fee schedule below for utility services in Stage 2 of the NYSERDA NY Prize Competition. This fee schedule is being proposed by the Joint Utilities, comprised of Consolidated Edison Company of New York, Central Hudson Gas & Electric, Niagara Mohawk Power Corporation d/b/a National Grid, Orange & Rockland Utilities, New York State Electric & Gas Corporation, Rochester Gas & Electric, and Public Service Enterprise Group Long Island, to estimate the costs to engage in studying the community microgrids proposed in the Stage 2 of the NY Prize Competition only. It shall not be interpreted as establishing a precedent and shall not be deemed applicable to any microgrid or distributed generation project outside of the NY Prize Competition. Use of the fee schedule should provide a general cost estimate for utility services within a range of +/- 20% of the total study. Fees are reconciled with actual costs upon completion of the study or if proceeding, at the end of project completion.

In Stage 1 of the NY Prize Competition there are feasibility studies being conducted for 83 different community microgrids across New York State. These community microgrid proposals vary widely in size and complexity. Accordingly, several applications of the fee schedule are also shown below to depict how the schedule can be applied to different community microgrid proposals.

Component Costs

At the community microgrid Point of Common Coupling (PCC) to the utility's Electric Power System (EPS):

\$15,000 for one (1) PCC, which includes general administrative, load flow study, short circuit and protection study, islanding and relay control evaluation, and substation modification review costs.

At individual Distributed Generation (DG) PCC to the Community Microgrid connected to the Utility EPS:

\$16,000 for one (1) inverter-based DG >50kW up to <500kW PCC, which includes general administrative, load flow study, short circuit and protection study, risk-of-islanding and transient overvoltage evaluation check, effective grounding analysis, review of other aggregate generation effects, and substation modification review costs.

\$25,000 for one (1) inverter-based DG from 500kW up to 2MW PCC, which includes general administrative, load flow study, short circuit and protection study, risk-of-islanding and transient overvoltage evaluation check, effective grounding analysis, redundant relay control evaluation, review of other aggregate generation effects (i.e., dynamic analysis), and substation and EPS modification scope review and associated determination of costs.

\$30,000 for one (1) rotating machine type DG from 1MW up to 5MW PCC, which includes general administrative, load flow study, short circuit and protection study, risk-of-islanding and transient overvoltage evaluation check, effective grounding analysis, redundant relay control evaluation, review of other aggregate generation effects (i.e., dynamic analysis), and substation and EPS modification scope review and associated determination of costs.

Assume **20% reduction** for general administrative and substation modification review for each DG after the first DG if it is a common study impact to all.

Also, if risk-of-islanding or transient overvoltage evaluation checks determine a potential impact, then add **\$10,000** for further detailed analysis.

The following represent examples of proposed NY Prize community microgrids and the Joint Utilities fee schedule being applied to determine the potential costs of study.¹

Example 1

Example of a single PCC community microgrid on a single utility substation EPS with participating distributed generation (DG) consisting of three (3) 300kW each solar PV, one (1) 2MW solar PV, and one (1) 4MW CHP customer-generator facilities:

At the one (1) community microgrid PCC = \$15,000

At the one (1) 4MW CHP PCC = \$30,000

At the three (3) 300kW each solar PV PCCs = 3 X \$16,000 = \$48,000

At the one (1) 2MW solar PV PCC = \$25,000

Subtotal Community Microgrid Study Cost for Example 1 = \$118,000

Discount for common substation modification review cost = -\$14,600

Total Community Microgrid Study Cost for Example 1 = \$103,400

Example 2

Example of a single PCC community microgrid on a single utility substation EPS with participating distributed generation (DG) consisting of one (1) 250kW solar PV and one (1) 3MW CHP customer-generator facilities:

At the one (1) community microgrid PCC = \$15,000

At the one (1) 250kW solar PV PCC = \$16,000

At the one (1) 3MW CHP PCC = \$30,000

Subtotal Community Microgrid Study Cost for Example 2 = \$61,000

Discount for common substation modification review cost = -\$6,000

Total Community Microgrid Study Cost for Example 2 = \$55,000

The applications above depict how this fee schedule can be applied to community microgrids with specific parameters. This fee schedule represents a method in which study costs can be estimated for a given project where the size and complexity can vary greatly among projects. The Joint Utilities remain committed to working with NYSERDA, Department of Public Service Staff, and NY Prize participants in continuing to study the potential of community microgrids in New York State.

¹ Note that more complex projects with multiple PCCs or more DGs or may result in significantly larger costs when the fee schedule is applied.