Connecticut Microgrid Program:

- May provide some insight on developing Resiliency Portfolio Standard.

- NJ may benefit from some of this information when determining how to respond to the storm. It will be important to learn from states like Connecticut who are more progressive than most, keeping in mind that the microgrid program currently being established has several flaws, including no funding or support for generation.

- Link to Public Act 12-148, which is the CT microgrid program legislation passed in 2012:
  - http://www.cga.ct.gov/2012/act/pa/pdf/2012PA-00148-R00SB-00023-PA.pdf

- The Connecticut Department of Energy and Environmental Protection's (DEEP) RFI for the microgrid program (attached below).

- DEEP's subsequent Project Feasibility Application for microgrid projects (attached below).
  - If a third party developer and/or an end user does not submit a PFA, they cannot participate the in RFP next year

- Link to DEEP's draft Comprehensive Energy Strategy, which was mentioned to the group by Jonathan Schrag of NECHPI:
  http://www.dpuc.state.ct.us/DEEPEnergy.nsf/c6c6d525f7cdd1168525797d0047c5bf/15872c7645d9710c85257a8e0046c627?OpenDocument

Additionally the NYSERDA PON 2157 for fuel cells is a great program to model. An additional incentive is applied to projects meeting specific grid independent/islanding requirements, which is obviously significant when considering storm response.

---Information provided by From Lisa Ward, UTC

Microgrid Grant and Loan Pilot Program

Request for Information

On

Requirements and Selection Criteria

Issue Date:
August 30, 2012

Stakeholder Meeting:
September 18, 2012

RFI Response Due Date:
September 28, 2012

Issued by;
State of Connecticut
Department of Energy and Environmental Protection
10 Franklin Square
New Britain, CT 06051

1. Background

Section 7 of Public Act 12-148, "An Act Enhancing Emergency Preparedness and Response" (Act), requires the Department of Energy and Environmental Protection (DEEP or Department) to establish a microgrid grant and loan program to support local distributed energy generation for critical facilities (Program) during times of electricity grid outages. DEEP is issuing this Request for Information (RFI) for the purpose of gathering information regarding the Program requirements and selection criteria used in a subsequent Request for Proposals (RFP) that will be issued by DEEP pursuant to the Act.

2. Program Summary

The Act directs DEEP to develop and issue an RFP. Eligible respondents include municipalities, electric distribution companies (EDCs), participating municipal electric utilities (MEUs), energy improvement districts and private entities seeking to develop microgrid projects. These projects can include, but are not limited to, installation of a complete Microgrid system or repurposing existing distributed energy generation for use with Microgrids, to support critical facilities. DEEP is developing a three-stage process to accomplish the requirements of the Act. First, DEEP will conduct an information gathering process, including issuing this RFI, aimed at informing interested participants of the requirements of the Program and for the purpose of soliciting feedback on Program development. Second, DEEP will issue a Phase 1 RFP. Interested participants may submit a project for a feasibility evaluation aimed at determining a qualified pool of applicants, based on draft minimum technical requirements outlined herein to participate in the final stage (Phase 1 RFP). Lastly, DEEP will issue a Phase 2 RFP to further evaluate the pre-qualified projects from the Phase 1 RFP and make awards to projects based on Program requirements (Phase 2 RFP).

3. Purpose of the RFI

DEEP is issuing this RFI to obtain feedback on the proposed Program criteria and solicit responses to specific RFI questions (see Attachment 2) from all participants. DEEP welcomes any and all feedback on the Program as provided in this RFI.

4. Headings

The headings to articles and sections throughout this RFI are intended solely to facilitate reading and reference to all articles, sections, and provisions of this RFI, and do not affect the meaning or interpretation of this RFI.

5. Definitions:

Critical Facility: Means any hospital, police station, fire station, water treatment plant, sewage treatment plant, public shelter or correctional facility, any commercial area of a municipality, a municipal center, as identified by the chief elected official of any

municipality, or any other facility or area identified by the Department of Energy and Environmental Protection as critical. (As defined in Public Act 12-148, §7)

Distributed Energy Generation: Means the generation of electricity from a unit with a rating of not more than sixty-five megawatts on the premises of a retail end user within the transmission and distribution system. (As defined in Public Act 12-148, §7)

EDC: Electric Distribution Company. The Connecticut Light and Power Company (CL&P) and The United Illuminating Company (UI) or others as defined in the general statutes.

Electric Power System (EPS): All electrical wires, equipment, and other facilities owned or provided by the EDC or MEU that are normally operated at voltages below 69 kV to provide distribution service to customers.

Generator: The owner / operator of the Generating Facility (As defined in Guidelines for Generator Interconnection, Fast Track and Study Process)

Generating Facility: The device used for the production of electricity identified in the Interconnection Request, but shall not include the Generating Facility's Interconnection Facilities. (As defined in Guidelines for Generator Interconnection, Fast Track and Study Process)

Interconnection Facilities: Include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Distribution System.

Island Mode or Intentional Islanding: Occurs when the Generating Facility has been isolated from the EPS by planned operation of disconnecting means consistent with the Technical Requirements and the Generating Facility as a result is serving segregated load(s) on the Generating Facility's side of the Point of Interconnection. (As defined in Guidelines for Generator Interconnection, Fast Track and Study Process)

MEU: Municipal Electric Company

Microgrid: Means a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid and that connects and disconnects from such grid to enable it to operate in both grid-connected or Island Mode. (As defined in Public Act, §7)

Microgrid Developer: An entity consisting of municipalities, electric distribution companies, participating municipal electric utilities, energy improvement districts and private entities looking to develop a Microgrid, to support critical facilities. Any entity eligible to submit a proposal may collaborate with any other such entity in submitting such proposal.

Parallel Mode: A Generating Facility that is electrically interconnected to a bus common with the EDC's or MEU's electric distribution system, and operates in parallel either on a momentary or continuous basis.

Point of Interconnection: The point at which the Generating Facility's local electric power system connects to the EPS, such as the electric power revenue meter or premises service transformer. (As defined in Guidelines for Generator Interconnection, Fast Track and Study Process)

Technical Requirements: Technical Requirements for the Interconnection. (As defined in Guidelines for Generator Interconnection, Fast Track and Study Process)

6. Freedom of Information Act

Due regard will be given for the protection of proprietary information contained in all proposals received; however, participants should be aware that all materials associated with project proposals during the entirety of the Program are subject to the terms of the Freedom of Information Act (FOIA) and all rules, regulations and interpretations resulting therefrom. It will not be sufficient for participants to merely state in general terms that the proposal is proprietary in nature and, therefore, not subject to release to third parties. Any proposal that makes such a general or overarching claim may be subject to disqualification. **Those particular sentences, paragraphs, pages or sections which a participant believes to be exempt from disclosure under the FOIA must be specifically identified as such.**

7. Role of the Electric Distribution Companies and Municipal Electric Utilities

The EDCs or the MEUs will conduct the feasibility evaluation under the Phase 1 RFP for proposed projects that fall within their respective service territories only.

A standard Operating Agreement, approved by the EDCs and MEUs, shall be executed between the owner of a Microgrid and the EDC or MEU that will define the roles and responsibilities for the installation, operation and maintenance of the Microgrid during normal and abnormal system conditions.

The EDC or MEU will review each proposed Microgrid project, within their respective service territories only, in accordance with the current and applicable version of the Guidelines for Generator Interconnection Fast Track and Study Process ("Guidelines") that has been approved by the Public Utilities Regulatory Authority ("PURA"). All proposed projects must submit an interconnection application and follow all interconnection requirements as specified in the Guidelines. The EDC or MEU will design, own and operate the Interconnection Facilities and Electric Power System (EPS) required to connect the Microgrid to the EPS.

8. Electric Distribution Company and Municipal Electric Utility Submittals

If an EDC or MEU chooses to submit a Microgrid project in response to the Phase 1 RFP, the proposed project will be evaluated independently by DEEP.

9. RFI

Interested parties are invited to submit information in the format outlined in Attachment 2 no later than **September 28, 2012**. The Department requests responses to specific questions posed to assist in the development of the Program and subsequent RFPs.

- No confidential information should be included in RFI submittals, and the Department shall not be held responsible for disclosure of any information submitted as part of the RFI, even if labeled "confidential" or "proprietary".

- Submittals: Submittals must be in the required format as outlined in Attachment 2 and provided to the Department via electronic mail to: Debra.Morrell@ct.gov

- Questions: The Department will respond no later than September 24, 2012, to written questions received by September 18, 2012 or oral questions posed during the Stakeholder meeting. Such questions should be submitted directly to the Program administrator at Veronica.Szczerkowski@ct.gov

While the Department will evaluate all conforming RFI submissions, the Department makes no commitment to any submitter that it will incorporate or otherwise act upon any information provided in response to this RFI or the subsequent RFPs. This RFI does not commit DEEP to award a contract, to pay any costs incurred in preparing an informational proposal for this request or to procure a contract for services or supplies. DEEP reserves the right to accept or reject any or all responses received as a result of this request. DEEP also reserves the right to discontinue the RFI and RFP process at any time.

10. Stakeholder Meeting

DEEP will hold a stakeholder meeting on Tuesday, **September 18, 2012**, at 9:00a.m. at its offices at 79 Elm Street, Hartford (Phoenix Auditorium). During such meeting, DEEP will conduct a question and answer session to provide further information to Program participants. This meeting will also serve as an information gathering session to help the Department better outline the requirements of and selection criteria used in the Phase 1 and Phase 2 RFPs. In addition, this meeting will serve as networking opportunity for municipalities, other participants interested in hosting a Microgrid and potential Microgrid developers. Potential Microgrid developers that wish to make a brief (10 minute) presentation or distribute literature on their

qualifications and development ideas please notify Debra Morrell at Debra.Morrell@ct.gov of your intention.

11. Grants and Loans Awarded

DEEP intends to award grants or loans to successful bidders, provided the total amount of the grants and loans awarded under the Program shall not exceed fifteen million dollars ($15,000,000). To the extent possible, the amount of loans and grants awarded under the Program shall be evenly distributed between small, medium and large municipalities. Such grants and loans shall only be used to provide assistance to recipients for the cost of design, engineering services and interconnection infrastructure for any such Microgrid. DEEP may establish a financing mechanism to provide or leverage additional funding to support the development of distributed energy generation and Microgrids that is not limited to the cost of interconnection infrastructure.

Attachment 1

Schedule - Microgrid Grant and Loan Pilot Program

Issue RFI	August 30, 2012
RFI Stakeholder Technical Meeting	September 18, 2012
RFI Submittals Due	September 28, 2012
Pace Law School workshop - Microgrids in New England	October 10, 2012
Issue Phase 1 RFP	October 15, 2012
Phase 1 RFP Participants Conference	October 29, 2012
Phase 1 RFP Submittals Due	November 12, 2012
Conduct Feasibility Evaluations	November - December 2012
Announce Phase 1 RFP Selections and Issue Phase 2 RFP	January 2, 2013
Issue Phase 2 RFP	January 2013
Phase 2 RFP Participants Conference	January 2013
Phase 2 RFP Submittals Due	February 2013
Evaluate Phase 2 RFP Microgrid Projects	February 2013
Award Grants and Loans to Microgrid Projects	February 2013

Attachment 2 – RFI Form

DEEP seeks responses to the questions below. In addition, please provide any additional information that may be helpful to development of the Program RFPs. RFI responses and related questions received by DEEP are considered public documents. No confidential information should be included in the RFI responses, and DEEP shall not be held responsible for disclosure of any information submitted by any participant as part of the RFI even if it is labeled "confidential" or "proprietary".

Question	Answer
Name, including Company name if applicable	
Address	
Company website, if applicable	
Telephone	
Email	

Question 1
What do you consider to be critical facilities? This response can be general in nature and not specific to one municipality or other location in which a microgrid may be located.

Answer 1: {Insert response here}

Question 2:
This question is posed to facilities that have existing distributed generation (DG) or emergency generation (EG). What type of generation do you currently own? What types of facilities does the DG or EG serve? Do you need to upgrade the existing DG or EG to accommodate additional facilities? What upgrades do you envision you would need? What other facilities would you add?

Answer 2: {Insert response here}

Question 3:
DEEP envisions three different types of Microgrid configurations: Municipal setting, Industrial/commercial setting and Campus style (hospitals and universities)

a) *What other microgrid configurations should DEEP consider?*
b) *Which microgrid configuration would your project fall under, if any?*
c) *What time frame do you find reasonable to get your project designed, interconnected and built?*

Answer 3: {Insert response here}

Question 4:
DEEP intends to fund the interconnection study costs and some or all of the interconnection costs for a variety of Microgrid configurations. DEEP anticipates selecting projects from each

Microgrid configuration (outlined in Question 3, above) that have successfully passed the feasibility evaluation and meet the financial, managerial and operational criteria to receive grants or loans under the Microgrid Program.

How should DEEP allocate the $15 million among the Microgrid configurations and why?

Answer 4: {Insert response here}

Question 5:
In regards to the operational, managerial and financial criteria outlined above. Comment on the criteria as described in this RFI. What other criteria should DEEP consider?

Answer 5: {Insert response here}

Question 6:
The Microgrid Program grants and loans may be used to provide assistance to recipients for the cost of design, engineering services and interconnection infrastructure for any such Microgrid. There are many options to fund the cost of generation:

- *Energy service agreement*
- *CHP Program*
- *LREC Program – fuel cells*
- *Connecticut Innovations – R&D costs*
- *PACE - Clean Energy Application Centers – technical assistance*
- *Possible federal money – if grants or loans are available*

Are you aware of any other funding sources to support the cost of the project? What are they?

Answer 6: {Insert response here}

Question 7:
DEEP envisions that Microgrids that only require repurposing of existing DG could be completed by Summer 2013, Microgrids that require reconfiguration of existing DG could be completed by October 2013, and Microgrids that are completely new could be completed by April 2014. Those completion dates would have to be met in order for the project to receive funding from the Program.

Comment on the length of time a project as outlined above. If you do not believe the Program funding should be issued after the project is completed, when do you believe the Program funding should be issued?

Answer 7: {Insert response here}

Question 8:
This question is posed to developers. Provide examples of Microgrid projects that you have been involved with. Identify the Microgrid configuration and if the Microgrid project repurposed or reconfigured existing DG or if it was a completely new project.

Answer 8: {Insert response here}

Question 9:

Please provide feedback and comments on the initial Program outline contained in Attachment 3.

Answer 9: {Insert response here}

Question 10:

Please provide any additional information that you believe would be helpful to development of the Program RFPs.

Answer 10: {Insert response here}

Attachment 3 – Initial Program Details

Microgrid PILOT PROGRAM INFORMATION

The schedule for the Program is provided previously as Attachment 1. DEEP, at its sole discretion, may modify the Program schedule at any time.

1. Phase 1 RFP - Feasibility Evaluation of Potential Projects

Proposed Microgrid projects must meet the definitions for Critical Facilities and Microgrid as defined in Section 7 of Public Act 12-148. In addition, DEEP has developed the following suggested eligibility requirements for bidders to include in their Phase 1 bid package. All definitions are found in Section 7 of Public Act 12-148 or in to the Definition Section of this RFI. Bidders are required to fund the cost of the feasibility evaluation. The cost is estimated to be $10,000 to $20,000 and is not subject to reimbursement through the Program.

1. Include a minimum of two or more Critical Facilities located in close proximity to each other.
2. All interconnection facilities will be of an underground design to ensure maximum reliability during an extreme weather event.
3. Include Distributed Energy Generation which is in close proximity to the load it is serving based on voltage quality.
4. Demonstrate the ability to form an intentional island upon local EDC or MEU request (e.g. prior to major storms, testing, etc.)
5. Demonstrate ability/methodology to form an intentional island (automatically) during loss of grid supply and a method to return to grid Parallel Mode when the grid is restored.
6. Demonstrate the ability to operate while in Island Mode 24x7 for an extended period of time during an extreme weather event.
7. Locate generation in close proximity to an uninterruptable fuel source capable of sustaining the Microgrid during an extended period of time.
8. Microgrid should not include Critical Facilities that are currently located on an existing underground or spot network.
9. Possess black start capability during Island Mode.
10. Demonstrate the ability to improve the reliability of electric supply for the Microgrid customers during an extreme weather event and not adversely impact customers outside of the Microgrid electric boundary.
11. Demonstrate the ability to not inhibit or delay restoration of other customers in the general area of the Microgrid.
12. Demonstrate the ability to support and manage existing Microgrid loads and describe techniques and equipment designed to manage future Microgrid loads in Island Mode.

13. Demonstrate the ability to perform load shedding in case of a shortage in the energy generation resources and be able to synchronize back to the local EDC or MEU system.
14. Demonstrate the ability to communicate with the local EDC or MEU via SCADA or other communication devices during parallel and Island Modes.
15. Demonstrate the ability to maintain acceptable voltage and frequency levels per the local or regional regulations and standards in Island Mode.
16. Demonstrate the ability to meet the requirements of IEEE 1547-2003 while operating in Parallel Mode with the local EDC or MEU.
17. Demonstrate the design of protection and control schemes while functioning in island and grid Parallel Modes.
18. Demonstrate the ability to maintain safe and reliable operation of all interconnected facilities.
19. Microgrid Developer must provide plane and One-Line electrical drawings depicting Microgrid interconnection of Critical Facilities to the EDC's or MEU's distribution system that is not part of the intentional island formed by the Microgrid.

2. Phase 2 RFP – Final Projects Review, Selection and Award

To be eligible to submit a bid for the Phase 2 RFP, bidders must have submitted a bid for the Phase 1 RFP and successfully completed the feasibility evaluation as outlined above. In the Phase 2 RFP, DEEP will further evaluate projects on the technical, operational and economic criteria outlined below, as well as the overall financial and managerial capabilities of the bidder:

Technical Criteria

In addition and as an expansion of the criteria outlined in section 2, above, a Microgrid shall:

1. Be capable of following the load on each phase while maintaining the voltage and frequency as indicated below.
2. Have adequate protection schemes in place to accommodate both grid connected Parallel Mode and stand-alone intentional Islanded Mode while supplying Microgrid served customers.
3. Provide operating telemetry and control to the local EDC or MEU.
4. Capture the power quality performance of the Microgrid.
5. Communicate with the local EDC or MEU via SCADA or other communication devices during Parallel and Island Modes.
6. Support and manage present and future Microgrid loads in Island Mode.
7. Have load shedding mechanism in case of shortage in the energy generation resources.
8. When in Parallel Mode, have the capability to control the distributed energy resource and maintain acceptable voltage and frequency levels per the local or regional regulations or standards.
9. When in Island Mode the Microgrid must maintain the service voltage quality within the Microgrid as specified in ANSI C84.1- 2011.

10. When in Island Mode the Microgrid must control frequency within acceptable levels. (59.3 Hz – 60.5 Hz)
11. Have a protection scheme against the various power system faults or failures that is suitable to function in an Island Mode and while maintaining safe and reliable operation.

Operational Criteria

1. An operating agreement shall be executed between the owner of a distributed generator and the local EDC or MEU to clearly define roles and responsibilities for operation and maintenance requirements of the Microgrid during normal and abnormal system conditions.
2. A Microgrid operating in Parallel Mode with the local EDC or MEU must meet the requirements of IEEE 1547-2003.
3. The Microgrid Developer must coordinate with the local EDC or MEU to configure the Microgrid infrastructure for the planned Island Mode.
4. Microgrid must have the ability to form an intentional island upon local EDC or MEU request. (e.g. prior to major storms, testing etc.)
5. Operators of the Microgrid shall provide performance reporting and cost benefits annually and upon request to DEEP.
6. Microgrid design should not inhibit or delay restoration of other customers in the general area of the Microgrid.

Economic Criteria

1. Standby EDC or MEU capacity requirements for purposes of Microgrid maintenance or shut down shall be provided by the Microgrid Developer on a yearly interval.

2. Every Microgrid project must complete a cost benefit analysis that includes installation, operation, and ongoing maintenance costs based on predetermined DEEP parameters, and provide project's Net Present Value in terms of $/KW.

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

PROJECT FEASIBILITY APPLICATION
Microgrid Grant and Loan Pilot Program
November 5, 2012

The Department of Energy and Environmental Protection (DEEP) is pleased to announce the first phase of the Microgrid Grant and Loan Pilot Program (Program), which seeks projects that support local distributed energy generation for critical facilities during times of electricity grid outages. The goal of the first phase of this program is to find projects that are technically feasible. Only those projects that pass the Program's feasibility review and evaluation will be eligible to submit a proposal in response to the Program's subsequent Request for Proposals (RFP).

♦ **SUBMISSION DEADLINE:** January 3, 2013 at 4:00 P.M. **Applications or supporting documents received after that date and time will not be considered.**

♦ **SUBMISSION REQUIREMENTS:**

Proposals must follow the instructions in Attachment A and must be submitted electronically. In order to submit a proposal electronically, the Respondent must first register for electronic filings on DEEP's website. DEEP recommends that you complete the registration process at least 24 hours prior to submitting your proposal. Proposals are submitted via the same link as used for registration. **Do not include any confidential or proprietary information in your electronic submittal. Proposals or supporting documentation transmitted via mail or fax will not be accepted.**

♦ **SELECTION NOTIFICATION:**

Respondents will be notified by February 21, 2013, as to whether or not their proposals have been selected to participate in the RFP.

♦ **FOR FURTHER PROGRAM INFORMATION, PLEASE CONTACT:**

Veronica Szczerkowski, at 860-827-2890
Or E-mail at: veronica.szczerkowski@ct.gov

♦ **FOR GENERAL INFORMATION, PLEASE CONTACT:**

Debra Morrell, at 860-827-2688
Or E-mail at: debra.morrell@ct.gov

PROGRAM PURPOSE

The purpose of the Program is to solicit proposals to build Microgrids in order to support Critical Facilities during times of electricity grid outages. This Project Feasibility Analysis (PFA) will be used to determine which projects are technically feasible and eligible to participate in the subsequent RFP. The Program was developed in response to the Governor's Two Storm Panel's recommendation regarding the use of Microgrids as a method for mitigating the impacts to infrastructure associated with emergencies and natural disasters. As such, the proposed Microgrid must be able to continuously operate for a

minimum of four weeks with its combined generation resources. The proposed Microgrid should include access to uninterruptable fuel resources either on-site or delivered for a minimum of two weeks and present a plan to secure additional fuel resources (if necessary) beyond two weeks as part of storm preparation and storm management. See Attachment C, Technical Feasibility Criteria and Submission Requirements, for a full list of project requirements.

SUGGESTED MICROGRID CONFIGURATION MODELS

The proposed Microgrid configuration must include distributed generation or emergency generation (new or existing) at a host site. The generation should be able to directly serve the electrical load at the project host site and feed excess generation to other Critical Facilities within the Microgrid utilizing existing or new distribution infrastructure. In the alternative, generation at the project host site could connect directly to the Critical Facilities within the Microgrid using new or existing low voltage infrastructure. The following are some suggested Microgrid configurations:

- Municipal Setting – A Microgrid that would encompass multiple municipal Critical Facilities in proximity of each other. An example of this setting would be a Microgrid consisting of a fire station, police station, and emergency shelter.

- Industrial/Commercial Setting – A Microgrid that would encompass generation that could serve one or more Critical Facilities within proximity of that generation. The generation could cover the emergency energy needs of the host site as well as the emergency energy needs of the existing Critical Facility(s).

- Campus Style – A Microgrid that would encompass one or more Critical Facilities on a single piece of property that has multiple Critical Facilities energized from existing or new onsite generation. An example of this would be a hospital, university, or military installation.

Additionally, DEEP will consider Microgrid configurations that serve multiple Critical Facilities within a single building if the Respondent can demonstrate how the load of those Critical Facilities could be better served by a Microgrid configuration instead of a standard distributed generation interconnection.

AWARD PROCESS

DEEP will review the technical feasibility of the proposed Microgrid projects submitted in response to this PFA. All projects that meet the technical feasibility criteria will be invited to participate in the subsequent RFP. All projects will be notified in writing if they pass the technical feasibility criteria evaluation. All costs incurred by Program participants in developing a proposal for this PFA are not subject to reimbursement from the Program. The feasibility evaluation costs incurred by the Electrical Distribution Companies (EDCs) or Municipal Electric Utilities (MEUs) in support of DEEP's review of the PFA proposals will not be charged to the respondents. DEEP will directly cover the EDC and MEU costs incurred as a result of the evaluation of the PFA.

ELIGIBILITY GUIDELINES

In order to be deemed eligible to participate in the subsequent RFP, respondents must meet the definitions for Critical Facilities and Microgrids as well as meet the Technical Feasibility Criteria and Submission Requirements Attachment C. All definitions are found in Section 7 of Public Act 12-148 or in the Definition Section of this PFA**.**

PROPOSAL SUBMISSION

Include the following documents:

1. Attachment B, Proposal Cover Page
2. Attachment C, Technical Feasibility Criteria and Submission Requirements

3. Layout Diagram. The Layout Diagram must indicate location of the generating facilities, fuel sources, Critical Facilities, and the proposed routing of wires and cables from the generating facility to all Critical Facilities (including estimated distances in feet).
4. One-Line Electrical Diagram. The One-Line Electrical Diagram must depict Microgrid interconnection of Critical Facilities to the EDC's or MEU's distribution system, and must include the intentional island formed by the Microgrid, including metering configuration depicting utility revenue meter, generator meter, and customer's meters.
5. Project Milestone Schedule in Gantt Chart format.
6. Municipality Support Letter from the municipality where the project is located. The letter must be signed by a municipal official (Mayor, First Selectman, etc.) and endorse the development of a Microgrid supporting the particular Critical Facilities identified.

The level of detail required to fully complete each required document is related to the scale and scope of the proposed project. Respondents are requested to provide a thorough description of the proposed project and answer each question as it applies to the activity.

Note: All of the questions on Attachment C must be answered. If a question is not applicable to your particular proposal, please indicate "N/A". Do not leave the questions blank. Clearly identify each question number in your response.
Submission of complete and accurate information will enhance the possibility of the proposal being selected for participation in the subsequent RFP.

If you have any technical questions for your utility while completing your response to this PFA, you must utilize Attachment D, Utility Information Form, to request information needed for project development from the respective utility servicing the potential Microgrid customers. The Utility Information Form must be submitted **in writing** no later than November 29, 2012 to allow time for responses prior to PFA due date.

If you have general program questions for DEEP while completing your response to this PFA, utilize Attachment E, DEEP Information Request Form, to submit your questions. The DEEP Information Request Form must be submitted **via email** no later than November 29, 2012 to allow time for responses prior to the PFA due date.

PFA TECHNICAL FEASIBILITY CRITERIA EVALUATION METRICS

Details of the Technical Feasibility Criteria Evaluation Metrics can be found in Attachment C.

CONFIDENTIAL INFORMATION

Respondents are advised not to include any proprietary information in their proposals. The Connecticut Freedom of Information Act generally requires the disclosure of documents in the possession of the State upon request of any citizen, unless the content of the document falls within certain categories of exemption. An example of an exemption is a "trade secret," as defined by statute (C.G.S. § 1-19(b)(5)). If the information is not readily available to the public from other sources and the respondent submitting the information requests confidentiality, then the information generally is considered to be "given in confidence." Confidential information must be isolated from other material in the proposal and labeled CONFIDENTIAL.

MULTIPLE SUBMISSIONS

Multiple proposals by the same respondent will be considered. Multiple proposals that include the same Critical Facilities may be submitted.

DEFINITIONS

Critical Facility: Means any hospital, police station, fire station, water treatment plant, sewage treatment plant, public shelter or correctional facility, any commercial area of a municipality, a municipal center, as identified by the chief elected official of any municipality, or any other facility or area identified by the Department of Energy and Environmental Protection as critical. (As defined in Public Act 12-148, §7)

DEEP has identified the following additional facilities as critical: military bases, communications towers, fueling stations, food distribution centers, and mass transit. In addition, DEEP considers as critical facilities those facilities that have some or all of the following characteristics: provide support for national security; act as a command center; act as an emergency shelter; provide access to food, fuel, money, or medication.

Distributed Energy Generation: Means the generation of electricity from a unit with a rating of not more than sixty-five megawatts on the premises of a retail end user within the transmission and distribution system. (As defined in Public Act 12-148, §7). Also referred to as distributed generation or emergency generation.

EDC: Electric Distribution Company. The Connecticut Light and Power Company (CL&P) and The United Illuminating Company (UI) or others as defined in the general statutes.

Electric Power System: All electrical wires, equipment, and other facilities owned or provided by the EDC or MEU that are normally operated at voltages below 69 kV to provide distribution service to customers.

Generator: The owner / operator of the Generating Facility (As defined in Guidelines for Generator Interconnection, Fast Track and Study Process)

Generating Facility: The device used for the production of electricity identified in the Interconnection Request, but shall not include the Generating Facility's Interconnection Facilities. (As defined in Guidelines for Generator Interconnection, Fast Track and Study Process)

Interconnection Facilities: Include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions, or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Distribution System.

Island Mode or Intentional Islanding: Occurs when the Generating Facility has been isolated from the Electric Power System by planned operation of the disconnecting means consistent with the Technical Requirements and the Generating Facility as a result is serving segregated load(s) on the Generating Facility's side of the Point of Interconnection. (As defined in Guidelines for Generator Interconnection, Fast Track and Study Process)

MEU: Municipal Electric Company

Microgrid: Means a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid and that connects and disconnects from such grid to enable it to operate in both grid-connected or Island Mode. (As defined in Public Act 12-148, §7)

***One-Line Diagram*:** A diagram which shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein (as defined in IEEE 100 The Authoritative Dictionary of IEEE Standards Terms).

Parallel Mode: A Generating Facility that is electrically interconnected to a bus common with the EDC's or MEU's electric distribution system, and which operates in parallel either on a momentary or continuous basis.

Point of Interconnection: The point at which the Microgrid Generating Facility's local electric power system connects to the Electric Power System, such as the electric power revenue meter or premises service transformer. (As defined in Guidelines for Generator Interconnection, Fast Track and Study Process)

Technical Requirements: Technical Requirements for the Interconnection (as defined in Guidelines for Generator Interconnection, Fast Track and Study Process).

RFP GUIDANCE

Microgrid Funding

DEEP has $15 million to award to Microgrid host sites for the development and implementation of Microgrid projects. DEEP has set aside up to $1.5 million to fund eligible RFP proposal development costs. Grants awarded for the RFP proposal development costs will be made at the completion of the RFP evaluation period. The RFP proposal development costs must be quantified in the RFP proposal. The remaining $13.5 million will be used to fund costs to implement selected projects, including eligible design, engineering and interconnection infrastructure costs in the post-RFP evaluation period. DEEP anticipates that the majority of the funding will be in the form of direct grants. Loans will be determined on a case-by-case basis as the RFP proposals are reviewed. Grants awarded for the Microgrid project implementation costs will be made when the project begins operation. To demonstrate that a project is operational, it must submit an affidavit that it has completed final acceptance of the applicable EDC or MEU interconnection process, including satisfactory commissioning testing, and is operational. The amount awarded to each respondent cannot be determined until the number of submissions is known. DEEP cannot guarantee that 100% of the respondent's eligible expenses will be reimbursed.

Evaluation Criteria

Respondents should consider their ability to meet the following RFP criteria when deciding to put forth a proposal for this PFA. DEEP is still developing the final RFP criteria upon which the projects will be selected and will announce it with the RFP, but offers the following guidance:

- The overall cost and benefits of the project
- The project's contribution to public need (increasing safety and quality of life for residents in an outage situation)
- The technical and operational performance of the project (an expanded scope of items contained in Attachment C)
- The demonstrated reliability of the proposed Microgrid configuration
- The use of clean and renewable generation resources in the project
- Overall financial and managerial capabilities of the developer

Respondents should include a recommendation as to whether a grant or loan would better suit their financing needs at different stages of the project.

Contract Compliance Requirements

Respondents are put on notice that, should they be deemed eligible to participate in the RFP, they must submit the following Contract Compliance forms as part of their RFP response.

See CHRO website for specific Contract Compliance forms. The following table will assist in determining which forms are required.

	Bidder Contract Compliance Monitoring Report Required – Affidavit for Certification of Subcontractors as MBE's, as applic.	**Affirmative Action Plan Required**	**CHRO Requires Pre Approval of Affirmative Action Plan**
$0-$4,000.00	No paperwork required.		
$4,000.01 - $9,999.99	No	No	n/a
Non Public Works Contract			
$10,000 - $249,999.99	Yes	No	n/a
$250,000 or more	Yes	Yes	No
Public Works Contract			
$10,000 - $50,000.00	Yes	No	n/a
$50,000.01 - $500,000	Yes	Yes	No
$500,000.01 or more	Yes	Yes	Yes

Campaign Contribution Ban

Respondents are further put on notice that should they be deemed eligible to participate in the RFP they are subject to the following campaign contribution ban.

With regard to a State contract as defined in P.A. 07-1 having a value in a calendar year of $50,000 or more or a combination or series of such agreements or contracts having a value of $100,000 or more, the authorized signatory to the submission in response to the RFP expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising prospective state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice (See SEEC Form 10).

Microgrid Project Completion Schedule

Microgrid configurations that only require repurposing of existing generation should be completed by September 1, 2013. Microgrid configurations that require reconfiguration of existing generation should be completed by November 30, 2013. Microgrid configurations that are completely new should be completed by June 30, 2014. There is the possibility for some flexibility on project timing on a case-by-case basis, but by and large these completion dates must be met in order for a project to receive funding from the Program. Funding approved in the RFP process is subject to change or full revocation if the implementation dates are not met.

ATTACHMENT A

MICROGRID GRANT AND LOAN PILOT PROGRAM

PROPOSAL COVER PAGE INSTRUCTIONS

Please read these instructions in their entirety and answer each question consecutively by number. These instructions have been designed to minimize the potential for incomplete applications. Information required in items 1-6 must be provided by filling out Attachment B, Proposal Cover Page **using the space provided.** Responses to items 7-10 should be provided by attaching additional pages to the cover page.

1. NAME, ADDRESS AND PHONE NUMBER OF RESPONDENT:
Fill in the *legal name(s)*, mailing address(es), phone number(s), and e-mail address of the respondent. For an incorporated business or academic institution, the legal name should be that which is registered with the Secretary of State's Office. Phone number(s) must be a number where the respondent can be reached during business hours.

2. NAME, ADDRESS AND PHONE NUMBER OF CONTACT (if different from respondent):
Fill in the name(s), mailing address(es), phone number(s), and e-mail address of the contact only if different from the respondent. Phone number(s) must be a number where the contact is reachable during business hours.

3. NAME AND TITLE OF AUTHORIZED REPRESENTATIVE:
State the name and title of the representative who, if the contract is awarded, would be legally authorized to sign the contract. Have this individual sign and date the application form in the space provided. **Applications which are not signed by a legally authorized individual shall not be accepted, and will be returned.** For Respondents other than an individual, the Respondent will need to supply a signature resolution indicating that the signer is legally authorized to do so.

4. TITLE:
State the title of the proposed project.

5. PROJECT DESCRIPTION:
Provide a brief description of the proposed project.

6. TIME FRAME:
Provide the proposed timeline for project completion. Refer to Question 11 for an explanation of how to determine a proposed schedule for implementation of the project.

7. ADDRESS(ES) OR LOCATION(S) OF PROPOSED PROJECT (include street address and municipality), AS APPLICABLE:
Include the street address(es) and the municipality where the proposed project is located, as applicable. If the site does not have a street address, please provide a description of and directions to the site. Also include a copy of the map and lot number(s) of the site as identified by the Tax Assessor's Office for the municipality in which the site is located.

8. PURPOSE AND NEED FOR PROPOSED PROJECT:

Describe the purpose, need, and intended use of the proposed project including a description of the public benefit expected to result from the project.

9. SCOPE OF WORK:
Describe the scope of work identifying each task, product, and service. Where applicable, include site maps and/or other diagrams indicating location and features of specific project tasks.

10. SCHEDULE FOR COMPLETION OF THE SCOPE OF WORK FOR THE PROPOSED PROJECT:
Provide a proposed schedule for completion of each phase of the project as it corresponds to the scope of work described and the total number of months needed to complete the project. Identify any seasonal constraints or specific requirements for work scheduling. For example, work times may need to be coordinated with a school year calendar, observation of environmentally sensitive seasons, or the receipt of required authorizations. In developing the schedule for completion, take into account the Microgrid Completion Schedule provided in the RFP Guidance.

ATTACHMENT B

MICROGRID GRANT AND LOAN PILOT PROGRAM

PROPOSAL COVER PAGE

(Please follow the instructions in Attachment A, Proposal Cover Page Instructions, and type answers using the space provided)

1. Name, Address, Phone Number and E-mail Address of Respondent (Include Legal name. If a CT Corporation or LLC, provide name as registered with the CT Secretary of the State.):
2. Contact Name, Title, Address, Phone Number, and E-mail Address of Contact (if different from Respondent):
3. Name, Title and Signature of Authorized Representative (legally authorized to sign the contract):
Name and Title:
Signature: | Date:
4. Title of the Proposed Project:
5. Brief Description:
6. Duration of Project Requested: ___ months From: _____ To: _____
List Time Constraints, if any:

Items 7-10 must be appropriately labeled and included as an attachment to this form.

ATTACHMENT C

MICROGRID GRANT AND LOAN PILOT PROGRAM

TECHNICAL FEASIBILITY CRITERIA AND SUBMISSION REQUIREMENTS

	Evaluation Criteria	Information Required	Submission
1.	Include a minimum of 2 or more critical facilities, not served by a common electrical service entrance, located in proximity to each other	Provide number of critical facilities with owner, name, address, load size, account number.	Layout Diagram and the following : Number of Critical Facilities Aggregate total load (kW) of all Critical Facilities For each Critical Facility, indicate: Facility Name: Address: Account Number: Total Load: Critical Load included in Microgrid (kW): Distance in feet from generator:
2.	Number of people likely to be served or benefit from the Microgrid	Provide number of people likely to be served or benefit by Critical Facility	Written Description
3.	kW Rating of Microgrid generation	Provide aggregate Microgrid generation size, identify each generation resource size separately; kW Rating must be 24/7 Continuous Duty Rating, NOT "standby rated"	Written Description Include: Aggregate kW rating of all generation sources For each generation source, include: Type: (gas Turbine, Recip Engines, Fuel cell etc...) Fuel: (Natural gas, oil, others) kW:
4.	Microgrid generation to load ratio	Provide ratio and explain critical facility load coverage and configuration during island mode if not all loads are covered by the Microgrid	Written Description, including: Ratio of Aggregate Generation/ Aggregate Load:
5.	Generation in close proximity to the loads it is serving	Provide distances between generation and loads on layout diagram, take into account voltage quality associated with increased distance	Layout Diagram
6.	Demonstrate the ability to form an intentional island upon **local EDC or MEU request** (e.g. prior to major storms, testing, and maintenance etc.)	Provide a summary of sequence of operations to form an intentional island including involved equipment and controls	One Line Diagram And Written Description
7.	Demonstrate ability to form an intentional island, **automatically,** during loss of grid supply and a method to return to grid Parallel Mode when the grid is restored in compliance with IEEE 1547-	Provide a summary of sequence of operations to form an intentional island including involved equipment. In a grid connect mode, the Microgrid will be in compliance with IEEE 1547-2003 and the UI/CL&P	One Line Diagram and Written Description

	Evaluation Criteria	Information Required	Submission
	2003 and the UI/CL&P Generator Interconnection Guidelines	Generator Interconnection Guidelines.	
8.	Demonstrate the ability of the Microgrid's Interconnection Facilities to continuously operate during an extreme weather event; identify the types of weather conditions during which proposed Microgrid Interconnection Facilities are capable of continuously operating	Provide description and technical characteristics of Interconnection Facilities construction and its ability to withstand extreme weather events, taking into account that incorporating undergrounded Interconnection Facilities will ensure highest reliability for the Microgrid. Communication lines and phone lines should also be considered and addressed i.e. wireless or hard wired.	Check all that apply: ☐ Tropical Storm ☐ Hurricane Category 1 ☐ Hurricane Category 2 ☐ Hurricane Category 3 ☐ Other (Please provide explanation below):
9.	Demonstrate the ability to continuously operate with no planned outage or down time for maintenance while in Island Mode 24x7, despite extreme weather event, for a minimum of four consecutive weeks utilizing Microgrid combined generation resources	Provide detailed description of all generation resources available and the appropriate technical specifications to demonstrate this requirement. Indicate mean time between failure (MTBF).	Written Description
10.	Locate generation in proximity to an uninterruptable fuel source capable of sustaining the Microgrid for a minimum of two weeks and describe a plan to secure additional fuel resources beyond two weeks as part of storm preparation and storm management	a. Provide description and location of incoming fuel source as well as maximum duration of operation possible. b. Explain how you will expand the fuel source beyond two weeks	Layout Diagram and Written Description
11.	Project must pass all associated Interconnection Guideline screens per the respective EDC or MEU	Respondents are encouraged to discuss project configuration with EDC or MEU prior to submitting their proposal utilizing, Attachment D, Information Request Form	Written Description
12.	Possess black start capability during Island Mode	Provide description of black start sequence of operation and generation resources technical information and specification demonstrating this capability	Written Description
13.	Demonstrate the ability to improve the reliability for Microgrid customers and not adversely impact customers outside of the Microgrid electric boundary and the ability to not inhibit or delay system restoration	Provide description of sequence of operation for disconnect and return to grid connect that is not adversely impacting either customers	Written Description
14.	Demonstrate the ability to support and manage existing Microgrid loads and describe techniques and equipment designed to manage future added Microgrid loads in Island Mode. Minimum generation capacity shall be no less than 120% of Critical Facility load.	Provide description of system configuration, operation and management to address this requirement	Written Description
15.	Demonstrate the ability to perform load shedding in case of a shortage in generation in Island Mode	Provide description of system configuration and operation to address this requirement	Written Description
16.	Demonstrate the ability to communicate with the local EDC or MEU via Supervisory Control and Data Acquisition (SCADA) and other	Provide description of SCADA type, configuration, protocols and operation to address this requirement	Written Description

	Evaluation Criteria	Information Required	Submission
	communication devices during parallel and Island Modes, while maintaining Cyber Security as required by interconnecting EDC or MEU. Operation of the Microgrid shall not be degraded by loss of communications between SCADA equipment. SCADA hardware and protocols to be compatible with utility requirements.		
17.	Demonstrate the ability to maintain acceptable voltage and frequency levels per the local or regional regulations and standards **in Island Mode**	Describe compliance with prevailing standards including PURA regulations, and ANSI 84-1	Written Description
18.	Demonstrate the ability to meet the requirements of IEEE 1547-2003 while operating **in Parallel Mode** with the local EDC or MEU	Describe compliance with prevailing standards including PURA regulations, IEEE 1547-2003	Written Description
19.	Demonstrate the design of protection and control schemes while functioning in Island and grid Parallel Modes. Utilize utility grade protective equipment in design	Provide description indicating equipment and logic, conceptually, for Microgrid protection and control in Island mode and in coordinated with utility in Parallel mode.	One-line Diagram and Written Description
20.	Demonstrate the ability to operate and maintain the Microgrid and all Interconnected Facilities in Island and Grid Parallel Modes in accordance with prevailing electrical safety and reliability standards	Demonstrate the resources, knowledge, experience and capabilities available Provide description of safety mechanisms embedded in the Microgrid configuration to ensure safe and reliable operation	Written Description
21.	Evidence of experience in distributed generation and Microgrid design, build and operation	Provide description of developer's experience and capabilities with similar successful projects which integrate the operational characteristics of the proposed mix of generation sources, especially if inverter based generation is proposed.	Written Description
22.	Demonstrate the ability and means to secure funding to reach project completion in specified time schedule	Provide sources of funding other than the DEEP Grant and Loan program that will be available to the project during design, engineering and construction, taking into account information provided in "Microgrid Funding section" under RFP Guidance, in the PFA	Written Description Specify available funding sources: 1. 2. 3.
23.	Demonstrate the respondent's ability to implement the project in expected Program timeframe		Project Milestone Schedule
24.	Past performance of projects for which respondent has previously received state funding	Operating statistics of state funded projects	Written Description

ATTACHMENT D

MICROGRID GRANT AND LOAN PILOT PROGRAM

UTILITY INFORMATION REQUEST FORM

The EDCs and MEU will provide, to the best of its ability and within the Program timeframe and in accordance with the Interconnection Guidelines, necessary information for a Microgrid developer as it relates to specific site conditions. Form must be submitted no later than November 29, 2012. Submit this attachment with all questions, **in writing**, to the servicing EDC or MEU as follows:
CL&P - distributed_resources@nu.com
UI – generator.connection@uinet.com
CMECC - drankin@cmeec.org

Form Submission Date: _____

Company name	
Address	
First and Last Name	
Role (Developer, Owner, Critical Facility)	
Telephone	
Email	

Question 1:	Site address: Question:
Answer 1:	

Question 2:	Site address: Question:
Answer 2:	

Add questions as necessary.

ATTACHMENT E

MICROGRID GRANT AND LOAN PILOT PROGRAM

DEEP INFORMATION REQUEST FORM

DEEP will provide, to the best of its ability and within the Program timeframe, necessary program information to a respondent. Form must be submitted no later than November 29, 2012. Submit this attachment with all questions, **via email**, to Veronica.Szczerkowski@ct.gov.

Form Submission Date: _____

Company name	
Address	
First and Last Name	
Role (Developer, Owner, Critical Facility)	
Telephone	
Email	

Question 1:	
Answer 1:	

Question 2:	
Answer 2:	

Add questions as necessary.