

Department of Energy and Environmental Protection



Microgrid Grant Program – Round 2

Frequently Asked Questions (FAQ) – Third Installment - Financing

February 19, 2014

DEEP has received many questions from participants of its Microgrid Program on the subject of financing microgrid projects. The Clean Energy Finance and Investment Authority (CEFIA) is assisting DEEP in responding to the following questions. These FAQs are intended to assist municipalities and microgrid developers to structure successful applications in the second round of the Microgrid program. These answers are provided for preliminary guidance purposes only.

Q41: Who is CEFIA?

A41: CEFIA, the nation's first Green Bank, was created in 2011 by the Connecticut Legislature as part of Public Act 11-80 to support the Governor's and legislature's strategies to achieve cleaner, cheaper and more reliable energy sources through clean energy finance for Connecticut residents, businesses, municipalities and institutions. CEFIA is working to finance the deployment of microgrids, and will assist successful microgrid RFP applicants in accessing, arranging and securing financing, if needed.

Q42: What aspects of the microgrid can CEFIA assist with financing?

A42: CEFIA will assist financing with the following components of a microgrid, which can generally be characterized as the onsite power generation, thermal energy distribution infrastructure and end use facility improvements required to implement a cost-effective microgrid:

- Generators, fuel cells, or any other type of electrical energy production source.
- Fuel tanks, piping, or fuel regulation equipment
- Foundations, except for electrical interconnection equipment as defined above.
- Excavation, trenching paving etc. except for underground electrical interconnection of microgrid.
- Mechanical equipment or piping
- Thermal insulation

Q43: In what ways will CEFIA assist successful microgrid RFP applicants in accessing, arranging and securing financing?

A43: CEFIA has developed financial programs that utilize private capital which microgrid applicants can leverage to finance the generation assets in their microgrid:

- **Commercial Property-Assessed Clean Energy**: C-PACE uses a benefit assessment on the generator host property (and beneficiary facilities of thermal energy in a thermal network) to secure 100% low-cost, long-term financing - up to 20 years - for clean energy upgrades, including energy efficiency and renewable energy. C-PACE is available for commercial, industrial, multifamily and non-profit facilities; C-PACE is not available for municipal facilities or residential properties of 4 or fewer units. Project developers may learn more and submit an application at www.c-pace.com
- **Lead By Example**: Part of the state's Lead By Example initiative includes a standardized process for Energy Savings Performance Contracting (ESPC). State agencies and municipalities can take advantage of DEEP-provided technical assistance and utilize pre-qualified ESPC contractors to install clean energy and energy efficiency improvements at state and municipal government buildings at no upfront cost. The cost of the upgrades is repaid over time through energy savings and those energy savings are guaranteed by the ESPC contractor. CEFIA is actively assisting program participants with arranging financial structuring, which can include bonding, tax-exempt leasing and / or direct participation by CEFIA.
- **Anaerobic Digestion**: CEFIA has an ongoing Anaerobic Digestion Pilot Program, a \$6M fund with a rolling application process for grants, loans, loan enhancements or power purchase incentives to help finance the cost of anaerobic digestion equipment for energy generating projects. Preference will be given to AD projects that process food waste and request either the loan/loan enhancement or power purchase incentive options. This program is applicable only to projects that are in the development phase, not those already under construction.

Individual awards are not a fixed amount based on size or cost and will vary based on the specific technology, efficiency and economics of the installation. However, funding will not exceed the equivalent of \$450 per kilowatt generated and be 3MW or less in size. Financial support is intended to help the recipient achieve a fair and reasonable payback and return on investment, compared with purchasing the equivalent amount of power from the utility.

Details and the application can be found at <http://www.energizect.com/ad>

- **Combined Heat and Power**: CEFIA has an ongoing program, \$5M in funds remaining, designed to provide grants, loans, loan enhancements or power purchase incentives to offset the costs of commercial, industrial and institutional facilities interested in financing for their investments in Combined Heat & Power technologies.

The program covers many CHP technologies, including commercially available fuel cells, reciprocating engines, and gas and steam turbines. Only projects that are in the development phase may apply. CEFIA places a strong emphasis on evaluating the financing feasibility of each proposed installation, as

well as the applicant's ability to complete construction in a timely manner. Preference will be given to CHP projects that request either the loan/loan enhancement or power purchase incentive options.

Individual awards are not a fixed amount based on size or cost and will vary based on the specific technology, efficiency and economics of the installation. However, funding will not exceed the equivalent of \$450 per kilowatt of nameplate rated capacity and be 5MW or less in size. Financial support is intended to help the recipient achieve a fair and reasonable payback and return on investment during the life of the project compared to purchasing the equivalent amount of power, fuel oil and/or gas from your utility.

Details and the application can be found at <http://www.energizect.com/chp>

Additionally, CEFIA can provide a small amount of direct financing to leverage additional 3rd party financing for microgrid projects, particularly for the following technologies:

- Anaerobic Digestion
- Combined Heat and Power
- PV
- Fuel Cells
- Storage and microgrid controls
- Energy efficiency improvements

Q44: How do I know which of these programs is right for my microgrid?

A44: This largely depends on the facilities and the technologies you plan to include in your microgrid.

DEEP is considering requiring the microgrids to provide clean, economically justified on-site power in both grid connected and island mode for a minimum of 7,000 hours annually (80% minimum availability). Combined heat and power technologies fit perfectly with that philosophy. DEEP is also considering giving preference to microgrids that combine critical commercial and municipal facilities. To this end, projects should consider leveraging C-PACE financing where:

- The commercial facility(ies) have the technical and financial potential to anchor and effectively monetize the benefits of fuel cells or other CHP technologies (e.g. primarily through use of waste heat recovery, C-PACE financing, tax credits and other incentives and programs).
- The commercial facility(ies) that are in close proximity to and municipal facilities and can provide reliable power to municipal critical facilities in 'island mode'.

This scenario will allow both municipal and commercial critical facilities to benefit from reliable and clean energy while municipalities avoid taking on debt/long term contractual obligations with 3rd party providers. It also allows commercial facilities to access low-cost capital through a benefit assessment structure that is transferable to future owners of that property and project developers to obtain the security of a 20 year benefit assessment lien on the host and beneficiary (for thermal energy) sites.

Microgrids that are comprised predominantly of municipal critical facilities should consider leveraging the Lead By Example program and/or mimic its structure through an ESPC that includes both onsite generation for the microgrid and energy savings opportunities at host, beneficiary, and non-microgrid sites. Energy efficiency savings over a long period of time can provide a 'budget' through which municipalities can offset the cost of onsite generation for a microgrid that serves only a few facilities. The economies of scale inferred in a ESPC project will also municipalities to both engage quality engineering firms that look for larger projects but also secure a performance guarantee and therein access lower cost capital.

Municipal microgrids should look closely at opportunities to site an AD/CHP project at waste water treatment plants; these are excellent host sites for the type of generation needed to anchor a microgrid and provide municipalities with a source of funding through which to leverage project financing via the AD/CHP Program.

Q45: What makes a microgrid project financeable? What elements should project applicants pay attention to when designing their project?

A45: CEFIA financing programs all leverage private capital sources and require that applicants design projects in a manner to produce cost-effective clean energy and include energy efficiency measures. In other words the project allows energy generation hosts and/or customer sites to obtain cheaper and/or more reliable power at lower cost compared with purchasing the equivalent amount of power from the utility and project developers and investors have generated a fair and reasonable return on investment.

Furthermore, projects should have an underlying business model. Depending on the project, this may mean that:

- The counterparty (host or offtakers) maintain high credit quality
- The financing uses a highly secure structure, such as C-PACE or a performance guarantee through a qualified ESPC provider.
- The project uses commercially available energy generation technologies
- Developers have already achieved substantial progress in site control
- The engineering fully utilizes the characteristics of the generation technologies and maximizes benefits to the customer sites
- The host has or plans to undergo energy efficiency retrofits at customer sites
- The financing leverages available energy efficiency and renewable energy incentives and / or energy financing programs
- The project and project teams demonstrate a high probability of reaching successful installation and operation (evidence of success with prior projects using substantially similar methods and technologies should be submitted where possible)

Q46: What programs exist in Connecticut to help project developers design a cost-effective microgrid?

A46: In addition to the financing programs described above, which help projects become cost effective through lowering their cost of capital, there are key components of project revenue available through state and federal programs:

- Reducing onsite energy use: Onsite clean energy and energy efficiency improvements directly reduce the amount of electricity and fuels facilities consume and procure from the utility or 3rd party providers. The ‘revenue’ produced from reducing onsite energy use typically manifests in the following ways:
 - Power purchase agreement or energy services agreement – If a third party is covering the cost of installing the energy improvements, they may charge the customer site a preferential rate for their electricity and/or thermal energy, which is lower than their current cost, but higher than what the customer host is actually saving in terms of direct reduction in their energy consumption. Another version of this is the ESPC model.
 - Net metering: Through applicable net metering or distributed generation riders, Class I renewables with capacity of 2,000 kW or less and Class III renewables with capacity of 6,500kW or less can benefit from the excess power their onsite facilities produce. Net excess generation (the amount produced less the total kWh used onsite) during a monthly billing period is carried over to the following month as a kilowatt-hour (kWh) credit until the end of the billing cycle year (March 31). At the end of the year, the utility pays the customer for any remaining kWh credits at the wholesale rate.

CL&P Net Metering Rider: <http://www.cl-p.com/downloads/ridern.pdf?id=4294986718&dl=t>

CL&P Distributed Generation Rider: <https://www.cl-p.com/downloads/ratedg.pdf?id=4294986719&dl=t>

UI Net Metering Rider (p. 89) and Distributed Generation Rider (p. 91)
[http://www.uinet.com/wps/wcm/connect/e1c9170040d8535ca7b9bfd2ce51850f/UI+Tariffs+Effective+January+1,+2011+\(clean\).pdf?MOD=AJPERES&CACHEID=e1c9170040d8535ca7b9bfd2ce51850f](http://www.uinet.com/wps/wcm/connect/e1c9170040d8535ca7b9bfd2ce51850f/UI+Tariffs+Effective+January+1,+2011+(clean).pdf?MOD=AJPERES&CACHEID=e1c9170040d8535ca7b9bfd2ce51850f)

- Virtual Net Metering: as currently drafted, Virtual Net Metering is available only to Municipal hosts and beneficiaries. A revised rider incorporating State and Agricultural hosts (for up to 3,000 kW) and State, Agricultural and Critical Facilities beneficiaries is currently before PURA. Under the newly proposed rider, the customer host can own, lease or be in a long-term arrangement for the Virtual Net Metering Facility. Any generation not used by the host in a given month will be assigned to pre-identified beneficiaries at the host electricity price (assuming a declining T&D charge). Any credits unused by the beneficiaries will be reimbursed to the host at the end of the year.

Current CL&P Virtual Net Metering Rider: <https://www.cl-p.com/downloads/VirtualNetMeteringRider.pdf?id=4294989083&dl=t>

- Selling excess energy generation:
 - Utility PPA: Under Rate 980, owners of distributed generation can opt to enter into a 15 year PPA to sell the utility power at the going wholesale rate.

CL&P Rate 980: <http://www.cl-p.com/downloads/rate980.pdf?id=4294986720&dl=t>
UI Self Generator Rate (p.86):
[http://www.uinet.com/wps/wcm/connect/e1c9170040d8535ca7b9bfd2ce51850f/UI+Tariffs+Effective+January+1,+2011+\(clean\).pdf?MOD=AJPERES&CACHEID=e1c9170040d8535ca7b9bfd2ce51850f](http://www.uinet.com/wps/wcm/connect/e1c9170040d8535ca7b9bfd2ce51850f/UI+Tariffs+Effective+January+1,+2011+(clean).pdf?MOD=AJPERES&CACHEID=e1c9170040d8535ca7b9bfd2ce51850f)
 - Virtual Net Metering (see above)
- Renewable Energy Credits:
 - LREC/ZREC: United Illuminating and Connecticut Light & Power provide fifteen-year REC contracts for Zero-Emissions (ZREC) and Low-Emissions (LREC) technologies, via an annual auction. More information at:
<http://www.ct.gov/deep/cwp/view.asp?a=4120&Q=503720>
 - NEPOOL (regional market) for Class I and Class III RECs: The Northeast Power Pool (NEPOOL) is comprised of CT, ME, MA, NH, RI, and VT. States needing to meet RPS requirements can purchase, and generators can sell RECs into the pool, which NEPOOL Generation Information System (GIS) issues monthly. <http://www.nepool.com/>
- Tax incentives
 - ITC: The Federal Investment Tax Credit allows offset their taxes by taking a 30% credit of the build expenditures for Solar, Fuel Cells, small Wind and Geothermal and 10% for Microturbines and CHP plants
http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US02F
 - MACRS: The Modified Accelerated Cost-Recovery System allows owners of renewable equipment to take accelerated depreciation discounts.
http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US06F

Q47: What are some of the ownership/operation models I should consider for a microgrid? What issues should I be considering?

A47: When determining the ownership and management structure for the microgrid, the following are questions to consider:

- Who will own the generating equipment? Specify if the ownership model pertains to one or more pieces of generating equipment on the microgrid. How will this impact the ability to access certain types of financing? Certain types of incentives?

- If 3rd Party owned, under what arrangement will the owner of the generating assets contract with the customer sites for onsite and/or excess power generation?
 - PPA/ESA/Lease
 - Other: Please describe.

- How will the owner charge the host and benefiting customer sites for the generation and delivery of the following energy types? Describe the contract pricing structure and terms and break out the charges for each energy type for each customer.

- Who will retain ownership of the RECs?

- What is the status of negotiations with the generator host and 3rd party offtakers?
 - Has a letter of intent been signed?
 - Has a contract (e.g. PPA/ESA) been signed?
 - Has VNM application been submitted?
 - Has application reserved a position in VNM Queue?

- What are plans for operations and maintenance? Who will be responsible for maintaining the generation equipment?

- If selected, who is the equipment manufacturer and what guarantees or warranties are tied to the equipment?

- If selected, who is the EPC firm and what guarantees or warranties are tied to the workmanship? (Include specific provisions including whether labor and transportation for replacement parts is included)

- **Executed copies of the following will likely be required to finalize financing:**
 - For third-party ownership Projects, where the Applicant plans to sell the Project's energy to the Customer Site, a copy of the PPA, ESA or lease between the Applicant and the Customer Site.
 - Letters of intent to negotiate any necessary easements.
 - Confirmation from utility of VNM queuing position and VNM credit availability (if applicable)
 - Confirmation of beneficiary accounts for VNM (if applicable)
 - Executed ZREC/LREC contracts with utility (if applicable)
 - Contracts to acquire, install, operate and maintain all major pieces of equipment.
 - Contracts or letters of commitment from financing firms or guarantors.

Q48. When can I engage CEFA for assistance in structuring financing for a microgrid?

A48. Because each microgrid is unique, CEFIA encourages early introduction to projects seeking CEFIA's assistance with financing. Once DEEP has approved the technical threshold fit with the Microgrid Program, CEFIA will begin to work with the developer and owner to arrange financing. Projects can be submitted for the above CEFIA financing programs at any time.

Please email Genevieve.sherman@ctcleanenergy.com to begin financing discussions.

Q49. Who else can I engage for assistance in structuring financing for a microgrid?

Q49. The US Department of Energy's Northeast CHP Technical Assistance Partnership (US DOE CHP TAP) and Pace Energy & Climate Center are offering targeted technical assistance consisting of CHP project qualification screenings, feasibility analysis at qualifying sites, and guidance on economic, financing, and policy issues that may arise. To learn more about the offerings, contact either Tom Bourgeois of Pace at: tbourgeois@law.pace.edu or (914) 422-4013 or Dr. Beka Kosanovic at UMASS Amherst School of Mechanical Engineering kosanovi@ecs.umass.edu or (413) 545-0684. You can also find additional information at: www.northeastchptap.org and <http://energy.pace.edu/> (Community Energy).