Respondent information

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Brief Summary

Energize Ithaca, LLC, was founded in 2011 to develop innovative energy solutions for the City of Ithaca and its business community. Our goal is to provide energy efficiency and long-term utility price stability with social responsibility and the highest standards of customer service. We believe that this can be done by developing a state-of-the-art district heating and electric co-generation system in conjunction with the planned renovation of Ithaca's downtown business district. Such systems have a long record of technical feasibility and provide the benefits of high energy efficiency, reduced fossil fuel dependence, increased price-stability, reduced environmental impacts and lowered greenhouse gas emissions. As a diverse group of community professionals with the technical and business experience to implement this project we are confident of our ability to realize these project goals and provide an effective model for other cities throughout New York.

Some of our partners involved in this project so far include:

- United States Department of Energy
- Cornell University
- City of Ithaca
- Downtown Ithaca Alliance
- Tompkins County Planning Department
- Tompkins County Legislature
- Tompkins Chamber of Commerce
- Tompkins County Climate Protection Initiative
- Landlords Association of Tompkins County
- Pace University Law School
- United States Environmental Protection Agency

Project Description

Type of Proposed Project

Our project will create a District Energy-Combined Heat and Power microgrid in Ithaca, New York in order to increase energy efficiency, decrease energy costs and reduce greenhouse gas emissions. Microgrids are self-contained electrical systems where power is produced, transmitted, consumed, monitored, and managed entirely on a local scale. They achieve energy reliability, carbon emission reduction, diversification of energy sources, efficiency and cost reduction established by the community using the microgrid.

District Energy-Combined Heat and Power (DHCHP) systems are fundamentally simple and combine two very basic principles. The first principle is to use a central system to provide heat for multiple applications, and it is the basis for most heating systems in American homes today. A single, central, furnace or boiler provides heat for different rooms or different parts of the house, which may be independently controlled by thermostats in different locations. The same sort of centralized distribution system is used by municipal water supply systems and can, in fact, be implemented for providing community heat as well. Heat, however, unlike

water pressure, is easily lost in transmission, and district heating systems require the kind of close proximity that is generally found in central business districts.

The second principle involved is equally simple, namely, that the generation of electricity from fossil fuels is inherently inefficient and looses two-thirds of all of the energy content to waste heat. By recapturing and utilizing this waste heat for district heating (or other heating applications), energy efficiencies are more than doubled. Costs are halved. Environmental impacts are halved. As a result, a DHCHP system has the potential to more than double all of the efficiencies associated with electric power generation and reduced all of the adverse impacts proportionately

Size of Proposed Project

This project will create a 12 megaWatt (mW) grid to service 3.5 million square feet of building space in downtown Ithaca.

Proposed project location (NYISO zone, town, county)

The project is located in the NYISO Central Zone in Ithaca in Tompkins County.

Fuel source and availability

Our engineers are studying all available fuels sources to include existing high pressure natural gas lines, as well as renewable sources.

Earliest date project can be operational

Mid 2014.

Experience, market availability and suitability of project technology

District Heating and Combined Heat and Power has a long, successful history of providing efficient, stable and clean energy, particularly in the international community. In Europe, DHCHP has market shares average about 10% of the heating market with almost 80% of the heat supplied originating from thermal recovery and renewable energy sources. For the past forty years, DHCHP has become a more and more attractive alternative for countries all over the world, such as Japan, Iceland, Denmark, Sweden, and Germany.

Project Justification

Addressing State's Objectives

Our project will ensure that long-term reliability of the electric system is maintained by creating a DHCHP microgrid for our community. Once the energy district is created we will be protected from major power outages, rising energy costs, and grid dependency.

CHP is a clean and efficient approach to generating power and thermal energy from a renewable fuel source. Our engineers are currently studying local solutions to provide renewable fuel sources, such as solar, biofuel, natural gas, etc., to power the microgrid.

Because CHP recovers otherwise wasted thermal energy to produce electricity or useful thermal energy, it is one of the most efficient ways to provide energy to a city. Furthermore, since it is so efficient, it also reduces emissions of air pollutants, such as carbon dioxide, which are the main contributors to the global climate change crisis.

The United States Department of Defense and Department of Energy have identified this new, advanced technology (DHCHP) as an optimal solution for reducing greenhouse gas emissions, increasing energy efficiency, decreasing grid vulnerability, stabilizing energy costs and stimulating employment.

District heating and cooling also offers:

• Low cost. District heating and cooling systems can be designed and operated competitively. Because they can use coal, municipal solid wastes, and cogenerated thermal energy, their fuel costs are typically lower than competing systems that use oil or natural gas.

• Reduced capital costs. These systems reduce users' capital investment by eliminating the need to buy and install furnaces, boilers, and air-conditioning systems. Such costs are, in effect, shifted to other investors.
• Increased building space use. Such systems permit more profitable and efficient use of building and housing space. The area they require is substantially less than that required for conventional heating and cooling equipment. One central plant can replace individual boilers in each building. The space saved can be used for other purposes, for example, more rental units, office space, or hospital rooms.
• Reduced operating and maintenance costs. By eliminating the need for onsite boilers, district heating and cooling also reduces operating, maintenance, and insurance costs in that it transfers some or all of these costs and responsibilities from the building owner or operator to the district heating and cooling system.

Financial

Because of the nature of this project, Energize Ithaca is considering multiple private funding sources and options. Our end goal is to create a public-private partnership in order to leverage local/state money with private investments. The complexity of this project, as well as the fact that an energy district of this type and size has not been done (to our knowledge) anywhere in New York State, has illustrated the need for a deep understanding of the past, current, and future regulatory atmosphere in NYS. The regulatory atmosphere is viewed by our funding partners as the greatest risk in the project. We are currently working with the United States Department of Energy, Pace University Law School and New York State based law firm Schlather, Stumbar, Parks, and Salk to discover the various regulatory barriers which will be an impediment to the project's success. We will then mitigate these risks which will allow our funding partners to assess the investment while allowing for greater diversification within the project itself.

Permit/Approval Process

Energize Ithaca intends to seek a declaratory ruling from the New York Public Service Commission that the Ithaca Downtown District Heating and Co-Generation facilities (the "Downtown District") are a cogeneration facility under Public Service Law (PSL) §2(2-a) and that the electric and hot water distribution lines are related facilities that are part of the cogeneration project under PSL §2(2-d). As a cogeneration facility under the PSL, Energize Ithaca would be exempt from the provisions of the PSL. Public Service Law §2(2-d) requires that the electric and hot water distribution lines be "at or near" the cogeneration facilities. Thus, it remains uncertain how large the Downtown District can be while still remaining a cogeneration facility under the PSL.

Energize Ithaca will also need to obtain the standard local, state and federal discharge and other permits, including but not limited to local building or construction permits, NYS Pollutant Discharge Elimination System (SPDES) Permits and federal Clean Air Act permits. Energize Ithaca is at the preliminary stage of developing the project and has not yet applied for an NYISO interconnection permit.

Other Considerations

Issues or challenges & suggestions for addressing them

Currently, the main impediment in trying to implement a microgrid in an upstate city is the regulatory environment; legal boundaries and existing regulations would define many CHP-Cogeneration projects as public utilities subject to the full burden of Public Service Commission statutes, regulations, and rules. Due to the complexity of this regulatory environment simply trying to negotiate the regulatory requirements is beyond the capability of most local governments. Some issues that need to be addressed at the outset include: researching existing regulations set forth by the Public Service Commission, reviewing current infrastructure, and studying successful District Heating and CHP solutions that are already in place. Based both on theory and

the available data on existing CHP-District Heating systems there is really no question that these models could provide cleaner, cheaper, and more reliable energy sources for upstate New York: the questions that need to be addressed regard the institutional impediments that are currently delaying its implementation.

In order to overcome these regulatory obstacles and create a DHCHP microgrid, we have identified several solutions. First we will conduct a review of existing DHCHP solutions implemented in the United States to get a better understanding of how others have gone through this process. Second, we must perform a review of existing regulatory structures in New York State to determine whether or not we are a qualifying facility under the Public Service Commission's statutes. Finally, once we have cleared the regulatory hurdles, we will examine various ownership structures for the downtown energy district.

Property
Currently being studied.

Projected In-Service Date and Project Schedule
10 to 12 months: Completion of engineering and legal feasibility studies
12-24 months: Creation and finalization of construction documents, permitting, etc
24-36 months: Construction and implementation

Interconnection
Currently being studied.

Technical
Currently being studied.

Construction
Not yet being studied or developed at this point. However, it is the intention of the New York State based team to utilize New York State labor and New York State produced and/or sold materials whenever feasible and possible.

Operational
Not yet being studied or developed at this point.

Socio-Economic

Potential benefits to and adverse impacts on the local economy
DHCHP is an ideal solution for bolstering a local economy. Once the district is created, we will be able to provide long-term utility price stability and energy efficiency to the building owners and tenants in the downtown district.

Aesthetic issues
The City of Ithaca is in the process of revamping the downtown Commons area. This work can be piggybacked with the DHCHP to provide 2 benefits from a single activity. This requires that the 2 projects work somewhat in harmony with each other.

Environmental Justice Considerations

There is a Tompkins County group called the Environmental Management Council which is tasked under the Legislature for reviewing issues such as this. Being that this project will be engineered and designed with detail we can ensure the impacts would be limited to those of lowering utility bills.

Financial

We have already identified multiple funding partners for the project. However, it is our belief that discovering other means for non-traditional financing will be key to the project's overall success. These opportunities include, but are not limited to: ITC, Federal funding, specialty funds, and others.

Environmental

Environmental benefit to region

Creating this DHCHP system will not only benefit the local environment of Ithaca but it will also help reduce the overall green house gas emissions of the entire state.

Public Outreach and Stakeholder Engagement

Public Outreach

In order to better educate the public about our project and DHCHP's benefits, we will be working with Communiqué, a design and marketing firm based in Ithaca. We have already begun working with them and have identified several strategies:

- Press release, public relations and media press conference and coordination
- Advertising campaign for local, regional media
- Utilize social media to build awareness
- Coordinate media interviews
- Establish a public service campaign with testimonials in support of Energize Ithaca