Monadnock Buying Collaborative Regional Photovoltaic Project

Application to the New Hampshire Public Utilities Commission
September 2014

Monadnock Buying Collaborative

Town of Francestown
Town of Temple
Town of Hancock
Town of Peterborough

Jaffrey – Rindge Cooperative School District

Town of Jaffrey
Town of Dublin
Town of Swanzey
Town of Rindge

Letter of Transmittal

Beginning in 2009 an informal group of public, private and not-for-profit organizations joined together to negotiate the best possible pricing for electricity. Out of that loose partnership grew the Monadnock Buying Collaborative (MBC), a group of small local governments that share a common goal of not only leveraging the benefits of a larger organization when negotiating pricing, but also of taking advantage of the many renewable energy opportunities that are simply not available to small governmental agencies working on their own. In 2013 Standard Power, the MBC's broker, provided us with the option of 100% renewable Wind REC electricity supplied through Integrys. We have since renewed with Integrys for the next two years for 100% wind power.

Though it has sometimes been difficult to find the funding opportunities to allow a small community to make investments in renewable energy, the members of the MBC have been committed to taking all the steps they can towards a more complete sustainable energy portfolio. Our members have successes at many levels including several biomass projects, active local energy groups, and they are listed on the EPA's Green Power Partnership website as 100% Renewable Partners[1]. Last year Peterborough, an MBC member, successfully collaborated with Borrego Solar on an application to the NH PUC for a one megawatt photovoltaic project now under construction and expected to be fully operational in early 2015.

With that experience within its membership, the MBC is now ready to expand on that project and develop a model that allows communities that are otherwise too small to install their own photovoltaic systems to take advantage of a collective approach made possible by net metering and power purchase agreements. We have engaged Standard Power to open discussions with Borrego Solar on the development of a one megawatt solar array for the MBC member communities to share. Our members are thrilled by the opportunities that this project presents us, not only for the renewable power it will provide, but also for the educational environment it creates for the students, and the regionalization model that can be replicated by other small hometown communities all over New Hampshire.

The MBC continues today to work through the strategy of this approach, and at each meeting the excitement grows more as the possibilities turn into realities. The team of Borrego Solar, Standard Power and MBC bring experience, knowledge and a successful track record to the project. Seldom does an opportunity to meet so many needs and goals with one project come around, and we can't wait to begin working with you to bring this project to life!

Sincerely,

Rodney Bartlett
Representative, Monadnock Buying Collaborative

Chris Anderson
Chief Technical Officer, Borrego Solar

[1] 100% Green Power Users: http://www.epa.gov/greenpower/toplists/partner100.htm

<table>
<tr><th colspan="3">Project Summary Sheet</th></tr>
<tr><td>Project Name:</td><td colspan="2">Monadnock Buying Collaborative Regional Photovoltaic Project</td></tr>
<tr><td>Project Team (name, role):</td><td colspan="2">
<table>
<tr><th>Key Personnel</th><th>Title/Role</th></tr>
<tr><td>Zak Farkes, Borrego Solar Systems</td><td>Project Developer</td></tr>
<tr><td>Patrick Canning, Borrego Solar Systems</td><td>Applications Engineer</td></tr>
<tr><td>Rodney Bartlett, Town of Peterborough</td><td>Director DPW</td></tr>
<tr><td>Bob Hayden, Standard Power</td><td>Broker for Collaborative</td></tr>
<tr><td>MBC Representatives</td><td></td></tr>
<tr><td>Charlie Fitzgerald, Borrego Solar Systems</td><td>Financial Analyst</td></tr>
<tr><td>Bryan Morrison, Borrego Solar Systems</td><td>Engineering Lead</td></tr>
<tr><td>David Albrecht, P.E. Borrego Solar Systems</td><td>Civil Engineer</td></tr>
<tr><td>Anne Dunbar, Borrego Solar Systems</td><td>Electrical Engineer</td></tr>
<tr><td>Scott Sargent, Borrego Solar Systems</td><td>Project Manager</td></tr>
<tr><td>Dan Stafford, Borrego Solar Systems</td><td>Site Superintendent</td></tr>
<tr><td>Gary Buchanan, Borrego Solar Systems</td><td>Director of Operations & Management</td></tr>
</table>
</td></tr>
<tr><td>Name, phone number and email address of person authorized to enter into binding grant agreement</td><td colspan="2">Rodney Bartlett
(603) 924-8000 x. 100
rbartlett@townofpeterborough.us

Zak Farkes, Project Developer, Borrego Solar
(978) 513-2612
zfarkes@borregosolar.com</td></tr>
<tr><td>Project Location:</td><td colspan="2">Locations being considered include two closed landfills:
EMS Parcel B Landfill, US Route 202, DES Site #198905054
Scott Mitchell Road Landfill, DES #198404057
Sites are being reviewed and ranked by MBC for cost of interconnect with PSNH and site work necessary.</td></tr>
<tr><td>Technology Employed:</td><td colspan="2">Photovoltaic System</td></tr>
<tr><td>Brief Project Description:</td><td colspan="2">Installation of a privately owned and operated 1 megawatt solar array to be shared by the Monadnock Buying Collaborative; this collaborative includes the Towns of Dublin, Francestown, Hancock, Jaffrey, Peterborough, Rindge, Swanzey, Temple, and the Jaffrey/Rindge School District; envisioned as a Community Solar Project for Communities. There are several sites under consideration, they will be evaluated and ranked on cost to interconnect and associated site work costs. Power will be shared via virtual net metering. The Project is to be funded by individual Power Purchase Agreements and a grant from the NH PUC. The successful Borrego/Peterborough 2013 grant will be used as a model for this collaborative project.</td></tr>
<tr><td>Capacity and Energy Production:</td><td>947 kilowatts</td><td>1,150,520 kilowatts per year</td></tr>
<tr><td>Total Project Cost ($):</td><td colspan="2">$2,627,000</td></tr>
<tr><td>Total Funding Requested under this RFP ($):</td><td colspan="2">$1,313,000</td></tr>
<tr><td>Levelized Cost of Energy ($/kWh)</td><td colspan="2"></td></tr>
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Economic Development Benefits (Direct NH Jobs):	Approximately 35 part time jobs created and 50 fulltime jobs supported. Approximately 3 long term fulltime.
Environmental Benefits:	Amount of fossil-fuel displaced/yr: 64,457 gallons Tons of CO_2 avoided/yr: 2,289,515 tons
Anticipated Project Completion Date:	Less than two years after award

Technical Project Proposal

Overview of project

The project will be sited on the one of several sites being considered. The sites will be ranked on several factors but particularly on the anticipated costs to interconnect with our default supplier, PSNH. We have realized that this task is typically left to the end of the planning stages and in many situations takes a financially viable project and stops it because of cost. MBC has identified several locations of municipality owned properties for this review and ranking task. The layout may require up to 4 acres to accommodate installation and operation, to include site security and access. It is intended that the system will mirror the system under development at the Peterborough Wastewater Treatment Facility that will be owned and operated by Borrego Solar (or other agreed to 3rd party). That effort is headed by Chris Anderson, Borrego's Chief Technical Officer, and Peterborough resident. See appendix 4).

Description of the project site's resource availability

As with the Borrego/Peterborough project Concord, NH municipal airport's National Renewable Energy Laboratory TMY3 data will be used.

Project timeline

The project is anticipated to take approximately 1 year to complete from award to commercial operation. A timeline follows based from date of award:

- Grant award and contract execution day 1
- Environmental review and permitting day 100
- Utility Interconnection agreement day 130
- Construction design complete day 160
- Notice to proceed with construction day 180
- System commissioning and startup day 360
- Project closeout day 390

Permits and approvals required

Sites under consideration are municipally owned. Local permits; i.e. building and electrical will be acquired. The site plan will be presented to the planning for review and input. Initial review indicates that Wetland and Shoreland permits will not be necessary, although alteration of terrain permit maybe be required.

Project ownership structure

The project will be privately owned through a single asset liability company; as is the Borrego/Peterborough project. The project's primary source of revenue will be the sale of electricity produced by the project via individual power purchase agreements (PPA) with the members of MBC. The carefully calculated requested NH PUC grant support will provide a cost per kWh that MBC members understand as reasonable in today's market and will allow for a reasonable return on investment for project investors.

Assignment and roles of individual key project personnel

Key Personnel	Organization	Title/Role	Responsibilities
Zak Farkes	Borrego Solar Systems, Inc.	Project Developer	Price Estimation, Modeling, Contract Negotiation
Patrick Canning	Borrego Solar Systems, Inc.	Applications Engineer	Technical, Performance, & Price Optimization
Rodney Bartlett	Town of Peterborough	Director DPW	Local Government Oversight
Bob Hayden	Standard Power	Broker for Collaborative	Negotiations, Price Analysis, Oversight
MBC Representatives	Towns of: Dublin, Francestown, Hancock, Jaffrey, Peterborough, Rindge, Swanzey, Temple, Jaffrey/Rindge School District		Purchase the Solar power generated for electric supply
Charlie Fitzgerald	Borrego Solar Systems, Inc.	Financial Analyst	Financial Modeling
Bryan Morrison	Borrego Solar Systems, Inc.	Engineering Lead	System Design, Permit Preparation
David Albrecht, P.E.	Borrego Solar Systems, Inc.	Civil Engineer	Permit Application, Compliance
Anne Dunbar	Borrego Solar Systems, Inc.	Electrical Engineer	Wire Management, Electrical Code Compliance
Scott Sargent	Borrego Solar Systems, Inc.	Project Manager	Construction Oversight, Permitting, Budget
Dan Stafford	Borrego Solar Systems, Inc.	Site Superintendent	Construction and Subcontractor Management
Gary Buchanan	Borrego Solar Systems, Inc.	Director of Operations & Management	Ongoing System Monitoring

Additional resumes and statements of qualifications are attached. See appendix 3).

Estimate of work

It is anticipated that 50% of the work will be performed by local labor, engineers and contractors; electrical, civil, site, and general labor. The remaining 50% will be accomplished by Borrego Solar employees which includes site development design, project management, legal, and administrative services.

Description of operations and maintenance plan

The PV modules planning to be utilized have a life of 25 years it can be reasonably anticipated this project we be operational for 30 years plus. A comprehensive maintenance and monitoring plan will be put into place to ensure the systems continuous operation; System monitoring will be daily, A remote alerts/alarm system will provide 24/365 monitoring, annual site inspection and preventative maintenance. It is clearly understood by both parties that successful year round operation is a must and will benefit all parties.

Letters of support

Letters of support from Monadnock Buying Collaborative member representatives are attached. See appendix 2).

Renewable Energy Generation and Capacity

See appendix 4) 2013 Borrego/Peterborough NHPUC Grant Application

Projected kilowatt hours generated

Power capacity in kW

Energy modeling

Projected increase in annual supply of New Hampshire renewable energy credits (RECs)

Verification of intent to apply for certification of REC eligibility

Project Cost and Financing

See appendix4) 2013 Borrego/Peterborough NHPUC Grant application.

Total project cost estimate

Project financing plan

Other financial resources

Annual and lifetime energy cost savings

Simple LCOE estimate

New Hampshire Benefits

Economic Development

Direct jobs created in New Hampshire during construction of project: 35

Direct jobs created in New Hampshire for the long term related to the project: 3

Societal Benefits

Educational component:

Our project team believes it is imperative to educate the next generation on energy sustainability so they can contribute to the solutions to our world's energy and environmental problems. To this end, Borrego Solar and MBC will partner to develop a series of lesson plans to educate K-12 students about solar electricity. The Jaffrey/Rindge School District will play a critical role in this effort. It is anticipated that The Solar Curriculum is a targeted set of lesson plans for primary, intermediate, and secondary grade levels that teach students how solar power works. Samples lesson plans can be provided at the Commission's request. Previously, Borrego has partnered with several schools to create an integrated learning program for their students, using their solar project as a working laboratory for the study of renewable energy through dynamic monitoring platforms. If we are awarded the grant funding necessary to construct this project, we will work with the members of MBC to develop a renewable energy education component to this project and share these resources with area primary and secondary schools. Additionally this project will involve a new member into our educational efforts; The Monadnock Makers, a MakerSpace Initiative, http://monadnockmakers.org/ or www.facebook.com/MonadnockMakers Please go to their website and Facebook, a very exciting opportunity for artist, educators, manufacturers, and entrepreneurs. Moving the Monadnock Region into the future.

Replicability of the project in the future for other New Hampshire entities:

The MBC has developed this project in part because they believe that it is a model that can be replicated by any group of small local governments in New Hampshire that may not otherwise have the opportunity to take advantage of photovoltaic technologies. We anticipate that other communities will be able to form their own collaborative groups and utilize the model of net metering and individual power purchase agreements to partner with private firms to construct solar arrays for the benefit of their communities and the residents they serve.

Description of energy efficient measures implemented by the end users within the last five years and the costs of such measures:

Multiple biomass (wood pellet) heating projects, Building envelope improvement projects, Green Purchasing Policies, Vehicle idling policy, lighting improvements,

Other benefits to New Hampshire:

Energy efficiency and renewable energy projects create jobs and reduces the dependence on fossil fuels. Importantly it diversifies our energy portfolios both locally and state wide. In the Monadnock Region these efforts are viewed as an economic driver for our region and the state. Creating "financial models"

to achieve these projects that can be replicated state wide is an important benefit to all the communities of New Hampshire.

Environmental Benefits

Type and annual usage of fossil-fuel or other energy source displaced and reduced

MBC presently by electric power from Integrys that is 100% Wind Power supported. The present combined demand is 5 megawatts approximately. This project will provide 1 megawatt of locally produced solar power, 20% of MBC's present demand.

Tons of CO2 emission avoided and/or reduced annually

Fossil fuel displaced – it would require the use of 67,850 barrels of oil to produce a much electricity as this proposed solar system. Tons of CO2e avoided – this proposed system will reduce Carbon Dioxide emissions by 45,790,300 lbs.

Qualifications and Experience

See appendix 3) for resumes and bios. See appendix 4) for addition information on Borrego Solar.

Conflicts of Interest

The members of the Monadnock Buying Collaborative, Borrego Solar Systems and Standard Power are unaware of any conflicts of Interest.

Attachments:

Appendix 1) Community profiles

Appendix 2) Letters of support

Appendix 3) Resumes & Qualifications

Appendix 4) 2013 Borrego/Peterborough NHPUC Grant application