

Bristol Community Solar Project – Article 2

Middlebury Energy
Committee

Article 2

Shall general obligation bonds or notes of the Town of Middlebury in an amount not to exceed Three Hundred and Twenty-Three Thousand Dollars (\$323,000.00), subject to reduction from available alternate sources of funding, be issued for the purpose of purchasing units in the Bristol Community Solar Project, pursuant to 24 V.S.A. § 1751(3)(b)?

Background

- Middlebury Energy Committee researched options for adding renewable electricity to the Town's net metering portfolio
 - Net metering allows the Town to obtain credit from GMP for electricity generated from a renewable energy source
- Acorn Energy Bristol Project was selected as the best option based on a set of criteria, one of which is cost savings
 - It will provide the greatest savings to the town

Background

- The Energy Committee provided a recommendation to the Selectboard on July 13th to purchase 25% of the units in the Acorn Energy Bristol array
- The recommendation was approved in the July 27th Selectboard meeting

Recommendation (as presented to the Selectboard)

- Our recommendation is to go forward with Acorn Energy Co-op option
 - There would be an average net savings of \$7,222 per year for 25 years
 - Greater savings than the other options –
 - Savings will increase as the cost of electricity increases
 - Savings may potentially increase due to drop in O&M costs
 - Savings could potentially continue beyond 25 years as the panels will still be producing electricity at that time
 - It would;
 - Increase the town's renewable energy portfolio
 - Support a local cooperative
 - Support the Town of Middlebury and Vermont's goal of increased renewable energy

Costs and Savings

- Number of units purchased by the town is subject to the number available at the time of the vote with a guaranteed minimum of 15% of the units
 - 25% of the units translates into 460 units for a total cost of \$322,920
 - 15% equals 276 units for a total cost of \$193,752
- Savings to the Town in electricity costs over 25 years is ~\$180,000 with a 25% share of the units
 - Savings factors in the principal and interest payments on a 20-year bond
 - Savings expected to be higher

Bristol Array Savings Over 25 Years

	Year 1	Year 5	Year 10	Year 15	Year 20	Year >20	25-year Total
Savings	\$23,000*	\$23,000	\$23,000	\$23,000	\$23,000	\$23,000	\$575,000
Debt Service 20-year Bond (Principal & Interest)	\$21,479	\$21,028	\$19,773	\$18,196	\$16,334	\$0	\$394,456
Net	\$1,521	\$1,972	\$3,227	\$4,804	\$6,666	\$23,000	\$180,544*

* Operations & Maintenance factored into net savings of \$50/unit/year

Bristol Community Solar Project

Thank you & Questions

Middlebury Energy
Committee

Backup Slides

Net-Metering Options

- There are three main options for the town to pursue net-metering:
 1. The Town signs on as a customer to a solar project and buys a portion of the net-metering credits
 - Solarsense or Green Lantern
 2. The Town buys units in Acorn Energy Co-op project
 3. Electricity generated from an anaerobic digester at the Wastewater Treatment Facility
- Note: The Town is limited by state law to 500 kW of net-metering and 153 kW is already being used (New Haven and Police Dept. projects), leaving up to 347 kW for a new project.

Option 1 - Buying Net-metering credits

- For this option, the town would receive net-metering credits generated by a privately developed project.
- The town would pay a discounted rate on the credits received from their portion of the solar generation.
- Both Green Lantern and Bullrock/Solarsense are offering a discount of 10% (i.e. paying \$.90 for every dollar of credit received).
- No upfront costs or operation costs required.

Option 2 - Acorn Energy Co-op Bristol Project

- The Town buys units in the Acorn Energy Co-op Bristol project
- Purchase units as a Series B investor
 - Receive net-metering credits for the units purchased. Series B investors would gain ownership after 6 years.

NUMBER OF UNITS PURCHASED BASED ON ANNUAL ELECTRICITY USAGE

Number of kWh used per Year	2,500	5,000	7,500	10,000	15,000
Number of Units	5	10	15	20	30
Total Cost (\$)	3,510	7,020	10,530	14,040	21,060
Net Credit/year - 1st 10 years (\$)	250	500	750	1000	1500
Return on Investment - 1st 10 yrs	7.1%	7.1%	7.1%	7.1%	7.1%

NOTE: One unit corresponds to the credits earned by a 405-watt section of the array

Option 3 - Anaerobic Digester

- Generate electricity from methane produced from anaerobic digester
- Potential amount of electricity generated by a digester is still unknown
 - Analysis just beginning
- At least 3-4 years before it would be operational
 - The delay results in lost savings opportunities
- Methane can also be used for thermal energy or sold directly to VGS as renewable natural gas (RNG)

Recommendation

- Our recommendation is to go forward with Acorn Energy Co-op option
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Costs (Based on 186.3 kW)

Criterion	Description of Criterion	Solarsense	Green Lantern	Acorn (Bristol)
Upfront Costs (Town of Middlebury)	Initial investment	\$0	\$0	\$322,920 *

* $\$702/\text{unit} \times 460 \text{ units} = \$322,920$

Location and Time

Criterion	Solarsense	Green Lantern	Acorn Energy Coop
Location of Provider	Bullrock - Shelburne, VT Solarsense - Berwyn, PA	Based in Waterbury, Vermont	Middlebury, VT
Time until Implementation	6 months	6-12 months	6-12 months

Net Savings

Criterion	Description of Criterion	Solarsense	Green Lantern	Acorn Energy Co-op
Net Monthly	Based on a total annual output of 230,000 kWh	\$315	\$315	\$602
Net Annually		\$3,775	\$3,775	\$7,222
Net 25 years		\$94,375	\$94,375	\$180,544*

** Savings with Acorn energy option expected to be higher due to conservatively high estimate of O&M costs*

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* O&M factored into net savings of \$50/unit/year

Hybrid Option

- Partial participation in Bristol array and remaining Net-metering from another source
 - Current proposal is to purchase approximately 185 kW of electricity from the Bristol array – 25% of the total 1840 units
 - Will look at the other options for remaining 162 kW

Criteria

1. Upfront Costs

- How much is the Town paying in the short term to get the project online?
- Would the Town be willing to provide this upfront investment?
- If so, then how?

2. Operations and Maintenance Costs

- Includes upfront costs and possible maintenance, operations or removal costs.

Criteria

3. Location

- Are there Town lands available for a project?
- What is the expected financial gain from having a project located on town land?
- Will there be pushback from residents against a project being built within the community?

4. Time until implementation

- How soon will the project be online?
- Have permits been issued for the project?
- If one proposal would take longer to construct and put online, then the cost of delaying the second option should be calculated. The second project, all else equal, should be able to make up this gap relative to the first proposal over the lifetime of the project.

Criteria

5. Ownership structure

- Who owns the renewable energy project.
 - Is it a private company, the Town of Middlebury or a shared ownership structure?
- Who is providing the financing? Will the majority of the project's revenue stay within the Vermont economy?
- If it is a private company, will ownership transfer at any point during the lifetime of the project?
- What will happen with the renewable energy credits?

Criteria

5. Ownership structure (cont'd)

- If it is Town owned, how does that impact maintenance, removal and liability?
- Is it possible for community members to own a share of the project?
 - How should potential benefits to community members be weighed against the financial considerations of the Town?

Criteria

6. Efficiency of the investment

- What is the expected lifetime return on the project?
- What is the reduction in expected greenhouse gas emissions given the amount of money invested?
- Will this project bring down emissions significantly, or is more for financial considerations?
- Are there other opportunities for the Town to invest in, either in renewable generation or consumption reduction projects, that would bring about a better return on investment?

Criteria

7. Other concerns

- Have there been any compliance issues or reputational issues with the company?
- How much time will staff have to devote to the projects?

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