Minutes

Town of Norwich
Finance Committee Meeting

Tuesday, February 10, 2010

Tracy Hall, Norwich, Vermont

Members present: Stephen Lajoie (Chair), Stephen Flanders (Secretary), Cheryl A. Lindberg (arrived 5:34), Keith Moran and Ann Sargent (arrived 5:15)

Members absent: Dan Weintraub, Robert Mitchell

Also Present: Henry Scheier, Neil Fulton, Linda Gray (Norwich Energy Committee), Alan Berolzheimer (Chair, Norwich Energy Committee), Brett Tofel (Renewable Energy Systems & Technologies, LLC), Doug Iverson, Dick Podolec, Ed Childs (Selectboard member), Gerry Tolman, Stan Williams (Norwich Energy Committee)

Informal Discussion:

An informal discussion occurred after the scheduled meeting start time and when a quorum was achieved with the arrival of NFC member, Sargent, at 5:15.

Introduction of Project – Norwich Energy Committee (NEC) chair, Berolzheimer, introduced the Solar Energy project. He said that the NEC had three long-term objectives, a project that:

1. Reduces the town's carbon footprint
2. Saves the town money (perhaps even generating income)
3. Provides a regional model for solar projects.

The NEC opted for a municipal project, owned by the town, rather than private or individual projects to facilitate the use of available financial instruments. He explained that the primary source of financing would be a CREB (Clean Renewable Energy Bond)[1].

The NEC assessed financial scenarios, which they deemed to be conservative. They felt that their scenarios, presented in a spreadsheet indicated little or no risk to town with a potentially significant financial upside for the town. Gray added that the project helps lock in the town's cost of electricity. Berolzheimer noted further that the Clean Energy Development Fund[2] has grant money that might help with construction costs. Gray recommended establishing a designated fund, with which to manage project finances. The grant funds up front would help the town's cash flow in the initial years. Berolzheimer said that the process is still unfolding with the recent opening of bids.

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[1] http://www.crebs.org/

[2] http://publicservice.vermont.gov/energy/ee_cleanenergyfund.html

NFC meeting called to order:

Chair Lajoie called the meeting to order at 5:15 PM.

Agenda Items Discussed

1. **Review/Amendment of Agenda:**

Lajoie asked if there were any changes to the agenda. There were none proposed.

2. **Review/Approval of Minutes:**

Lajoie asked for comments on the minutes of the meeting of 26 January 2010.

> **Motion**: Moran moved and Sargent seconded that the 26 January 2010 minutes circulated to the NFC be accepted as drafted.
>
> **The motion passed unanimously.**

3. **Public Comments:** There were not public comments on items that were not on the agenda.

4. **Proposed Solar Project:**

Chairman Lajoie made reference to a list of questions that the NFC had compiled to ask of the NEC in advance of the meeting (Appendix A). The discussion covered these questions and other topics, as follows, making reference to a spreadsheet, developed by Williams and provided by the NEC (first tab in Appendix B):

> **Question:** What sum of money is being requested to be raised for repayment by the town's taxpayers?
>
> **Answer:** The spreadsheet shows that $941K would be raised by a CREB and a grant to be repaid by revenue, generated by the town's payment for electricity, plus a subsidy in years when expenses exceed revenues.
>
> **Question:** If the project incurs more expense than revenue, who will incur the resulting financial burden?
>
> **Answer:** The town is responsible for the repayment of the CREBs bond, according to Berolzheimer.
>
> **Question:** Model uses $0.13/ KWH retail rate (Dec '09 retail was $0.13841 per KWH). Who pays for the GMP (Green Mountain Power) $0.06 premium? Is this subject to change, and if so, by whose authority?
>
> **Answer:** Berolzheimer explained that the GMP premium is totally voluntary, but reflects several corporate incentives to keep such a premium in place. The GMP could change the premium at will following an interval after a change had been announced.
>
> **Question:** After the GMP premium expires, appears annual cost per KWH may be barely under or even exceed retail rate. What are each year's projected KWH cost and retail rate projection over the 25-year project life?

Answer: The spreadsheet assumes scenarios in which rates will rise by between 2% and 3% beyond $0.13/ KWH.

Question: What has been GMP's utility rate increase history over the past 25 years?

Answer: Williams provided Lajoie with a spreadsheet, showing Vermont rate histories to have increased by 5.0% since 1970, with more recent increases being: 15 years—2.7%, 10 years—2.4%, and 5 years—2.8%.

Question: Is the project insured? What is the deductible? What are the exclusions? E.g., if the whole project were destroyed by lightning, what would be the financial fallout?

Answer: Tofel explained that the two greatest natural hazards are lightning, which could damage inverters and super-sized hail, which could damage the solar arrays. The principal risk, not covered by insurance would be unscheduled down time, when no revenues would be realized. He estimated that it might require one to two months to repair major damage. The additional cost of insurance through the town is factored into the project, as shown in the spreadsheet, at a value of $2.3K/annum. In addition, the vendor would guarantee the operation of the system for the first five years. Power monitoring will help alert a problem with the array.

Question: What is the tax credit amount an investor receives for a $10-K investment in the project?

Answer: According to Berolzheimer, the after-tax credit in the highest income bracket would be $420/annum.

Question: What has been Farm-Way's operating experience so far: Actual total power generation to date vs. plan? Maintenance actual vs. anticipated/budgeted? What IRR was Farm-Way looking for on their investment?

Answer: Gray reported that she had been in touch with a Farm-Way representative and reported that there has been essentially no maintenance required.

Question: Other than the inverters, what else has a warrantee? Is the warrantee(s) for parts or parts & labor?

Answer: Tofel reported that the warrantee applies to parts and labor on the inverters and solar collectors for five years.

Question: How can usage by the school, a separate public entity from the Town, be included to make up for a Norwich electric bill shortfall?

Answer: The project relies on "net metering" to offset town expenses. In order for this approach to be useful, the town needs to use more electricity over the year than it generates, although there will be net outflows of electricity during certain periods. The Town can add other meters, such as the school, to the net meter to ensure using all the power generated. Excess electricity not used in a twelve-month period is forfeited to GMP.

Question: What are NEC assumptions with regard to the state of economy going forward?
Levels of assumptions: Most pessimistic?
Most likely?
Most optimistic?

Answer: The spreadsheet assumes the most pessimistic and optimistic assumptions to be, as shown in Table 1 (no scenario was described as most likely):

Category	**Pessimistic**	**Optimistic**
Utility inflation	2%	3%
Solar GMP premium $.06 (#years)	3	8
Combined annual expenses	$8,700	$8,700
Production Value in Year 25	$49,310	$62,320
Payback Time (years)	21	18
Project Account Balance - yr 25	$306,210	$511,582
Max Norwich Cum. Deficit	**$(138,306)**	**$0**
Town Account Balance - ending	$306,210	$593,205

Table 1. Differences in assumptions and results for pessimistic and optimistic scenarios.

While Lajoie was obtaining answers to the NFC's list of questions, the following points were made:

- Lindberg inquired about the request for proposals (RFP) for this project and how it was handled. Gray answered that there is a summary of the RFP process that would be forwarded to the NFC for review.
- Gray explained that the break-even period happens in years 18-25, after the bond is paid off.
- About project costs, Berolzheimer explained that clearing the land would cost about $20K, factoring in the sale of timber harvested from the land.
- Tofel explained that the interest and inflation rate were variables that can affect the finances negatively.
- Tolman suggested that there's no active market for Solar Renewable Energy Credits (SRECs) in Vermont, where such credits are voluntary for utility companies.
- Williams reported that the town actually spends $32K, not $38K for energy.

- Tofel explained that the incidence of snow on the solar collectors is based on snow data, provided by the National Renewable Energy Laboratory (NREL).
- Tolman questioned the assumptions about the 0.5% per year degradation rate. He noted that *PVWatts*[3] has a 1%/year degradation rate looks at the whole system. Tofel explained that *PVWatts* uses both de-rating and degradation. De-rating addresses compatibility issues among elements of the installation. Tolman said that *PVWatts* predicts a de-rating 77% to 58% over the 25-year life of this system. Tolman produced a spreadsheet with more detailed de-rating assumptions. Tofel explained that warrantees pertain to individual elements of the system, not at meter.

Bond Premium Rates – Lindberg reported that she was not aware of CREBs being sold without a premium to attract investors. Such a premium would have to be borne by the project. A discussion ensued about the following:

- Williams asked the NFC to advise the NEC about, what would be a recommended premium rate that the bonds would be issued at? Lindberg reported that without 2% incentive, CREBs are not selling. Williams explained that, absent a market place for such bonds, liquidity is an issue. There was discussion of the possibility that local residents might be interested in a solar-power investment in principle.
- Gray reported the recommended minimum investment of $5K to cover administrative cost.
- She reported that the town can administer the bond payments. This is included in assumptions.

Present Value Calculations – Fulton and Flanders noted that the spreadsheets did not appear to take into account the time value of money, i.e. a present dollar is worth more than a future dollar. They recommended incorporation of Present Value[4] calculations into the analysis.

Future Briefings of the Project – Flanders recommended that the NEC develop a more cogent presentation that would help explain the project to the Selectboard and the public.

5. Other Topics:

Fulton reported that the town financial policy is on the agenda for the 24 February 2010 Selectboard agenda. He requested that the NFC place it on its 16 February agenda.

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[3] http://www.nrel.gov/rredc/pvwatts/: NREL's PVWatts™ calculator determines the energy production and cost savings of grid-connected photovoltaic (PV) energy systems throughout the world.

[4] http://en.wikipedia.org/wiki/Present_value_of_a_future_sum#Present_value_of_a_future_sum: (See Appendix C)

6. Adjournment

Motion: Sargent moved and Moran seconded that the committee adjourn.

The vote was unanimous.

Adjourned at 5:55 PM.

Upcoming meeting dates (4:30 PM in Tracy Hall):

Tuesday, February 16, 2010

Tuesday, March 16, 2010

Tuesday, April 20, 2010

Appendix A: NFC *Solar Project Questions* prepared for the NEC

- What sum of money is being requested to be raised for repayment by the town's taxpayers?
- If the project incurs more expense than revenue, who will incur the resulting financial burden?
- Model uses $0.13/ KWH retail rate (Dec '09 retail was $0.13841 per KWH). Who pays for the GMP $0.06 premium? Is this subject to change, and if so, by whose authority?
- After the GMP premium expires, appears annual cost per KWH may be barely under or even exceed retail rate. What are each year's projected KWH cost and retail rate projection over the 25 year project life?
- What has been GMP's utility rate increase history over the past 25 years?
- Is the project insured? What is the deductible? What are the exclusions? E.g., if the whole project were destroyed by lightning, what would be the financial fallout?
- What is the tax credit amount an investor receives for a $10,000 investment in the project?
- What has been Farm-Way's operating experience so far: Actual total power generation to date vs. plan? Maintenance actual vs. anticipated/budgeted? What IRR was Farm-Way looking for on their investment?
- Other than the inverters, what else has a warrantee? Is the warrantee(s) for parts or parts & labor?
- How can usage by the school, a separate public entity from the Town, be included to make up for a Norwich electric bill shortfall?
- What are NEC assumptions with regard to the state of economy going forward?
  Levels of assumptions: Most pessimistic?
  Most likely?
  Most optimistic?

Appendix B: NEC Spreadsheet (Summary Tab)

Data and Assumptions	KEY ASSUMPTIONS IN RED					
	Three-Phase					
	Scenario 1	Scenario 1A	Scenario 2	Scenario 2a	Scenario 3	Scenario 3a
System						
System Rating (kW)	228.8	228.8	228.8	228.8	228.8	228.8
Output Decay: 25 years	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%
Output Decay: annual	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Production - Year 1						
Days in Operation	323	323	323	323	323	323
Annual Production (kWh)	237,146	237,146	237,146	237,146	237,146	237,146
Production - Year 2						
Days in Operation	365	365	365	365	365	365
Starting Annual Production (kWh)	267,982	267,982	267,982	267,982	267,982	267,982
Up-front Cost						
Cost per Watt	$3.81	$3.81	$3.81	$3.81	$3.81	$3.81
System Cost (Bid Price)	$872,342	$872,342	$872,342	$872,342	$872,342	$872,342
Tentative Three Phase Cost	$33,000	$33,000	$33,000	$33,000	$33,000	$33,000
Extended Warranty for inverters	$17,270	$17,270	$17,270	$17,270	$17,270	$17,270
Contingency	$18,452	$18,452	$18,452	$18,452	$18,452	$18,452
Total System Cost	$941,064	$941,064	$941,064	$941,064	$941,064	$941,064
Financing						
CEDF Grant	220,000	220,000	220,000	220,000	220,000	220,000
CREB (IRS) Bond Sizing	960,269	960,269	960,269	960,269	960,269	960,269
CREB fees	15,205	15,205	15,205	15,205	15,205	15,205
CREB repayment term (years)	17	17	17	17	17	17
Add'l Interest to CREB holders	1.0%	3.0%	1.0%	1.5%	1.0%	1.5%
Interest on Sinking Fund	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Net-Metering @ retail	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13
Utility inflation	3%	2%	3%	2%	3%	2%
solar GMP premium 5.06 (#years)	6	6	6	6	3	3
REPI ($/kwh)	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01
SREC ($/Mwh)	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00
Combined annual expenses	$8,700	$8,700	$8,700	$8,700	$8,700	$8,700
Annual growth in expenses	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%
Production Value in Year 25	$62,320	$49,310	$62,320	$49,310	$62,320	$49,310
Resale Price for PV panels in 25 years	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000

Table B1. Data and Assumptions:

Results						
Project IRR	**3.81%**	**3.05%**	**3.63%**	**2.82%**	**3.26%**	**2.41%**
Payback Time (years)	**18**	**19**	**18**	**20**	**19**	**21**
Project Account Balance - yr 25	**$511,582**	**$379,408**	**$489,569**	**$352,372**	**$447,295**	**$306,210**
Max Norwich Cum. Deficit	**$-**	**$-**	**$-**	**$(92,144)**	**$(4,583)**	**$(138,306)**
Town Account Balance - ending	**$593,205**	**$461,031**	**$571,192**	**$352,372**	**$528,918**	**$306,210**
25 yr cost for elecricity - conventional	$1,385,452	$1,217,151	$1,385,452	$1,217,151	$1,385,452	$1,217,151
avg annual cost	$55,418	$48,686	$55,418	$48,686	$55,418	$48,686
per kwh	$0.1896	$0.1666	$0.1896	$0.1666	$0.1896	$0.1666
25 yr cost for elecricity - solar	$942,247	$906,121	$964,260	$1,014,780	$1,006,534	$1,060,941
avg annual cost	$37,690	$36,245	$38,570	$40,591	$40,261	$42,438
per kwh	$0.1289	$0.1240	$0.1320	$0.1389	$0.1377	$0.1452
savings/yr	$17,728	$12,441	$16,848	$8,095	$15,157	$6,248
% savings	**32%**	**26%**	**30%**	**17%**	**27%**	**13%**
system revenues in yr 25	$62,320	$49,310	$62,320	$49,310	$62,320	$49,310

Table B2. Results of calculations, based on the assumptions (match the columns to Table B1.)

Appendix C: Present value of a future sum[5]

The present value (PV) formula has four variables, each of which can be solved for:

$$PV = \frac{FV}{(1+i)^n}$$

Where,

1. *PV* is the value at time = 0
2. *FV* is the value at time = *n*
3. *i* is the rate at which the amount will be compounded each period
4. *n* is the number of periods (not necessarily an integer)

The cumulative present value of future cash flows can be calculated by summing the contributions of FV_t, the value of cash flow at time = *t*.

$$PV = \sum_{t=0}^{n} \frac{FV_t}{(1+i)^t}$$

Note that this series can be summed for a given value of n, or when n is ∞.

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5 http://en.wikipedia.org/wiki/Present_value_of_a_future_sum#Present_value_of_a_future_sum