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Prepared as of 12/14/08

FINANCING SOLAR ENERGY PROJECTS by NEW JERSEY MUNICIPALITIES

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New Jersey municipalities are increasingly being asked to find new and innovative ways to save on energy costs. One way is the installation of a solar energy system. A brief description of how solar energy works and a strategy for financing these systems is explored here.

Solar Energy

Solar energy converts sunlight or solar radiation into electricity. It is considered a renewable energy technology and is considered one of the cleanest and quietest electric technologies available. An investment in a solar electric system offers several benefits:

- Reduces a municipality's electric bills because it will purchase less power from its utility company
- Further reduces a municipality's electric bills through net metering,¹ which credits it for any surplus electricity generated by its system
- Stabilizes a municipality's electric costs once the upfront cost for the system is purchased because energy from the sun is free. The cost of generating electricity will not vary significantly during the life of the system.

¹ "Net metering" allows the electric meter to spin backwards when excess energy is generated by a solar electric system. The excess energy is stored by the utility until it is required for future use.

- Benefits the environment because solar electricity does not produce any emissions; traditionally, electricity generation facilities are powered with fossil fuels—i.e., coal, oil, natural gas—thus depleting the earth of these resources.

Solar electric systems should not be confused with solar water-heating systems that use the sun’s rays to heat water. Solar electric technology produces electricity from electrons that are freed when the sunlight interacts with the semiconductor material in the solar electric cells, or sometimes called photovoltaic cells.² These cells are the basic building blocks of the system and are wired together to form modules or panels, which are the system components that are sold commercially.

Power output from a module ranges from 10 to 300 watts. One or more modules are installed as part of a typical solar electric system. The modules are then connected to the electric utility through an inverter that changes Direct Current (DC) into Alternating Current (AC). AC current is the same form of electricity that is received from the utility company and fed into homes and businesses.

New Jersey is one of the leaders in developing renewable energy technologies. The *New Jersey Electric Discount and Energy Competition Act*, N.J.S.A. 48:3-49 *et seq.*, requires the New Jersey Board of Public Utilities (BPU) to adopt renewable energy portfolio standards, or RPS.³ The BPU now requires a steadily increasing requirement for renewable energy—such as solar power—through 2021. In that year, 20% of the electricity supplied to New Jersey customers

² A photovoltaic (PV) cell is the basic component of solar technology that converts solar power directly into electricity. Photovoltaic literally means “light generated voltage.”

³ Renewable portfolio standards require electricity suppliers to obtain a certain percentage of the electricity they sell from solar energy systems located in New Jersey.

must be generated by Class I renewal energy⁴ systems and of that amount 2.12% must be supplied from solar electric generation systems.

Suppliers of electricity may comply with the 2.12% solar requirement by purchasing solar renewable energy certificates (SRECs), or by making a solar alternative compliance payment (SACP). An SREC represents the solar renewable energy attributes of one megawatt hour (1 MWh) of generation from a solar energy facility. A supplier of electricity who holds too few SRECs to comply with the BPU's regulations can make up the shortfall by paying the SACP for each megawatt hour of the shortfall. Since a supplier of electricity has the option of either paying for the SACP or obtaining SRECs to comply with the BPU's regulations, the cost of the SACP essentially becomes the upper limit on the price of an SREC in the market. The use of SRECs by the BPU helps to reduce the reliance on rebates to finance solar energy projects by transitioning to a more market-based incentive to achieve solar energy objectives.

Financing Alternatives

One of the early decisions of a municipality is whether to issue debt to finance a solar installation or enter into a power purchase agreement and have another party undertake the financing and operation of the installation. If a municipality wants to finance its own installation, it must first adopt a bond ordinance to that effect. The costs of the debt financing can be offset with SREC revenue and reduced energy costs, which are discussed next.

SREC. As mentioned, New Jersey's energy public policy is moving toward a market based incentive for achieving its renewable energy objective. The main market driven strategy adopted by the BPU is the use of solar renewal energy certificates. SRECs are a type of clean

⁴ Class I renewable energy under the *New Jersey Electric Discount and Energy Competition Act* is electric energy produced from solar technologies, photovoltaic technologies, wind energy, fuel cells, geothermal technologies, wave or tidal action, and methane gas from landfills or a biomass facility.

energy credit that can be bought or sold. An SREC is issued once a solar facility has generated 1 MWh through either estimated or actual metered production. SRECs can be sold separately from the electricity that the solar system saves, thus affording a municipality another source of revenue to offset the cost and the payback period for such an installation. A Municipality can sell its SRECs to an entity that must purchase them in order for that entity to fulfill its renewable portfolio standards as required by the BPU. Currently, the BPU allows the SRECs to be sold for a 15 year period for each solar installation. Some solar installers will offer to purchase all of an installation’s SRECs and finance the entire project, thus reducing the up-front capital costs for a solar installation. These agreements are generally known as power purchase agreements and are discussed later.

The price of SRECs is determined primarily by their supply and demand with the upward value of an SREC being influenced by the cost of a solar alternative compliance payment or SACP. The price of a SACP is established by the BPU above the target levels for an SREC so that electric suppliers have an incentive to purchase SRECs instead of SACP. According to the New Jersey Clean Energy program’s web site, SRECs have been trading at about 50% to 75% of the SACP level. The SACP level was at \$300 for the past two years. As of July, 2008, an SREC was trading at a weighted average of \$245. On September 12, 2007, the BPU approved the rates for SACP and established an eight year rolling SACP schedule:

Energy Yr. ending 5/31	2009	2010	2011	2012	2013	2014	2015	2016
SACP	\$711	\$693	\$675	\$658	\$641	\$625	\$609	\$594

These higher values for SACP are intended to encourage electric suppliers to purchase the excess electricity from solar projects with SRECs. By analogy, the BPU’s increase in the cost of SACP could also result in higher values for each SRECs sold. Nonetheless, the sale of

SRECs are dependent on market conditions at the time that they are sold, thus making it difficult to predict with any certainty their economic value in the future. This is particularly true because the private sector has embraced the concept of solar energy more quickly than the public sector. For that reason companies and corporations are already flooding the market with their SRECs, which may bring down the price of SRECs in the future.

CREB. Another solar energy economic incentive is found in the *Energy Policy Act of 2005*, which allows municipalities and other public entities to issue “Clean Renewable Energy Bonds” (CREBs). This federal legislation effectively permits a municipality to issue zero interest rate bonds by providing a tax credit to the bondholder instead of the municipality paying interest. The purchaser of the CREB applies the tax credits against his regular income tax liability and alternative minimum tax liability. The municipality is still obligated to repay the principal on the CREB to the bondholder in equal amounts beginning in the first year of the issuance of the CREB.⁵

The CREB program was enacted by Congress for a two year period, beginning January 1, 2006. The legislation permits a maximum of \$800 million of CREBs to be issued through December 31, 2008. On October 1, 2008, President Bush signed into law the *Emergency Economic Stabilization Act of 2008*, better known as the economic bail-out bill. One of the many provisions in this legislation was the extension of the CREB program through December 31, 2009 as well as authorizing another \$800 million of allocation for these types of bonds.

Energy Savings. Aside from the revenue derived from the SRECs, a municipality should not overlook one of the primary reasons to undertake a solar project—i.e., to reduce

⁵ The credit is included in gross income for federal income tax purposes as interest income. Therefore, the value of a CREB to a bondholder for any year is equal to the amount of the credit less the amount of the bondholder’s tax liability. For example, if the taxpayer earns a \$100 tax credit on a CREB for a year, and the taxpayer is in the 35% tax bracket, the credit provides a \$65 benefit to the taxpayer or bondholder.

energy costs. The amount of the reduction in electricity usage and cost savings for any solar energy project depends on several factors—size of the solar installation, interest rate on the bonds, and price of the SRECs. While these electricity savings cannot be allocated toward the reduction in debt service because they represent savings in the operating budget, these savings should nevertheless be part of any financial plan. Moreover, the greater amount of electricity that can be generated from a solar installation, the more control a municipality can have over its electricity costs—especially after the solar installation is fully paid. Since solar energy is essentially free, a municipality’s electricity costs become less reliant on the costs fluctuations of its utility company, because utility companies are still primarily generating electricity from the use of fossil fuels—cost that will vary with the availability of these resources.

Power Purchase Agreements. The recent passage of the Public Laws of 2008, Chapter 83, effective September 10, 2008, authorizes a municipality to enter into a power purchase agreement for a maximum term of 15 years.⁶ The new law requires, however, that the BPU first adopt guidelines for establishing the methodology for computing energy savings. As of this date, these regulations have not been adopted.

Power purchase agreements shift the entire responsibility and risk of installing a solar energy installation to another party, or solar investor. The solar investor must be selected pursuant to the competitive contracting process, N.J.S.A. 40A:11-4.2 *et seq.*⁷ Once selected, the

⁶ Chapter 83 added a new provision in N.J.S.A. 40A:11-15(45), which reads:

Any contracting unit may award a contract for longer periods of time [if] the . . . performance of goods or services for the purpose of producing Class I renewable energy . . . at, or adjacent to, buildings owned by a contracting unit, the entire price of which is to be established as a percentage of the resultant savings in energy costs, for a term of not to exceed 15 years; provided, however, that these contracts shall be entered into . . . in accordance with guidelines promulgated by the Board of Public Utilities establishing the methodology for computing energy costs savings and energy generation costs.

solar investor will finance, install, maintain, and own the solar project, thus providing a true “turn key” operation for a municipality. In exchange, a municipality agrees to provide space for the solar installation and to purchase the electricity generated from the solar installation for a maximum period of 15 years. Based on the performance of power purchase agreements in the private sector, these agreements will likely reduce a municipality’s electricity costs by approximately 10% in the first year, and a slightly lower increase in electricity costs during their remaining term—approximately 2.00% to 2.50%--as compared to the normal increases charged by the municipality’s utility company. The solar investor benefits from the ownership of the SRECs and federal tax credits resulting from the installation.

Financing Strategies

Solar energy installations provide an opportunity for a New Jersey municipality to both reduce energy costs and reduce emissions into the environment. It is uncertain at this time whether the issuance of debt or the execution of a power purchase agreement presents the best economic return for a municipality, because municipalities are not yet permitted to enter into power purchase agreements. Presumably, if a municipality can qualify all, or a portion, of its bonds to finance a solar project with CREBs, then the issuance of debt along with the ownership of the SRECs would be more cost-effective than the execution of a power purchase agreement.

Another strategy is for a municipality to execute a shared services agreement with the school district located within its boundaries, pursuant to the *Uniform Shared Services and Consolidation Act*, N.J.S.A. 40A:65-1 *et seq.* This strategy would require the municipality and the school district to both issue debt to finance their respective portions of the solar installation. School districts are excellent hosts for solar panels because of their expansive roof areas.

⁷ “Local Finance Notice,” No. 2008-20, dated December 3, 2008, requires a municipality to utilize the competitive contracting process in selecting the entity that will execute the power purchase agreement with the municipality.

Another incentive for school districts to undertake a solar project is that they receive at least 40% state debt service aid, if they finance their solar projects with school debt. The receipt of state school aid, when combined with the sale of SRECs, affords school districts significant financial advantage over a power purchase agreement. Depending on the negotiated terms, a shared service agreement would allow a municipality and its partnered school district to share in the installation's solar energy savings and SREC revenue,⁸ thus benefiting both public entities. This type of cooperation between the municipality and the school district is especially needed for a Type II school district, since it will need the approval of the voters to issue school bonds. Support for such a school bond referendum, if it were to come from the municipality's governing body, could likely be the impetus for the voters approving such a referendum.

⁸ New Jersey school districts are not permitted to share the debt service aid that they would receive from the State of New Jersey.