Using Tax Financing Strategies to Help Fund a Zero Net Energy Landmark Building and “Green” Endowment for Beloit College

By: John Clancy¹

Beloit College is actively planning “to convert the Blackhawk Generating Station, a river-front, decommissioned 100-year-old coal burning power plant, into a student union and recreation center – The Powerhouse.” (Schoof 2015)

The College engaged Chicago-based firms Studio Gang Architects and dbHMS Engineering to design a renovation that creates a modern combined recreation, student center while both preserving the historical character of the building and advancing the College’s ambitious sustainability goals.

Studio Gang Architects and dbHMS Engineering have proposed a unique geothermal heating and cooling system for the $38 million, 130,000 sq. ft. project. “Their idea is to create an active, isothermal skin for the building by wrapping the exterior with polyethylene tubing, adding a significant insulating envelope, and covering it all with weathering steel. Through the tubing will flow liquid that uses the moderating temperature of the river water to turn the massive masonry walls of the facility into radiant surfaces that will heat and cool the building, keeping it a constant temperature throughout the year.” (Schoof 2015) The design preserves the historical interior of the building, maximizing interior space, while potentially reducing initial renovation costs and decreasing future operating costs.

If completed, the proposed design would give the College a landmark, na-

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¹ John Clancy is an environmental and energy lawyer at Godfrey & Kahn. While this article generally discusses tax and related legal issues, it is not intended to provide legal advice for any particular situation. If the College or anyone else pursues an energy project utilizing any tax financing strategies, it is very important that they have their own legal advice to address the various issues that apply to the project.
tionally unique building on the cutting-edge of sustainable design.

As this paper shows, the College could take this project one step further by making the renovated building zero net energy through the installation of large-scale solar photovoltaic (PV) facilities on or near the Powerhouse. A zero net energy building produces as much energy on-site as it consumes in a year.

The resulting 130,000 sq. ft. structure would be one of the nation’s largest, commercial zero net energy buildings. The completed renovation would not only provide the College with much needed functional space, but also with a cornucopia of publicity for years to come.

In 2012, Oberlin College had a 2.278 MW PV system installed on its campus without paying for the project upfront. Spear Point Energy, the project developer and system owner, coordinated the design and engineering of the project and “negotiated the Power Purchase Agreement and Lease needed to make the system a reality.” (Spear Point Energy 2015) The agreement provided Oberlin College with renewable electricity at a competitive, guaranteed rate for 25 years while the 10 acre PV installation also provided a highly visible marker of Oberlin College’s commitment to sustainability. As a private firm, Spear Point Energy was able to receive tax-based solar incentives unavailable to non-profit Oberlin College if it had built and owned the system itself.

A similar PV system installed on and around the Powerhouse would raise the College’s sustainability successes to a new height. The problem for Beloit College, and the State of Wisconsin, is that power purchase agreements, such as Oberlin College used to site a large PV facility on its campus, are much more challenging in Wisconsin. However, as this paper will show, alternative financing and ownership mechanisms can be used, and have been used, in Wisconsin that achieve the financial benefits of a power purchase agreement. At low upfront cost, Beloit College could install a PV system able to produce renewable, solar energy equal to the Powerhouse’s annual energy demand, making it a zero net energy building.

This essay discusses potential methods for the College to take advantage of the significant tax advantages available for solar PV systems, even though the College is not a taxable entity. It will also discuss strategies to fund the solar project, make the Powerhouse a unique zero net energy building, and create a stable and self-sustaining “green” endowment for the College.

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2 Currently, the largest net zero building in the U.S. is The Research Support Facility at the National Renewable Energy Laboratory in Colorado.
1. Beloit College’s Strong Sustainability Goals and the “True Cost” of the Energy it Uses.

The College has a strong commitment to sustainability, both in its academic activities and with respect to its physical plant. This is reflected in both the many actions taken by the College and in the leadership of Beloit College’s President Scott Bierman, who has said:

“I strongly support the current and future sustainable activities on campus. I believe that there are both economic and educational reasons for enhancing efforts to identify sustainability projects. Of particular interest are projects that meet reasonable cost-benefit tests; curricular opportunities that introduce environmental issues into courses in a variety of disciplines; and research projects that expand our understanding of the complex interplay between environmental systems and environmental policy.”

One of the key reasons for installing relatively large-scale solar PV systems and utilizing their energy is to allow the College to meet its sustainability goals and reduce its environmental footprint. Presently, Beloit College, like almost everyone else in its area, purchases energy from its local utility provider. As is common in the Midwest, the majority of electrical energy that the College’s utility provides is produced by coal-fired plants. Coal-fired plants emit, on average, about a ton of carbon dioxide per megawatt hour, or about two pounds per kilowatt hour. That emission rate and an estimated damage value of $30/ton of CO₂ equivalents “results in climate related damages that equal about 3 cents per kilowatt hour,” which “is in addition to the 3.2 cents per kilowatt hour that are estimated for non-climate damages.” (National Research Council 2009) In contrast, the operation of solar energy PV facilities produces neither CO₂ nor other potentially harmful air emissions.

2. The College’s Catch-22.

Because of the College’s strong sustainability goal and its plans for a green renovation of the Powerhouse, it would likely greatly benefit from being able to use on-site solar power to provide energy to the Powerhouse and other Beloit College buildings. Fortunately, solar PV systems have come down substantially in

3 See http://www.beloit.edu/sustainability/assets/Beloit_campus_sust_map_color_2.pdf.
price over the past several years. In addition, solar PV systems are eligible for sig-
ificant federal tax incentives that can substantially lower the net cost of installing
such systems.

Moreover, as noted above, Beloit College has strong sustainability goals. For
this reason, Beloit College and other environmentally-conscious, not-for-profit
organizations are often among those most interested in installing solar and other
clean energy systems. However, because they are non-taxable entities, they cannot
directly receive the significant federal tax benefits available for solar and other
renewable energy projects. Hence, the Catch-22: those often most interested in
solar and other renewable power cannot directly receive the most significant Fed-
eral incentives to develop that power.

3. The Basics of the Federal Tax Incentives and Structures
that Can Help Solve Beloit College’s Catch-22.

The Federal tax incentives for solar PV installations include a 30% investment
tax credit that is available for systems that are installed and operating before the
end of 2016. This tax credit is available to directly offset Federal tax liability, and
therefore can have significant value to taxable entities. In addition, the tax credit
is generally available for the entire cost of the solar facility. Thus, a $100,000
solar facility will generate a $30,000 investment tax credit. In addition to the tax
credit, the cost of solar facilities can often be depreciated over a short seven year
timeframe, and thereby provide substantial tax deductions. Taxable entities that
receive the 30% investment tax credit receive a 15% reduction basis for depre-
ciation purposes. However, because of the relatively short depreciation schedule,
depreciation deductions associated with solar facilities are also quite valuable to
taxable entities.

Fortunately for Beloit College, there are legal structures that can help non-
profits and other nontaxable entities to address their Catch-22 and receive value
for the significant tax incentives for solar facilities. One of the most commonly
utilized structures is generally referred to as the “partnership flip.” The partnership
flip allows for a nonprofit such as Beloit College to enter into a partnership ar-
rangement, often through a limited liability company (an “LLC”), with a taxable
investor.

Under the “flip” structure, the nontaxable entity initially is typically provided
a minority ownership interest in the LLC for tax purposes. The taxable investor,
on the other hand, typically has a majority ownership interest for tax purposes. This allows the taxable investor to receive most of the tax benefits available for solar projects. The LLC typically will enter into an agreement under which it provides energy to the nonprofit. The U.S. Treasury Department allows for a “flip” of ownership without there being a recognized taxable event. This flip could allow for the College’s ownership to be almost 100 percent. The College could then purchase the remainder of the taxable investor’s ownership interest at its then fair market value.

Although the partnership flip option is often used to transfer ownership without a taxable event, a variation of this arrangement is often used with nontaxable entities, since their involvement in a partnership flip could limit the ability of the taxable investor to take advantage of the accelerated seven-year depreciation schedule. Under this variation (the “LLC Approach”), instead of the “flip,” the investor receives a “put” right to sell its interests in the LLC for a relatively low amount after it has received its needed return. As backup protection for the non-taxable entity, there can be an opportunity for it to purchase the taxable investor’s interest in the LLC and/or the solar facility for its then fair market value.


As one might guess, solar tax incentives make a big difference with respect to the net cost of the solar facility and payback. One can see this by comparing the payback of a potential solar facility for the Powerhouse with and without tax incentives.

In determining the solar facility’s payback, it is important to know the rate that the College pays for its electricity, since that determines the value to the College of the energy produced by the solar facility. Beloit College has a somewhat unique arrangement with its utility provider, under which it can purchase energy for its entire campus as if it were one building. This allows the College to aggregate its energy usage under a large customer commercial rate, and to purchase energy at a relatively low marginal cost of approximately 6.8 cents per kilowatt hour during on-peak time periods (which are generally daytime hours on weekdays). In return, the College must pay a demand charge, which is based on its peak energy usage during on-peak time periods throughout the year. This provides incentives for the College to manage its load to avoid on-peak spikes in energy usage, and thereby help the utility’s overall energy profile.
While Beloit College’s marginal cost of utility supplied energy is relatively low, the “true” cost of Beloit’s energy usage, at least from an environmental prospective, is substantially higher. The true cost for electricity produced by coal-fired facilities is approximately 14 cents per kilowatt hour (6.8 cents plus 3 cents from CO₂ emissions and 3.2 cents from other emissions as discussed above).

Based on Beloit College’s present energy usage, even without any additional energy demands from the Powerhouse, the College could likely support a 2.8 megawatt solar facility. Such a system might cost about $6.25 million to install. Assuming that the College could offset energy at an average rate of about 6 cents per kilowatt hour, such a system would likely result in energy savings starting at $190,000 per year and increasing thereafter based on the inflation rate for electrical energy. It is reasonable to assume an offsetting rate of 6 cents per kilowatt hour, since a portion of the energy the solar facility produces will offset lower-cost, off-peak energy. If the College was unable to receive value from the investment tax credit or depreciation available for solar PV systems, the system would have a relatively long payback period of about 24.3 years, and a relatively low internal rate of return of 1.7% over 30 years.

It is important to note, however, that the solar facility payback would be substantially shorter if Beloit College’s true cost of energy were considered. For example, even if one assumed that only half of the energy provided to the College was coal fired and the other half had no emission concerns, the “true” cost of the energy offset by the solar facility would likely be over 9 cents per kilowatt hour (6 cents, plus half of 6.2 cents for environmental costs). This likely understates the true cost because coal produces more than one half of Wisconsin’s energy and other energy sources, such as natural gas also have CO₂ and other emissions. But if the true cost is assumed to be 9 cents, the “payback” for the solar facility would be reduced to about 16 years, and the internal rate of return increased to 5.2%.

If the project was implemented using the LLC Approach described above, the benefits to the College from the investment tax credit and accelerated depreciation would depend upon the particular terms agreed to between the tax investor and the College. However, based upon a general range of investment terms likely required by investors, the payback would be reduced from over 24 years to somewhere between 16 and 19 years, and the internal rate of return over 30 years would likely be improved to between 4% and 5.3%.
5. Use of “Zero Energy” and Tax Advantages to Help Fund Raise for Powerhouse and to Create “Green” Endowment.

Making the historic Powerhouse into one of the largest zero net energy buildings in the world could likely enhance the College’s fund raising efforts for this unique facility. Moreover, doing so could allow the College to create a “green” endowment to provide a steady, substantial, and likely increasing source of funding to help meet its operational expenses.

This green endowment would be substantially more valuable if the College utilized the LLC structure for the solar project to enhance its return. In particular, if the College were able to fund raise for a substantial portion of the $6.25 million installed cost of the 2.8 megawatt system, it could likely use the LLC Approach to allow it to only pay a very reduced cost for energy for 6 years, and then receive full ownership of the system and save approximately $220,000 per year in energy costs from that point forward. For example, the College could seek donations from its alumni and others to fund its $4 million contribution toward the cost of the system and to make the Powerhouse a zero net energy building. The College could then negotiate to receive full credit for that contribution to the solar LLC, and potentially enter into an agreement where it pays only about 2 cents per kilowatt hour for approximately 6 years, and then purchases the tax investors’ interest for about $190,000. During this initial time frame, the College would receive savings from the solar powered energy beginning at about $125,000 per year. After the buyout, the College would own the system outright, and receive from it a steady and generally increasing source of funds from the solar facility. Based on the College’s present energy costs and assuming a relatively low energy inflation rate of 3%, the “income” from the solar facility would start at $220,000 per year and generally increase thereafter.

It is important to note that by the time the College owns the solar facility outright, the cost of carbon for coal fired energy may have become internalized because of EPA’s proposed Clean Power Plan, which is to be finalized in June of 2015. This Federal rule will require coal-fired units to substantially lower their carbon emissions in the future, and will likely require utilities to buy offsets if their coal-fired units cannot meet these stringent targets. Indeed, the College may actually be able to receive significant payments for producing and using this green energy from utilities that need to offset their coal-fired carbon emissions. Therefore, the savings to the College after year six from using clean solar energy may
be substantially greater than $220,000 per year, making the “green” endowment even more valuable.

Thus, with the help of solar tax incentives, the College could both transform the Powerhouse into a showcase zero net energy facility and create a “green” endowment. By creating one of the nation’s largest zero net energy, repurposed buildings, the College would become a world leader in sustainability. In addition, the “green” endowment could provide an immediate return of approximately $125,000 per year and after 6 years an increasing annual payout that begins at about $220,000. Since many colleges and other non-profits find that it is easier to fund raise for “cool” capital projects than on-going operating costs, this strategy could provide the College with a unique opportunity to have its cake and eat it too, by allowing it to both create a truly word-class green building and a permanent endowment to help offset its future operational costs.
References


