



**Report on  
Beaver Lake Nature Center Solar Panels  
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**Report Index**

<b>Report Section</b>	<b>Section Name</b>	<b>Page Number</b>
<b>I</b>	<b>Background and Executive Summary</b>	<b>2</b>
<b>II</b>	<b>Scope and Methodology</b>	<b>3</b>
<b>III</b>	<b>Findings and Recommendations</b>	<b>4</b>
<b>IV</b>	<b>Management Response</b>	<b>7</b>

# **SECTION I**

## **BACKGROUND AND EXECUTIVE SUMMARY**

### **Background**

At the January 13, 2009 meeting of the Facilities Committee of the Onondaga County Legislature (the “Committee”), a proposal was made to install photovoltaic panels (more commonly referred to as solar panels) at the Beaver Lake Nature Center (BLNC). The project was explained as a \$200,000 investment with \$90,000 from NYSERDA, \$40,000 from Onondaga County (the “County”), and additional funds from the Friends of Beaver Lake. The funds from NYSERDA and the County would pay for the actual solar panels and their installation, while the funds from the Friends of Beaver Lake would pay for educational components. The discussion made clear that this project would be a test case to see whether future investment in solar technology would be worthwhile for the County. The Committee approved spending of the funds.

At the regular session of the County Legislature held on February 3, 2009, Resolution 4-2009 was passed approving the installation of the solar panels. The Resolution recited the anticipated costs of the project and further stated “the solar panels would generate an estimated 19,000 kWh of electricity per year, which is about 15% of the average electric daily usage at the Nature Center.”

In July 2010, a contract was signed for the installation of the solar panels. An addendum to the bid documents indicates a 16.2 kW system would be the maximum size allowed due to the equipment used. The Beaver Lake website indicates a 16.170 kWp system was installed and became operational on June 1, 2011. The website further provides data concerning the electricity generated.

### **Executive Summary**

Over the course of the audit, we found the following:

1. In preparation for this audit, Department of Audit and Control staff reviewed the Beaver Lake Nature Center website for the publicly available information. Actual electric utility data from outside vendors was retrieved from claims submitted and entered into the PeopleSoft accounting system.
2. In a letter dated May 5, 2016, the Department of Audit and Control requested information concerning the solar panels.

3. In an e-mail dated May 11, 2016, Deputy County Executive Mary Beth Primo indicated she was not inclined to release the information and was referring the matter to the County Attorney.
4. Therefore, this Audit is based on publicly available information published on the Beaver Lake Nature Center website. In addition, actual electric utility data and project cost data were derived from information available in PeopleSoft.

## **SECTION II**

### **SCOPE AND METHODOLOGY**

**Scope:**

The scope of this audit is to review the actual financial performance of the Beaver Lake Nature Center solar panels and compare the results to the financial expectations as represented in Resolution 4-2009.

**Methodology:**

In order to complete our objectives we relied on publicly available information published on the Beaver Lake Nature Center website as well as utility data and project cost data retrieved from the County accounting system. The County Administration was unwilling to provide any information on the project.

## SECTION III FINDINGS AND RECOMMENDATIONS

County records indicate \$40,000 of the BLNC solar panel project cost came from Room Occupancy Tax, and \$34,109.30 was paid out of a Conservation Block Grant. On its face, it appears the system only cost \$74,109.30. However, review of the contract documents and County records seem to indicate that the vendor, O’Connell Electric Company, independently applied for an additional \$28,297.50 in grant funding from NYSERDA. A memorandum from the Parks Department to the County Administration dated May 27, 2011, in reference to a change order to reduce O’Connell Electric’s contract, states that “The NYSERDA program requires that the installation contractor apply for the grant and reimburse the owner.” The memorandum further states that it was “impractical to incorporate the credit amount in the bid documents, making it necessary for the county to receive the reimbursement through the vehicle of a deduct change order.” These funds do not appear to be accounted for by the County in its capitalization of the project. Due to the County Administration’s lack of cooperation and the ‘off the books’ activity engaged in, there is no way to audit and properly account for the actual total cost of the project, the actual reimbursement from NYSERDA, or to ensure that the NYSERDA funding guidelines were met. It appears that the total cost for the 16.170 kWp system was \$102,406.80. As previously noted, the Legislature had budgeted \$130,000, with \$90,000 in NYSERDA grants, for a system that could produce up to 19,000 kWh of electricity per year. An amendment signed by County Executive Mahoney on February 3, 2011 directed partial funding through the energy efficiency and conservation block grant.

The Beaver Lake Nature Center website indicates performance of the solar panels as follows:

2011	kWh	Est. Savings
Jan-11		
Feb-11		
Mar-11		
Apr-11		
May-11	158.59	\$23.79
Jun-11	1920.65	\$288.10
Jul-11	2136.25	\$320.44
Aug-11	1733.87	\$260.08
Sep-11	1306.53	\$195.98
Oct-11	843.29	\$126.49
Nov-11	653.55	\$98.03
Dec-11	337.58	\$50.64
Average	1136.29	
<b>Total</b>	<b>9090.31</b>	<b>\$1,363.55</b>

2012	kWh	Est. Savings
Jan-12	197.01	\$29.55
Feb-12	524.97	\$78.75
Mar-12	1254.17	\$188.13
Apr-12	1730.41	\$259.56
May-12	2015.90	\$302.39
Jun-12	1958.54	\$293.78
Jul-12	2116.84	\$317.53
Aug-12	1862.85	\$279.43
Sep-12	1381.21	\$207.18
Oct-12	848.45	\$127.27
Nov-12	480.85	\$72.13
Dec-12	270.78	\$40.62
Average	1220.17	
<b>Total</b>	<b>14641.98</b>	<b>\$2,196.30</b>

<b>2013</b>	<b>kWh</b>	<b>Est. Savings</b>
Jan-13	81.51	\$12.23
Feb-13	3.55	\$0.53
Mar-13	598.55	\$89.78
Apr-13	1458.20	\$218.73
May-13	1965.97	\$294.90
Jun-13	1627.64	\$244.15
Jul-13	1877.81	\$281.67
Aug-13	1793.28	\$268.99
Sep-13	1450.84	\$217.63
Oct-13	853.78	\$128.07
Nov-13	460.80	\$69.12
Dec-13	60.63	\$9.09
Average	1019.38	
<b>Total</b>	<b>12232.56</b>	<b>\$1,834.88</b>

<b>2014</b>	<b>kWh</b>	<b>Est. Savings</b>
Jan-14	76.69	\$11.50
Feb-14	0.00	\$0.00
Mar-14	0.00	\$0.00
Apr-14	1030.86	\$154.63
May-14	2034.62	\$305.19
Jun-14	1867.62	\$280.14
Jul-14	1823.82	\$273.57
Aug-14	1698.34	\$254.75
Sep-14	1436.55	\$215.48
Oct-14	854.90	\$128.24
Nov-14	354.57	\$53.19
Dec-14	178.53	\$26.78
Average	946.38	
<b>Total</b>	<b>11356.50</b>	<b>\$1,703.48</b>

<b>2015</b>	<b>kWh</b>	<b>Est. Savings</b>
Jan-15	46.60	\$6.99
Feb-15	0.00	\$0.00
Mar-15	53.44	\$8.02
Apr-15	1652.67	\$247.90
May-15	1432.73	\$214.91
Jun-15	1760.39	\$264.06
Jul-15	2033.64	\$305.05
Aug-15	1678.70	\$251.81
Sep-15	1395.33	\$209.30
Oct-15	924.15	\$138.62
Nov-15	575.91	\$86.39
Dec-15	268.73	\$40.31
Average	985.19	
<b>Total</b>	<b>11822.29</b>	<b>\$1,773.34</b>

<b>2016</b>	<b>kWh</b>	<b>Est. Savings</b>
Jan-16	44.41	\$6.66
Feb-16	233.22	\$34.98
Mar-16	1205.00	\$180.75
Apr-16	1609.92	\$241.49
May-16		\$0.00
Jun-16		\$0.00
Jul-16		\$0.00
Aug-16		\$0.00
Sep-16		\$0.00
Oct-16		\$0.00
Nov-16		\$0.00
Dec-16		\$0.00
Average	773.14	
<b>Total</b>	<b>3092.55</b>	<b>\$463.88</b>

As of May 11, 2016, the Beaver Lake website indicates 67,602.77 kWh produced at an estimated savings of \$10,140.42, which works out to fifteen cents (\$0.15) per kWh. Due to the County Administration's refusal to cooperate in this audit, it is unknown how the \$0.15/kWh savings figure was derived.

Total Annual Production and estimated savings from project inception:

Year	kWh	Estimated Savings
2011 (partial year)	9,090.31	\$1,363.55
2012	14,641.98	\$2,196.30
2013	12,232.56	\$1,834.88
2014	11,356.50	\$1,703.48
2015	11,822.29	\$1,773.34
2016 (through Apr.) *	3,092.55	\$463.88

\* Full year data is unavailable

Actual electricity production and savings figures for 2015 are represented in the following table. These figures were derived from electric bills charged to BLNC for 2015. The actual average cost per kWh was \$0.109, 27.3% less than the \$0.15/kWh estimated savings figure. In 2015, the solar panels generated 11.32% of the total kWh used, 24.5% less than the anticipated 15%.

One year is presented here; this analysis may yield different results if applied to multiple years. No information was provided by the Administration regarding actual production/savings figures.

2015	Total kWh	kWh Provided by Outside Suppliers	kWh Provided by Solar Panels	Total cost per kWh Outside Suppliers *	Actual Savings from Solar Power Generated	% of Total kWh provided by Solar Panels
15-Jan	9,132	9,085	47	\$ 0.117	\$5.50	0.51%
15-Feb	8,509	8,509	-	\$ 0.119	\$0.00	0.00%
15-Mar	8,709	8,656	53	\$ 0.118	\$6.25	0.61%
15-Apr	7,976	6,324	1,652	\$ 0.132	\$218.06	20.71%
15-May	8,551	7,118	1,433	\$ 0.127	\$181.99	16.76%
15-Jun	7,505	5,745	1,760	\$ 0.096	\$168.96	23.45%
15-Jul	7,571	5,537	2,034	\$ 0.115	\$233.91	26.87%
15-Aug	8,528	6,849	1,679	\$ 0.104	\$174.62	19.69%
15-Sep	9,386	7,991	1,395	\$ 0.136	\$189.72	14.86%
15-Oct	9,505	8,581	924	\$ 0.100	\$92.40	9.72%
15-Nov	9,722	9,146	576	\$ 0.069	\$39.74	5.92%
15-Dec	9,336	9,067	269	\$ 0.070	\$18.83	2.88%
Average	8,703	7,718	985	<b>\$ 0.109</b>		
<b>Total</b>	<b>104,430</b>	<b>92,608</b>	<b>11,822</b>		<b>\$1,329.99</b>	<b>11.32%</b>

\* Includes delivery and other costs as applicable

Committee meeting minutes from January 13, 2009 indicate the Legislature anticipated a payback period of approximately twenty-four (24) years. This was based upon an assumption of annual savings of \$1,650 per year and zero interest on the \$40,000 portion funded with Room Occupancy Tax. However, assuming a modest interest rate of 2.0%, it would take over thirty

years to pay back \$40,000 with an annual payment of \$1,650. Reimbursement to the taxpayers of the total cost of the project, \$102,406.80, at the assumed savings of \$1,650 per year would take in excess of sixty (60) years at zero percent interest. Using a modest interest rate of 2.0%, the project could never be repaid, as a \$1,650 annual payment is too low to accommodate even the interest portion of the payment. The Committee meeting minutes further indicate the useful life of the solar panels to be approximately 30 years.

**Based upon the above findings, the following is recommended:**

Further solar investment by the County should only be made with similar grants from outside agencies. Ultimately, even in such a situation, the taxpayers will still be making the total investment, it will just be a matter of from which pocket the money comes. The decision to use solar panels does not appear to make financial sense at this time. However, other considerations, such as the desire to use environmentally friendly sources of energy, are beyond the scope of this audit and this Department.

Additionally, standard accounting procedures should not be circumvented in an effort to secure funding. In the future, the Parks Department and County Administration should consult with the Comptroller's Office when irregular circumstances arise in order to ensure proper accounting for capital expenditures.

<p style="text-align: center;"><b>SECTION V MANAGEMENT RESPONSE</b></p>
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The administration has declined to participate in this audit by refusing to provide any information. The basis of this audit was through publicly available sources and information derived from the County accounting system.