

## Spring 2015 Campus Sustainability Fund Proposal

*Installation of a 12.24 kw Roof Mounted Solar Array on the Joan  
Weill Adirondack Library*

Project Leader:

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Co-Participants: Devon Tibbils, Curt Stager, Steve McFarland,

Amount Requested: \$32,900

## Goals and Objectives

Our project goal is to install a highly visible solar array on the south facing roof Joan Weill Adirondack Library.

### Project Objectives

1. The array will generate electricity from a renewable energy source offsetting the college's current electricity consumption with a clean energy source- contributing to the college's goal of reaching carbon neutrality.
2. Promoting solar energy development in the Adirondack Park.
3. Provide an educational tool for classes, students, and surrounding community.
4. Serve as a symbol of our college communities' commitment to renewable energy while also promoting about the option of solar energy in the Adirondack Park.

The proposed 12.24 kw grid-tied roof mounted solar array will consist of 48 (255 watt) solar panels which will generate an estimated 15,286 kWh of electricity annually. We are proposing to install a 12.24kw solar array, but the system will be designed to accommodate up to 50kw array in the future. The 50 kw array would consist of 195 (255 watt) panels with the potential of generating 63,200 kWh of electricity annually. The college currently uses on average 4,000,000 kwh of electricity; the 12.24 kw solar array will offset approximately .4% of the colleges electricity consumption. If we choose to build out the system to a full 50 kw array it will offset approximately 1.6% of our annual electricity consumption.

The on campus community will be able to observe the panels daily, and electricity generated can easily be viewed anywhere with internet access. The activity can be displayed on interactive monitors in the student center or in the library for all to see. The contracted technician Wayne Davidson, who would be installing the panels, has also agreed to come speak to a group of students to give an overview and to field questions about the projects. Once the installation is completed, we will be able to discuss the highlights and challenges in hindsight. All of this information together will be helpful for anyone considering solar power in the Adirondack Park. Paul Smith's College is committed to renewable energy development; the college is currently developing a proposal for a 1.5GW solar farm on Paul Smith's College land within the bounds of the Adirondack park.

## **Project Justification and Relevance**

Paul Smith's College is a signatory of the Colleges and Universities Presidents Climate Commitment, we are dedicated to reaching climate neutrality (Zero carbon Emissions) by 2029. Since 2007 we have taken several significant step towards this goal. These steps include the installation of 2 million dollars' worth of on campus energy efficiency projects, the installation of campus energy metering system, the building of several LEED certified Silver buildings, the establishment of a Campus Sustainability Office and Campus Sustainability Fund to support the development of sustainability projects and (most recently) the installation of the region's first wood pellet boiler district heating system (which will replace nearly 8000 gallons of fuel oil annually).

The installation of a pellet boiler is the first renewable energy project on campus; we see this as the first of many on our path to reducing our dependence on fuel oil to heat our on campus buildings. For the last two years we have been considering several renewable energy projects which would address the college's electricity needs. We have developed a proposal to build a 2GW solar farm on college property (not on main campus), and are currently seeking approval for this project. This large solar farm would be the first of its kind in the Adirondack Park. This project may take at least a year if not several to come to fruition. It is our hope that the construction and presence of the library solar system will benefit the larger solar farm plan by creating experience and support.

At Paul Smith's, a huge focus of the college's mission is to combine experiential learning with classroom instruction. Many of our classes and even some degree programs focus on or include the topic of renewable energy. Solar is widely discussed in the Alternative Energy and Sustainable Development classes, and the Environmental Chemistry class dedicates a week of class to a chapter on solar energy. The Environmental Sciences and Natural Resource Sustainability degrees both incorporate the topic heavily. So, construction of a solar panel array on campus would align with the goals and values of our institution, and provide a valuable educational tool for instructors.

As the college of the Adirondacks, we aim to be a source of knowledge and example not just for our students, but for the larger community as well. We are committed to the development of

localized renewable energy resources, and wish to encourage citizens of the park to do the same. By demonstrating our commitment with action in the development of several forms of renewable energy, we contribute to the strength of a movement and its associated knowledge base. By signing with a local contractor to perform the installation, we will be supporting the local industry that is needed to meet renewable energy goals.

## **Methods**

Steve McFarland, the VP for Capital Projects here at Paul Smith's College, will oversee the project and contract out the installation of the solar system to Northern Solar (Local company, information can be found at <http://www.go4solarnow.com/about%20us.html>). Northern Solar will organize the completion of the Structural Assessment and Certification of the Roof and contact National Grid. Northern Solar will also apply for the NYSERDA funds and, once approved, order supplies and install the system. Northern Solar will also ensure that the system is certified and the net meter is installed by National Grid.

The solar system will be tied into the flat panel screen in the Student Center with Solectria web based monitoring software. The Student Center flat panel is managed by Student Activities and they will be able to display real time energy information along with the regularly displayed campus announcements. Solectria software will also allow us to display the solar information on the college website. More information on the Solectria can be found here, <http://solectria.com/products/monitoring/solrenview/>

## Project Budget

Item	Cost
48 REC Group 255 watt photovoltaic modules	NS Quote
1 Solectria PVI 14TL string inverter with 10 year warranty	NS Quote
1 200 amp 3-phase AC solar combiner panel 3.65	NS Quote
1 single phase kwh meter	NS Quote
Electrical inspection and building permit	NS Quote
3 additional pairs of wire from the mechanical room to the roof junction box for future system expansion	NS Quote
All necessary labor, conduit, mounting hardware, wiring, and interconnection devices	NS Quote
Northern Solar System Quote	39,568.00
NYSERDA Grant	-\$8,568.00
Web-Based Monitoring Software	\$900.00
Structural assessment and certification of the roof	\$1,0000
<b>Total Cost:</b>	<b>\$32,900</b>
<b>Net Out-of-Pocket Cost:</b>	<b>\$32,900</b>

**\*NYSERDA application will be completed and submitted by Northern Solar**

**\*\*System installed will be able to support 250 REC Group 255 watt panels, which could be added as funds become available. Additional Panels would be added in groups of 12 at cost of \$9,100. (12 X 255 watt panel X \$3. per watt (roughly) \$9,180 increments.)**

## Timeline

**March:** VP of Capital Projects contracts with Northern Solar for project management and installation. Architect completes structural assessment and certification of roof.

**March/April:** Northern Solar will fill out NYSERDA application, and net metering agreement with National Grid (week 1). Wait for approval from NYSERDA (2-5 weeks).

**May 4th:** Once NYSEDA approves project, Campus Sustainability Office cuts Northern Solar a check for 60% deposit (\$18,600).

**May 8th:** Northern Solar orders materials. (2 weeks for materials to arrive).

**June 1st:** Installation begins (roughly a week to install).

**June 9th:** System will be inspected. Submit a letter to National Grid including the final electrical inspection certificate, and then

**June 20th:** National Grid has 10 days to install a “net meter”. Connect software to flat panel screen in the Student Center to display real time electricity generation. Campus Sustainability office cuts check for final payment to Northern Solar (\$13,400).

**June 22nd:** Activate the system!

## Supporting Documentation

### Appendix 1 : Northern Solar Project Quote

### Appendix2: Letter of Support from the Grounds Committee



Katharine Glenn  
Fri 3/6/2015 6:55 AM

← REPLY   ← REPLY ALL   → FORWARD   ...

Mark as unread

To: Sierra Doucette;

Sent from my Trail Phone

Begin forwarded message:

**From:** Steven McFarland <[smcfarland@paulsmiths.edu](mailto:smcfarland@paulsmiths.edu)>  
**Date:** March 5, 2015 at 5:01:21 PM EST  
**To:** Katharine Glenn <[kglenn@paulsmiths.edu](mailto:kglenn@paulsmiths.edu)>  
**Subject:** Library roof Solar Array

Kate,

As Chair of the Space Allocation Committee, I am happy to approve the installation of a solar array on our Library Roof pending a structural assessment to assure the additional load can be carried. This cost has been included in the budget.

Steven McFarland  
VP Capital Projects  
Paul Smiths College

**Appendix3:** <http://solectria.com/products/monitoring/solrenview/>