



University of Wisconsin Stevens Point

UWSP Solar Investment

2017

A summary of the preliminary roadmap designed for the University of Wisconsin Stevens Point for the incorporation of renewable energy onto campus. This summary is an introduction of priority sites on UW-Stevens Point campus that represent the most viable locations for PV array addition. This plan is intended to act as a tool for the University to reach its goal of carbon neutrality by 2050.

Executive Summary

The University of Wisconsin Stevens Point (UWSP) Solar Investment Plan Team is sponsored through a joint funded effort by the Career Ready Internship (CRI) program and Midwest Renewable Energy Association (MREA). A preliminary roadmap was designed for the UW-Stevens Point campus by a small team of individuals, which would be used as a tool for the campus to invest in large-scale solar energy on campus. The UWSP campus is on route to become carbon neutral by the year 2050, which this plan hopes to expedite and pose as a guide to acknowledge any concerns associated with PV installations. This executive summary will outline priority sites and provide details about these sites and how the university can implement such a system.

This project has enabled two students at the University of Wisconsin Stevens Point to work on this project, one acting as the Stakeholder and Policy Analyst and the other as the Solar Site and Financial Analyst. The Stakeholder and Campus Policy Intern researched and outlined the opportunities for UWSP photovoltaic (PV) investment based on identification and engagement of key campus stakeholders, regulatory (campus or other) barriers and opportunities, and campus financial opportunity. The Solar Site and Financial Analyst Intern would research and outline the opportunities for UW-Stevens Point solar photovoltaic investment based on descriptions of priority PV sites, campus electrical infrastructure and usage analyses, and project financial goals and analysis.

Throughout the course of the road map construction, the two acting interns met with the Vice Chancellor's and other executive stakeholders on campus. The interns met individually with each of these individuals, asking their opinion on campus PV installations, and to help provide any information on a variety of topics that pertained to their role on campus. These meetings were also used to identify any concerns they may have so that it could be addressed appropriately within the road map. After the conduction of these meetings, guidelines and restrictions for the UWSP campus were addressed to compile the best route for the University to take. After reviewing all of this information, we have determined five priority sites on campus. The five sites are as follows:

1. Nelson Hall
2. 601 Division Street
3. Hyer Hall
4. Schmeekle Parking Lot
5. Lot Q

Each of these sites were analyzed and ranked on the following factors:

1. Potential kWh generation
2. Site energy usage
3. Utility payment rates
4. Simple Payback in years
5. Percent of energy usage proposed generation would cover

Nelson Hall

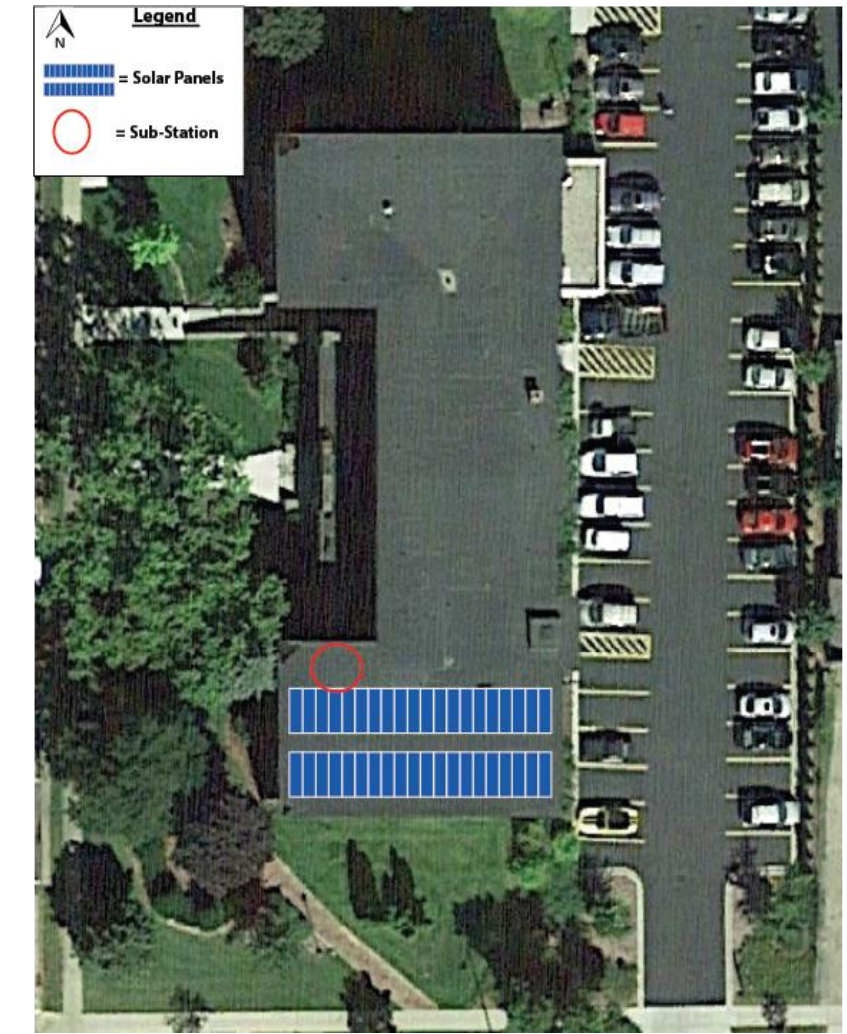


Figure 1: Proposed siting for 80 kW P.V. system on Nelson Hall

Mounting Style	Possible System DC (kW)	Possible Annual AC Energy kWh	Current Price per kWh	Annual Energy Used (kWh)	Suggested System Size (kW)	Percent Energy Covered	Initial Cost	Simple Payback
Roof	798	929,050	\$0.1081	91,714.00	80	96%	\$172,000	18.5

Simple payback with 30% Federal Tax Credit: 12.95 Years

601 Division Street

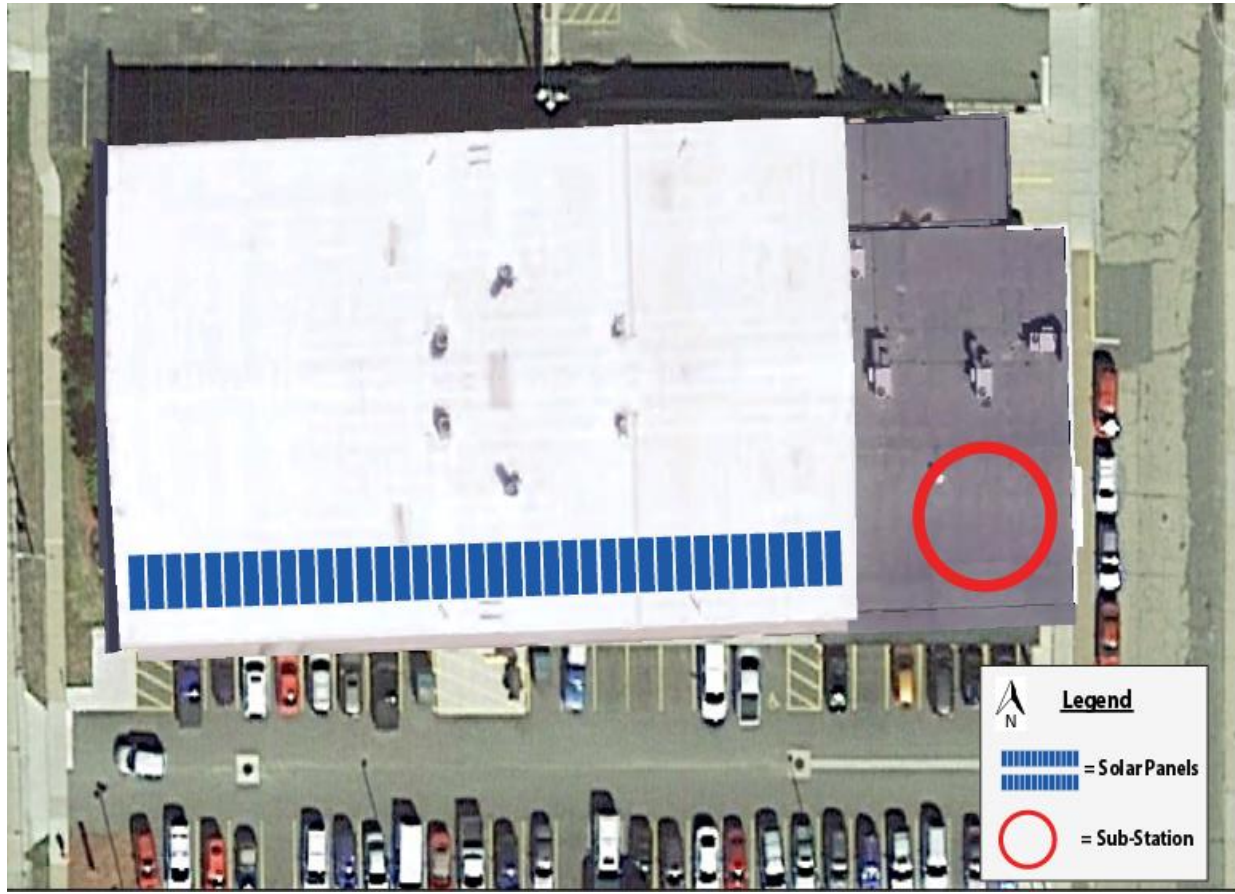


Figure 2: Proposed siting for 115 kW P.V. system on 601 Division

Mounting Style	Possible System DC (kW)	Possible Annual AC Energy kWh	Current Price per kWh	Annual Energy Used (kWh)	Suggested System Size (kW)	Percent Energy Covered	Initial Cost	Simple Payback
Roof	860	1,001,250	\$0.0974	186,436.85	115	66%	\$247,250	18.75

Simple payback with 30% Federal Tax Credit: 13.12 Years

Hyer Hall



Figure 3: Proposed siting for 100 kW P.V. system on Hyer Hall

Mounting Style	Possible System DC (kW)	Possible Annual AC Energy kWh	Current Price per kWh	Annual Energy Used (kWh)	Suggested System Size (kW)	Percent Energy Covered	Initial Cost	Simple Payback
Roof	561	653,130	\$0.0987	178,055.50	100	62%	\$215,000	18.9

Simple payback with 30% Federal Tax Credit: 13.23 Years

Schmeekle Parking Lot



Figure 4: Proposed siting for 55 kW P.V. system on Schmeekle Visitor Center Parking Lot

Mounting Style	Possible System DC (kW)	Possible Annual AC Energy kWh	Current Price per kWh	Annual Energy Used (kWh)	Suggested System Size (kW)	Percent Energy Covered	Initial Cost	Simple Payback
Stand-alone	138	160,663	\$0.1082	64,965.50	55	94%	\$118,250	18.26

Simple payback with 30% Federal Tax Credit: 12.78 Years

Lot Q

Figure 5: Proposed siting for 2417 kW P.V. system on Lot Q

Mounting Style	Possible System DC (kW)	Possible Annual AC Energy kWh	Current Price per kWh	Annual Energy Used (kWh)	Suggested System Size (kW)	Percent kWh Covered	Initial Cost	Simple Payback
Stand-alone	2417	2,803,823	\$0.0435	25,429,969	2417	11%	\$5,196,550	41.96

Simple payback with 30% Federal Tax Credit: 29.38 Years

The University of Wisconsin Stevens Point has a few options it can choose to finance the addition of solar onto its electrical grid. One of these options is through capital investment from the UW system budget. All capital investments would have to see a return on investment within 16.4 years. This return on investment period is mandated by the UW System Administration and the Board of Regents. Although this ROI time frame is only for capital investments, it was used as a benchmark for alternative financing proposals. However, due to capital budget funding restrictions and enrollment decreases, the best funding route would be through a power purchase agreement or solar lease and not capital investment. This option would allow the owner of the system, a third party, to take advantage of an increased number of rebates, tax breaks, and incentives which University would not be eligible for if it were to purchase the system. One significant incentive is a 30% federal business tax credit. This would work to help reduce the cost of the system, and through a solar lease, would also divert the maintenance of the system to the solar leasing company. With these cost reductions incorporated into the cost, many of the sites we evaluated have a ROI time closer to 13 years as represented below each table above.

Table 1: Simple Financial Payback (years) for Three Investment Scenarios

<u>Site</u>	<u>Direct Ownership</u>	<u>Third- Party/PPA</u>	<u>\$50,000 Grant/Rebate</u>
Nelson Hall	18.50	12.95	13.12
601 Division	18.75	13.12	14.96
Hyer Hall	18.90	13.23	14.51
Schmeekle Visitor Center	18.26	12.78	10.54
Lot Q	41.96	29.38	41.56

To avoid interconnection fees, all proposed systems are under the building's electrical usage. For all installations over 20 kW, which these are, the local utility is not required to reimburse the owner for electricity generated back to the grid. This is why we chose to avoid the corresponding fees in our system proposals because there would be no reimbursement for the excess energy generated to offset them.

The top five priority sites described above are the most suitable for a solar photovoltaic installation at this time. With all systems evaluated being on campus property, restrictions for implementation are minimized with the University having no current liens or property use agreements on the main campus property. These solar arrays would reap the most benefit in terms of solar production and ROI, being closest the required time frame of 16.4 years if University ownership was pursued, or being the most likely to be of interest if a third party operating lease is pursued. Utilizing a solar lease would allow the University to cut costs further, making this purchase more favorable, and is the method we suggest the University pursue if they are considering solar photovoltaics on the UWSP Campus. The financial arguments for a third party lease and the potential campus monetary and carbon savings strengthen the reasoning for the campus to switch towards renewables. Generated solar energy on campus will help add another dimension to the University of Wisconsin Stevens Point's agenda for being carbon neutral by 2050, give a unique visual and hands-on experience for students, and continue UWSP's standard of leading the UW System in its embodiment of sustainability.