

Converting The University of Winnipeg Bike Lab to an Off Grid Power System

A report submitted in partial fulfilment of the requirements for ENV-4614 Campus

Sustainability !

Department of Environmental Studies!

The University of Winnipeg!

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installation on The University of Winnipeg's campus. Although installing solar panels would be the end result I would hope for, that may not be realistic with the time of this course. The location for my solar study will be on the Bike Lab, as their main goal is to go off the grid. This project will also look into preliminary questions that will not be addressed in the feasibility study. I discussed with a local engineer consultant to learn about the costs the university wants to spend as well as the feasible side to the project. My project will also include some communicative and social learning opportunities for the Bike Lab's new location as well as its energy source.

Benefits and Downfalls

Installing an off grid system can result in many benefits. Economically, solar panels that are installed will eventually pay themselves off. This means that you will not have to monthly or annually be paying for energy or electricity because you're creating your own. This is called a payback period. With a simple equation you can derive your payback period. You take the total cost of the solar system, divided by the value of electricity generated, divided by the annual electricity used by the building or house, and then you have your payback period. It would be an easy way to discover the bike lab's payback period but, the lab is

not metered, therefore we do not know how much energy is being used per hour

use. We can do this with batteries that are going to be stored in the bike lab.

atoms in the semiconductor material. The electrical conductors that are attached

batteries that are storing energy are full? Evidently this power is going to be wasted, because there will be no more room to store it. There has been a question of whether or not the energy from the bike lab can be rerouted back into the grid to help power the university. This is a rather good idea but not feasible because of cost. This is not in the plan that the University of Winnipeg has for the future of the bike lab.

The university would like to look at installing solar panels on some of the main buildings in the future to create their own energy other than rerouting

They will generate around 10,000 kWh a year that will be directly fed into the grid without the use of batteries. The solar walkway will be powering the University's

university's budget for this specific project is \$35,000. This is around the price the

was hoping for would be for the photovoltaic panels to be installed, but the term is not long enough to see those kind of results happen. Although we are pleased to see the bike lab move to its new location.



Methods

Methods used for this project were staying in touch with the engineers that help make projects like these possible. Staying on top of what is happening with planning as well as doing research of my own. During this endeavour I had many different sources that I could rely on, Kyle Macdonald, was the engineer that I was in contact with. He answered many of my questions and was able to help my understanding of many different aspects of this project. Alana O'Malley and Alex

Wieb attended our classes to give positive feedback and constructive criticism.

All of these efforts were very helpful and useful, thank you to all who helped with this project. My main acknowledgement of course is to Alan for creating a fun, challenging new course and guiding us towards the finish line, as well as my classmates that had many helpful ideas and suggestions, thank you.

Next Steps

Next for the bike lab would be a detailed cost analysis, that would be feasible for the university. Then carrying on with Solar Solutions to create the perfect design for the roof of the bike lab and finally installing the solar panels.

of the bike lab going off grid. The University is becoming more sustainable every year and I am fortunate to research a small part of it. Thank you again to everyone that has helped with the process of all the Sustainable Campus Living students.

The University of Winnipeg is very interested in community learning and creating an educational aspect with many of their projects. In the University of Winnipeg Community Learning Policy, their purpose states, "To provide an institutional framework for the management and support of community learning activities, with a view to increase access to and participation in post-secondary education for those who are traditionally underrepresented in the University population, with a focus on Indigenous people and new Canadians."

For the bike lab I wanted to create a sign that can go up in front of it to explain the panels and why the university chose to do this project. It is important to include a community learning aspect so not only anyone interested in this project but people walking by can learn about it. The sign will be posted on the bike lab so people walking by can spot it and read about the bike lab photovoltaic project. I haauonnothoo72 (u) -0“() 0.2 (b) -0.2(y t) 0.2 (h)(u)(o) - 1 72 9r2 (t) 0.2 (a

Work Cited

Fisher, Gavin. "Thompson Rivers University Puts Energy into Solar Powered