

## **MSU Solar Power: A Step Towards a Brighter Future**

For a college that already bleeds green, Michigan State University in East Lansing is taking giant steps into becoming even more green. October 27, 2017 marked a milestone for progress as the college officially opened the largest solar carport array in North America. Consisting of nearly 40,000 panels and spanning 700,000 square feet, these carports cover a total of 5,000 parking spots across five lots in the southern part of campus.

Projects like this first began at MSU with the formulation of its Energy Transition Plan in 2012 that pledged to transition the campus to run on 100 percent renewable energy. The plan supports the university's vision to improve the environment on campus, invest in sustainable energy research, and contain energy costs. In 2014, MSU President Lou Anna Simon announced the university would stop using coal to supply its electricity needs by the end of 2016. Looking to fill the energy that coal once provided, the university began searching for greener energy sources that coincided with the university's energy transition plan. From there, the idea of solar energy emerged.

This project was first approved by the Board of Trustees on September 11, 2015 after a power purchase agreement for the project was made with Inovateus Solar, LLC, a solar-energy supplier in Indiana, and Alterra Power Corp, an independent power producer and renewable-energy developer in British Columbia, Canada. The partnership will allow MSU to purchase electricity produced from the solar arrays from Inovateus and Alterra at a fixed price for 25 years. MSU will also cover the cost of connecting the arrays to the university's power grid for about \$2.5 million. Project investors will pay all other construction and maintenance costs projected to be about \$20 million. In short, electricity harvested from these panels will be cheaper than electricity available elsewhere.

One of the most significant benefits comes from reducing the university's utility costs over time according to Wolfgang Bauer, a physics professor and senior consultant with the Office of the Executive Vice President. "One of the main concerns was that the cost would ultimately fall on the student and as a parent with kids in school, I'm glad to say it will not" Bauer said. The project is estimated to save the university about \$10 million in electricity costs over the next 25 years as a result and 18 percent of campus electrical power will be generated from the solar units. It saves cost by reducing demand for of purchased power and those savings could be used for other things, including improved instructional spaces or even paying for teaching assistants.

These Photovoltaic panels are some of the most advanced today and require no fuel and releases zero emissions, therefore one of the biggest environmental benefits is cleaner air due to the clean generation of electricity. Additionally, it is also easy to maintain because it has no moving parts and is useful during power outages. "We could have gone with non-commercial panels that were more absorbent of the sun's rays, but for the sake of durability, longevity, and price, we ultimately went with something that will serve best in the long run." Bauer said. With a decay rate of less than 0.7% each year that will retain more than 80% over 25 years, it is safe to say that they will be around for a while.

Besides the panels, the structures themselves provide additional benefits for people parking beneath them. Instead of excavating additional land to produce these structures, the college decided to utilize an area that is already used by students' cars every day. "The positioning of the panels and location of the structures were made with efficiency and weather in mind" Bauer said. "During the summer, these parking lots soak up direct sunlight all day long and protect the cars underneath from heating up too much." This means that the bays will collect between 10 and 11 megawatts of power during peak hours. "In the winter, the parked cars will be protected from snow and rain as the V-Shape will cause them to slide right off." Altogether, it's expected to save MSU from having to generate or purchase around 15,000-megawatt hours of electricity a year, which is between five and six percent of energy consumption on campus.

MSU's commitment to going green has proven that clean energy projects can indeed be done without sacrificing cost or energy production. While there are no further projects currently in the works, the university is now hosting meetings open to anyone who wishes to speak their minds and contribute ideas for future projects.

*Luke Sierras is a participant in the 2017 MCEF Fellowship Program. He is currently a student at Michigan State University.*