Solar Photovoltaic Roadmap

The Madison College Solar Roadmap was created through the College's participation in the Solar University Network funded by the U.S. Department of Energy SunShot Initiative. Over the course of several months in spring 2018, a team from Madison College participated in a course organized by the Midwest Renewable Energy Association to develop a campus solar roadmap. The course included teams from 14 colleges and universities across the country that worked together to explore and share best practices in solar planning and development. The course included subject matter expert instructors from the education, industry, and financial sectors. Numerous solar informational resources, research analyses, online tools, and case studies provided by government agencies, national laboratories, and other colleges were examined. The Madison College Solar Roadmap is a 60 page document that was produced as an outcome of that process, with the intention that it would be incorporated in the Madison College Facilities Master Plan, to guide solar projects to be completed over the next decade.

The Roadmap was authored by:
Steven Ansorge, Madison College Student Senate President
Tom Helbig, Madison College Electrician and Electrical Instructor
Wes Marquardt, Madison College Facilities Manager
Mark Thomas, Madison College Vice President and CFO
Ken Walz, Madison College STEM Instructor & Director of the CREATE Energy Center

Table of Contents

Madison College Solar PV Roadmap 2018

Overview and Executive Summary

Madison College has been a leader in sustainability and clean energy technology since 2002 when the college received its first National Science Foundation (NSF) grant in renewable energy. In 2008, the college became one of the early signers of the American College and University President's Climate Commitment, which set the school on a path for reducing energy consumption and shrinking the energy footprint of campus buildings. The college has offered coursework in solar photovoltaics for over a decade, and teaches technicians how to install solar systems at the Commercial Avenue Campus. In recent years, the college's leadership has been recognized as the home institution for the NSF funded Center for Renewable Energy Advanced Technological Education. In 2017, the college announced a major 1.85 MW solar development project for the Truax campus, creating the largest rooftop solar system in the state of Wisconsin.

The cost of solar technology has dropped dramatically over the past decade, with reductions of more than 60% for large systems. This presents Madison College with a once in a generation opportunity to transform the college's energy infrastructure, while also providing learning opportunities for students. The purchase of solar generation, allows the college to use existing capital funds to buy down ongoing operational costs; thereby easing future budget constraints. At the same time, solar generation allows the college to "lock-in" the cost of a portion of its electrical consumption, thereby acting as a hedge against future electric utility price increases.

Based on building energy consumption, utility rate structures, roof space analysis, and opportunities for student instruction, various campus sites were assessed for their solar potential The ranked prioritization for future solar development is as follows:

1. ***Truax Rooftop System (in progress to be completed Dec, 2018)***
2. ***Madison South Campus Rooftop System (in progress to be completed Sept, 2019)***
3. ***Protective Services and Health Education Rooftop Systems***
4. ***Commercial Avenue Campus – Instructional Systems***
5. ***Regional Campuses Rooftop or Ground Mounted Systems***
6. ***Truax Ground Mount or Parking Canopy Systems***
7. ***EVOC and/or Fall River Ground Mounted Instructional Systems***
8. ***Truax Energy Storage System***

Thanks to federal policy, it is possible for the college to develop solar resources without dedicating upfront capital funds by pairing with a third-party investor through a solar lease and buyback arrangement. The advantage to such contracts is that it allows an investor with tax liability to take advantage of federal incentives for solar energy. This model is explored in section 5 of this roadmap. The solar investment tax credit currently provides a 30% tax credit through 2019 on new solar systems. The credit will ratchet down to 26% in 2020, and 20% in 2021, before reaching its permanent target of 10% in 2022. Thus, a four-year window exists between now and 2021 to take advantage of Federal incentives for solar energy.