Renewable Development Fund
Project EP3-12

Milestones 3, 6, and 7 Report – 04/13/10

PUBLIC

Solarflow Energy

an effortless shift to solar

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Legal Notice

Project Title: A Solar Electric Solution for Residential Markets

Contract Number: EP3-12 Milestones: 3, 6, and 7 Report Date: 04/13/2010

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Congressional District for Corporate office: 5
Congressional Districts for Project location: Overall, across the Twin Cities, but for this installation corresponding to Milestone 3, 6 and 7 - Districts 5.

Executive Summary

The goal of this project, as stated in the proposal submitted on July 17, 2007, is “to demonstrate the commercial viability of providing solar-generated electricity to homes and small businesses based on a leasing and service package”. In addition, the "project will provide distribute residential solar energy through rooftop-mounted photovoltaic solar panels" and the importance of the project is to overcome pricing and capitalization barriers in this market, which have been documented to be the biggest obstacles to solar expansion.

The key objective of the project is to install 280 KW of solar capacity in approximately 30 to 40 sites distributed across the Twin Cities. The exact number of installation sites will depend on the actual number of panels in each site.

The delivery of 280 KW will be grouped into 15 milestones, with the third, sixth, and seventh milestones requiring the installation of 28KW.

The rest of this report will be dedicated to describe the technical details, what went well, what did not, lessons learned, etc.

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As a reference to the reader, the installed capacity was 39.15KW in Minneapolis, which was our first commercial installation in this project. This 174-panel commercial installation now features the largest solar photovoltaic system in the cities of Minneapolis and St. Paul, drawing the attention of prominent Minnesotans such as U.S. Senator Al Franken (Reference Appendix B for press releases). This solar system will generate a forecasted 45,211 kilowatts of electricity every year which means it will supply about 30% of the electricity used for this commercial business. It is expected to save this business between $20,000-$40,000 during the 18 years of the lease, depending on future electrical rate increases.

Technical Progress

From a technical perspective, the installation was successful with no major issues. As stated in previous reports, the process begins with permit requests and equipment ordering, in particular, building permits from each City, electrical permits from the State and submittal of Xcel Interconnection Agreement. On installation day, the process entails racking and ballasting, installation of micro-inverters and panels and electrical conduits/circuits to the business´ electrical service. After installation, inspections were conducted and an Xcel Area Engineer was scheduled for testing and commissioning. All inspections were conducted successfully and the resulting signed documents from Xcel are enclosed to this report in Appendix A (confidential information, given that it includes customer data).

The system is fully monitored with the Enphase Enlighten systems. For a real time view, please click on the following link. Please note the panel-by-panel electricity generation display and the buttons for 'Time-lapse: Today's Power/Power Last 7 days", which are particularly insightful: http://enlighten.enphaseenergy.com/installer_systems/590/freEner-g

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Project Benefits

Project benefits are:

1. Demonstration of the viability of 'solar-as-a-service'
2. Delivery of 280KW of generating capacity, which will count towards the Xcel Energy goal for Renewable Energy Standard
3. Green job generation
4. Generation of clean electricity for a minimum of 15 years

Given that 62.1 KW out of a total 280 KW have been delivered so far, project benefits have already been achieved in part. In particular, demonstration of the viability of solar as a service has now been done for both residential and commercial customers. In addition, a little over 22% of the solar generating capacity has been delivered.

Project Findings – what went well and what to improve on

As we started the solar PV installation phase, the following went well:

- Prefabricating the modules greatly increased our efficiency in the field, in particular, the assembly of micro-inverters to every panel, which was done in our warehouse.
- The Panel Claw wind deflector offers better wire management than other flat roof racking systems.
- Larger installations dramatically decrease the labor hours/installed watt when compared to residential installations.
- Flat roofs are simpler and safer to install than pitched roofs.
- Issues with laying out the arrays are magnified when dealing with installations of this size - small inaccuracies in site measurements turn into bigger issues that require on-site correction and additional labor cost.

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Appendix A – Xcel Energy signed Interconnection Agreements- DELETED DUE TO CONFIDENTIAL INFORMATION

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Appendix B- Press Releases For First Commercial Installation

Source: Southwest-Calhoun KSTP.COM

Auto body shop on Nicollet installs largest solar array in Mpls-St. Paul

Written by Gail Brown

Published Wed, Apr 14 2010

U.S. Senator Al Franken with Owner Pat Mulroy and his grandkids on the roof of the auto body shop.

An auto body shop on Nicollet Avenue in Minneapolis now features the largest solar installation in Mpls.-St. Paul, and its drawing the attention of Minnesota politicians. The 174-panel, 40-kilowatt solar display was just completed on the roof of Mulroy's Auto Body Shop at 3920 Nicollet. And owner Pat Mulroy says they're just about ready to throw the switch to turn it on.

The solar panels were installed over the past three weeks by Solarflow Energy, a Minneapolis company, and funded in part by stimulus dollars--the U.S. American Recovery and Reinvestment Act, and a grant from Xcel Energy's Renewable Development Fund. Mulroy says he was thrilled to show off the solar array on the roof of his shop to U.S. Senator Al Franken last

week. He plans to set up a time for neighbors in the area to tour it as well, because he says there's been quite a bit of interest.

According to Solarflow's fact sheet, the solar system will generate a forecasted 45,211 kilowatts of electricity every year...which means it will supply about 30% of the electricity used at Mulroy's.

Pat Mulroy says he discovered it was more affordable to lease the $285,000 equipment than to own it. He'll pay $470 a month the first year and the price will be adjusted for the initial three years to make sure the cost remains below the value of the electricity offset by solar. It's expected to save Mulroy's Auto Body Shop between $20,000-$40,000 during the 18 years of the lease, depending of course on future electrical rates.

"We would like to be on the leading edge rather than following everybody," said Pat Mulroy. He says he tries to make sure his business is environmentally sensitive. For example, six years ago, when the shop moved to its present location at 3920 Nicollet, his workers started using water-based paint.

Mulroy's Auto Body Shop will celebrate its 50th year in business this July. His dad started the business in 1960 at 8 West 43rd Street.

You can see how much electricity Mulroy's solar system generates... check out this web site after April 23rd. Click here for more information about Solarflow Energy.

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Stimulus dollars at work: Al Franken tours Minneapolis solar-energy installation

Written by Brad Allen from MinnPost

Published Thu, Apr 8 2010

MinnPost photo by Brad Allen
Sen. Franken inspects the solar panels installed on the roof of Mulroy's Body Shop.

Pat Mulroy said he's doing it "for the grandkids," when asked why he decided to have 174 solar panels installed on the roof of his Nicollet Avenue body shop in South Minneapolis, a business that's been in the family for 50 years.

Minnesota's U.S. Sen. Al Franken had a slightly longer time horizon in mind as he joked with the proprietor, asking him if Mulroy's Body Shop will be around for 2 billion years, or "as long as the sun is still shining." Franken visited the body shop Wednesday to highlight the use of federal stimulus funds in creating jobs and boosting the alternative energy economy.

Minneapolis-based Solarflow Energy installed the system and is leasing the equipment to Mulroy's under contract with Xcel Energy. The lease agreement also includes installation, maintenance and support. The federal stimulus funds deliver a grant-in-lieu of a 30 percent tax credit on the value of the installation to Solarflow, Franken pointed out.

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While unwilling to specify the amount of stimulus funding he is receiving, Solarflow Energy CEO and founder Gerardo Ruiz said the system installed at Mulroy's would cost about $300,000 to purchase.

The system will produce up to 40 kilowatts of electricity, or about 30 percent of Mulroy's electrical requirements. The system can produce up to 50,000 kilowatt hours a year, depending on how much sunlight is available. Excess electricity produced when the body shop is not using power will be returned to the Xcel Energy grid and used by other customers, Ruiz explained.

"This is our first commercial install, and it's pretty exciting because... it's the largest one we've done so far," Ruiz said.

MinnPost photo by Brad Allen
Sen. Franken speaks with the head of Solarflow Energy, Gerardo Ruiz, as Minneapolis City Council Member Elizabeth Glidden looks on.

Ruiz worked as a supplier to the electric utility industry before founding Solarflow in 2008. The start-up was partially funded through an Xcel Energy Renewable Development Fund grant of $1.5 million. With six full-time and eight part-time employees, the company has installed six residential solar-powered generating units for Xcel and has plans to install equipment at 25 to 30 residential and commercial sites in the metro area this year.

Ruiz, who was born in Spain, has lived in Minnesota for three decades and hopes to accelerate the awareness and adoption of clean energy in the United States, which lags behind such countries as his homeland in the use of solar energy, he said. "We are truly where the IBM PC was in 1985," he observed.

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After the system's benefits and funding were discussed in the body shop, Franken and a couple of dozen guests and onlookers headed to the roof to inspect the 5-foot-by-3-foot solar panels. A battery-powered hydraulic lift carried the senator to the roof, but as if scripted to highlight the unreliability of traditional energy sources, the battery died once he had ascended. After the rooftop inspection tour, the senator gamely descended the old-fashioned way, by ladder.

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Mulroy's Body Shop goes solar

Written by Jake Weyer, Southwest Journal

March 22, 2010

Mulroy's Body Shop at 3920 Nicollet Ave. will be getting roughly 30 percent of its power from the sun starting this spring.

The shop is the first commercial property taking part in a solar-energy project run by south-Minneapolis-based freEner-g, which offers solar electricity leasing. The company is under contract with Xcel Energy for the project, which involves installing solar panels on 20 residential and five commercial properties in the metro. It is also partialy funded through an Xcel Energy Renewable Development Fund grant.

Pat Mulroy, owner and namesake of Mulroy's Body Shop, agreed to have his facility fitted with 174 five-foot-by-three-foot solar panels. They were delivered this month and will be installed soon.

"This is our first commercial install and it's pretty exciting because it's almost 40 kilowatts of capacity, so it's the largest one we've done so far," said freEner-g CEO Gerardo Ruiz.

Ruiz said the panels are leased at a cost that is less than the value of the electricity being delivered, which Mulroy gets at no additional cost. The lease agreement also includes installation, maintenance and support.

"We're trying to prove the model of solar service in Xcel territory," Ruiz said.

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