DEED Student Research Grant Summary Abstract

Project Title: Commercial Photovoltaic Generator Demonstration Project

Project Start: January 2009 Project Finish: November 2009

Project Purpose: A small photovoltaic (PV) generator was designed to give Georgetown Utility Systems (GUS) knowledge of modern PV technology. Designing and building this PV generator will also provide GUS with the opportunity to examine how PV generators could benefit GUS by reducing dependence upon carbon based fuel sources and diversifying their energy portfolio.

Project Participants:

Georgetown Utility Systems: 300 Industrial Avenue, Georgetown, Texas, 78626 Texas Life Sciences Collaboration Center: 111 Cooperative Way, Suite 200, Georgetown, TX 78626 Georgetown Rail Equipment: 111 Cooperative Way Suite 100 Georgetown, TX 78626

Educational Institute:

The University of Texas at Austin: 405 W 25th St # 301, Austin, TX 78705

Problem Statement, Description and Results:

Georgetown, Texas is a rapidly growing city with changing electrical needs. Georgetown Utility Systems (GUS) owns and manages the electric lines in Georgetown. A small photovoltaic (PV) system will be designed and built in order to investigate the possibility of reducing GUS's exposure to market power prices and increasing the diversity of GUS's energy portfolio. This task will be completed by reviewing available PV technology and costs, determining the proper orientation and spacing of the PV array, contracting with local electrical service providers to install the PV array, and monitoring the power output from the array.

At the time of writing this project is generating power and has given GUS good experience with designing and installing PV arrays. This knowledge will provide GUS with the ability to create an appropriate billing structure for GUS customers who are building PV arrays. This knowledge will also provide GUS with the ability to manage the installation of larger PV arrays, which will in time diversify GUS's energy portfolio and reduce their exposure to market power costs.

Personnel:

Jim Briggs, Assistant City Manager of Utility Operations, jhb@georgetowntx.org, (512) 930-3889. Mr. Briggs was the primary source of leadership within GUS, and this project was conducted with his oversight.

Page 1 of 2

Kenneth Arnold, Energy Services Director of GUS, karnold@georgetowntx.org, (512) 930-2577. Ken was GUS's primary operational representative.

Walter Koopman, Wireless Information Services Manager, wkoopmann@georgetowntx.org, (512) 930-2580. Walter was the project manager for GUS.

Steve Glenn, Transmission Engineer for GUS, sglenn@georgetowntx.org, (512) 930-6116. Steve provided engineering oversight during the design of this solar generator.

Bob Warde, Automatic Meter Reader Technician, Coordinated the installation of the racking, micro inverters, and PV panels. The installation was performed by Bob Warde, and GUS line crew and Automatic Meter Reader (AMR) personnel.

Russ Peterman, Peterman Consulting Associated LCC, executivedirector@texaslifesciences.com, (512) 248-2171. Russ was involved with this project as an outside consultant providing management services. Russ is also the Executive Director of TLCC.

Steve Orrell, Chairman of GREX, orrell@georgetownrail.com, (512) 413-5787. GREX is also the land lord of TLCC.

Ned Snead, Founder of GREX. Mr. Snead conceived this project over 10 years ago.

Bill Stump, PE, Sole Proprietor of Stump Properties, wrstump@gmail.com, (512) 869-9928. Mr. Stump answered David Stump's numerous technical and non-technical questions.

Dr. Mary Jo Kirisits, Assistant Professor at the University of Texas at Austin, Mary.Kirisits@engr.utexas.edu – Dr. Kirisits represents the University of Texas at Austin in this project, and oversaw David Stump's work so that he could obtain class credit for this project.

David Stump, Senior at the University of Texas at Austin, majoring in Civil Engineering, davidwstump@gmail.com, (860) 420-7151. David was brought onto this project through a student grant given by the American Public Power Association.

Project Subject Areas:

Photovoltaics, PV, solar power, grid connected, generator, generation, orientation, engineering, shading, design, small, review, utility, peak loading, peak load, peak demand, renewable energy, commercial project, space efficiency, billing structures, net metering, diverse, diversified portfolio, central inverters, micro inverters, micro-inverters, sunlight, direct current, alternating current, phase, phases, DC, AC, kilowatt, megawatt, kW, mW, kilowatt hours, megawatt hours, kWh, mWh, PV Watts, calculator, roof mounted