

Overcoming Structural Engineering Barriers to PV Permits and Installations

Stephen F Dwyer, PhD, PE¹

Elizabeth Richards, PhD¹

Tom Bosiljevac, PE²

Kay Schindel³

Alan Harper⁴

The Solar America Cities (SAC) program is a partnership between the U.S. Department of Energy (DOE) and a select group of cities across the country that have committed to accelerating the adoption of solar energy technologies at the local level. Twenty-five major U.S. cities were competitively selected and are working with the DOE and National Laboratories to accelerate the adoption of solar energy technologies. The SAC program is working in partnership with these cities to break down barriers to the use of solar technologies, with the goal of making solar energy cost competitive with conventional energy sources by 2015.

One identified market barrier to new solar installations involves structural considerations in adhering to local building codes and in the construction permitting process, primarily related to loads generated on roof systems. There are two primary issues: One is the extra time and expense required when a Professional Engineer must be involved in simple and routine installations. The other is ensuring that structural integrity of buildings and roofs is not compromised as a result of an installation, as well as ensuring structural integrity of the solar system itself when subjected to extreme weather conditions.

This paper describes a process developed to overcome this barrier. Initially focused on the City of Madison, Wisconsin, the process makes use of simplified structural engineering methods and installation recommendations. Sandia National Laboratory personnel along with the City of Madison personnel involved in the permit process and industry stakeholders have developed a structural guidance and training workshop for the design and installation of PV installations geared for solar installers. The Madison process is now being adapted to provide structural guidance for national use to overcome barriers imposed by differing codes and permitting agencies while educating installers on the optimization of the structural installation of PV systems.

¹ Principal Member of Technical Staff, Sandia National laboratories, Albuquerque, NM

² Senior Member of Technical Staff, Sandia National laboratories, Albuquerque, NM

³ Engineer, City of Madison, Madison, WI

⁴ Plan Review Specialist III, City of Madison, Madison, WI