



## ***Utility Solar Water Heating Initiative***

3236 Alcor Trail  
De Pere, WI 54115

July 18, 2008

Mr. Mark Futrell  
Florida Public Service Commission  
2540 Shumard Oak Blvd.  
Tallahassee, FL 32399-0850

Dear Mr. Futrell:

The Utility Solar Water Heating Initiative, USH<sub>2</sub>O, is pleased to submit comments regarding Florida's proposed Renewable Portfolio Standard.

USH<sub>2</sub>O is a coalition of utilities and the solar thermal industry that focuses on implementing cost-effective, reliable solar thermal solutions for utilities and their customers. Our 180 members include several Florida utilities and solar thermal businesses. USH<sub>2</sub>O utility members manage the largest and longest-running utility SWH programs in the United States. These programs demonstrate SWH's reliability and cost-effectiveness, especially in Florida. Likewise, USH<sub>2</sub>O's industry members supply nearly all the SWH equipment being installed today.

The following Florida utilities have participated in USH<sub>2</sub>O in recent years:

- Lakeland Electric
- Gainesville Regional Utilities
- Tallahassee utilities
- Orlando Utilities Commission
- Keys Energy Services
- JEA
- Progress Energy Florida
- The Southern Company

Based on USH<sub>2</sub>O's experience and expertise, we strongly support the effort to expand Florida's renewable energy market. Most important, USH<sub>2</sub>O feels it is critical to include solar water heating as an eligible technology in Florida's RPS program.

USH<sub>2</sub>O's comments focus on five aspects of solar water heating related to Florida's RPS: 1) Status of the solar thermal industry and equipment reliability, 2) Impact of SWH on the utility system, 3) SWH's relative cost compared to other renewable energy sources, 4) Utility experience with solar water heating, and 5) RPS in other states.

### **Status Of The Solar Thermal Industry And Equipment Reliability**

SWH is a well-established, effective, pollution-free technology. An estimated one million residential and 200,000 commercial SWH systems have been installed in the United States. The U.S. solar thermal industry, though small, is stable and poised for growth. There are currently about ten U.S. manufacturers of solar thermal equipment, and they offer commercialized, off-the-shelf SWH systems. In active markets there is a network of qualified installers and service personnel, and in less mature markets, plumbing contractors often have experience with installation and service.

In the 21<sup>st</sup> century, SWH equipment is better than ever. Systems are durable and require little maintenance. Solar water heating collectors are constructed of long-lived materials: aluminum, copper and glass. Other components such as pumps, heat exchangers and controllers, are also long-lasting and can be easily repaired or replaced. Efficient design of solar thermal collectors and systems translates to high efficiency. Today's SWH collectors convert 50% of the annual incident sunlight to useful heat. Annually, SWH can meet 80% of a Florida homeowner's water heating needs.

The solar thermal industry has also developed standards for equipment and installation to ensure high quality and many years of problem-free performance. The Solar Rating and Certification Corporation (SRCC, [www.solar-rating.org](http://www.solar-rating.org)), based at the Florida Solar Energy Center, performs rigorous independent testing of SWH collectors and systems and publishes performance ratings of each manufacturer's equipment. On the installation side, the North American Board of Certified Energy Practitioners (NABCEP, [www.nabcep.org](http://www.nabcep.org)) provides certification for contractors and has established standardized requirements for training and experience. In addition, Florida has a dedicated solar contractors licensing classification.

### **Impact of SWH on the Utility System**

The net impact of a solar water heater on the electrical grid, when offsetting the consumption of electricity, is virtually indistinguishable from that of a renewable distributed resource that generates electricity. Identical environmental benefits accrue, and, like other distributed resources, the energy is produced and used at the site, thereby avoiding transmission and distribution losses.

The energy savings of SWH can be measured using off-the-shelf metering. This can be a useful aspect of a successful RPS program. As described below, Lakeland Electric in Polk County has a successful SWH program based on metering and selling solar-heated water to its customers.

Besides reducing the consumption of conventional energy, solar water heaters also reduce electrical demand. At Hawaiian Electric Company, for example, over 20 MW of demand

have been offset with solar water heating. Calculation methods are available to quantify this impact.

When solar offsets the combustion of natural gas, SWH also adds value, particularly in residential new construction applications. The environmental advantages of SWH, including avoidance of nitrous oxides and carbon dioxide emissions, are substantial. In addition, SWH can provide a significant hedge against natural gas price volatility and help reduce consumption of a resource that is becoming increasingly used for the generation of electricity.

### **SWH's Relative Cost**

SWH's costs are competitive with other renewable resources such as biomass and especially with solar-electric technologies. See table below.

<b>Plant Type</b>	<b>Levelized Energy Production Cost, cents/kilowatt-hour</b>
Solar Water Heating <sup>1</sup>	4.0 – 8.0
Solar Photovoltaic <sup>2</sup>	13.0 – 32.0
Municipal Solid Waste <sup>3</sup>	3.5 – 15.3
Biomass (direct combustion) <sup>3</sup>	6.3 – 11.0
Landfill Gas <sup>3</sup>	2.4 – 6.3
Wind <sup>4</sup>	3.0 – 6.5

<sup>1</sup>Analyses from Hawaiian Electric Companies, Eugene Water and Electric Board and Wisconsin Public Service Corporation

<sup>2</sup>U.S. Department of Energy, Solar Energy Industry Forecast: Perspectives on U.S. Solar Market Trajectory, 2008.

<sup>3</sup>Florida Public Service Commission and the Department of Environmental Protection, An Assessment of Renewable Electric Generating Technologies for Florida, January 2003.

<sup>4</sup>U.S. Department of Energy, Annual Report of Wind Power Installation, Cost and Performance Trends: 2007, 2008.

### **Utility Experience With Solar Water Heating**

Many utilities have productive SWH programs. Consider these three current success stories:

- **Hawaiian Electric Company**: Through this investor-owned utility, 34,000 SWH systems have been installed from 1996 through 2006, with 20% market penetration. The systems have provided a total demand savings of 19 MW and energy savings of 84 million kilowatt-hours. The local solar industry consists of over 65 businesses with 450 direct employees, and the utility has paid \$30 million in incentives over the ten-year period.
- **Eugene (Oregon) Water & Electric Board**: A municipal utility, EWEB has supported the installation of 1,000 SWH systems since 1984. The utility's program, named the *Bright Way to Heat Water*<sup>TM</sup> has been adopted by at least nine other utilities in Pacific Northwest through partnership with Bonneville Power Administration.

- Lakeland (Florida) Electric: LE is the nation's first utility to sell a metered SWH service to its customers. The solar water heaters are installed on residential customers' homes. LE owns the equipment and customers purchase solar-heated water at competitive rates. Comparing the cost of solar to combined-cycle power plants shows that solar is comparable in terms of generation capacity and less in terms of energy.

### **RPS in Other States**

The proposed Florida RPS program recognizes the special role that solar energy will play in creating a sustainable energy future. USH<sub>2</sub>O believes the Florida PSC should add SWH to the list of eligible solar technologies in view of the fact that it is the lowest cost solar technology available today and competes well with the other renewable technologies.

Several states recognize that "generation offset" technologies deserve a seat at the renewable table. Nevada's RPS, for example, includes a five percent set-aside for solar. Nevada's regulations, NRS 704.7815, § 2 (2), defines "renewable energy system" to include "a solar thermal energy system that reduces the consumption of electricity." Ten other states also include SWH in their RPS: Hawaii, Pennsylvania, Arizona, Texas, Vermont, Delaware, Ohio, Illinois, New Hampshire and North Carolina. SWH is cost-effective across the U.S. and particularly in states such as Florida that have mild climates and abundant sunshine.

Based on this and similar evidence, it is clear that solar water heating can play a productive role in meeting the renewable energy goals of Florida. We encourage the Florida PSC to adopt and support this approach in any future analyses. USH<sub>2</sub>O can provide further information about solar water heating and would welcome a response to these issues and the opportunity for discussion.

Sincerely,



Chip Bircher  
USH<sub>2</sub>O Coordinator

cc: Dillon Daniels, President, Florida Solar Energy Industries Association  
Colleen Kettles, Executive Director, Florida Solar Energy Research and Education Foundation