

Utility Adoption of Solar Hot Water

**2007 Solar Hot Water
Strategic Planning Meeting
September 26, 2007
Long Beach, California**

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Lakeland Electric**

Utility Portrait

- Florida's 3rd largest municipal utility
- 120,000 metered customers
- Inland, non-resort community
- 12,000 snowbird accounts
- All electric housing stock
- Winter peak @ 745 MW
- Metered solar water heaters
- Net-metered & utility-owned PV

Cost-Effective Solar Water Heating Program

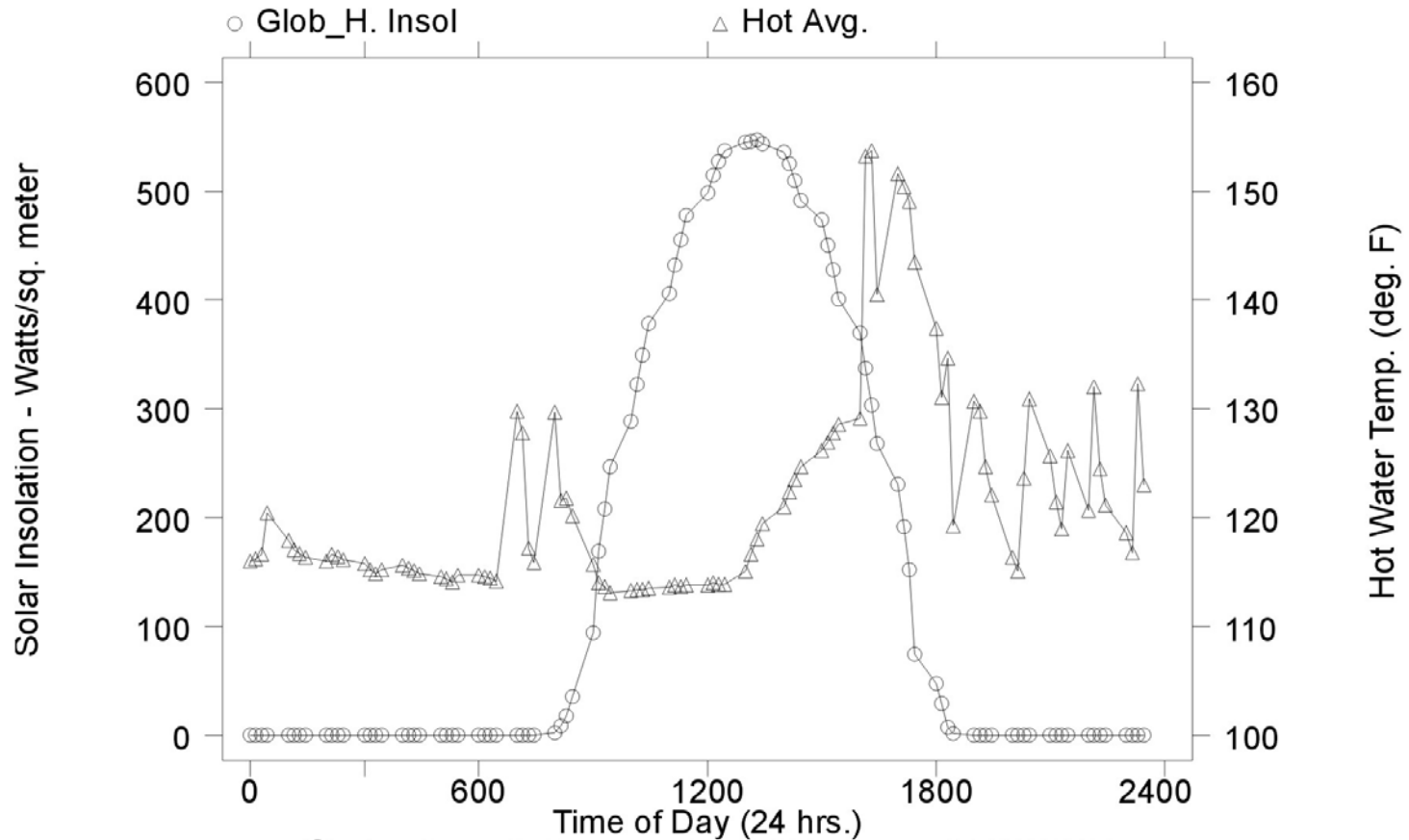
Original Goals:

- Accurate metering of thermal energy
- Profitable sale of solar energy
- Demonstrate SHW as DG
- Utilize SHW as “supply side” device
- Provide green energy option to customers
- Produce & sell SREC's
- Can solar thermal KWh compete with fossil fuel KWh ?





Daily SHW Consumption



Solar Insolation vs Hot Water - 11/28/98

Thermal Metering System

- Hot Temp Probe
- Cold Temp Probe
- 1 Pulse/Liter Input
- Captures BTU's
- Displays KWH's



SHW Monthly Bill



Service Location:
2642 HIGHLANDS VUE PY
LAKELAND, FL 33813

Billing Date: 04/07/05⁰
Page: 1
Account No.: 3247313

Payment History

Previous Balance.....	\$	140.71
Payments.....	\$	140.71-
Credits.....	\$	0.00

Current Charge Summary

Electric Service	\$	143.50
(Includes Fuel Charge of \$60.79)		
Solar Hot Water Program	\$	32.51
Water Service	\$	35.42
TOTAL CURRENT CHARGES.....	\$	211.43

TOTAL AMOUNT SUBJECT TO PENALTY AFTER 05/02/05..... \$ 211.43

All charges above include all taxes.

Key Program Features

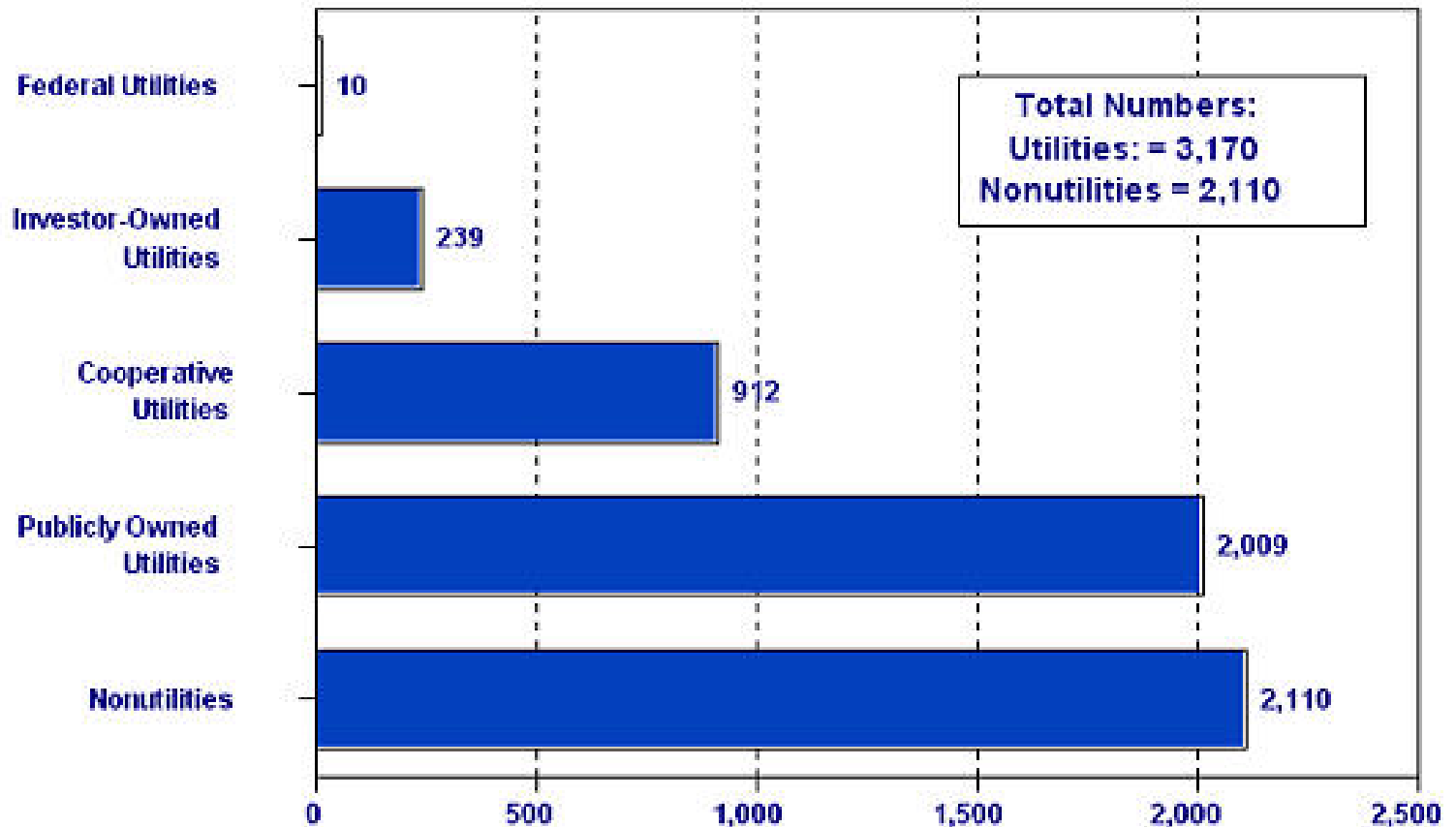
- Metered solar thermal energy
- Utility-owned
- Residential only
- Separate line item on monthly bill
- Offer energy price stability
- *Newest form of energy generation*

Benefits to Customer

- No investment risk
- Increased DHW volume
- Brand new water heater
- Cost savings of stand-by heating
- No maintenance costs
- Hedge against future price increases
- Non-business reason: green choice

Electric Utility Breakdown

Figure 1. Composition of the Electric Power Industry in the United States, 1998



Utility Support for SHW

- **3170 electric utilities (2009 municipal)**
- **2000 gas utilities (1000 municipal)**

- **29 participating utilities nationwide:**
 - 28 electric**
 - 1 gas-only utility**

Arizona Public Service	IOU	Electric	Rebate	\$0.50/kWh
Salt River Project	Municipal	Electric	Rebate	\$0.50/kWh
Redding Electric	Municipal	Electric	Rebate	\$/Panel (tiered)
SMUD	Municipal	Electric	Rebate	\$1,500
Delmarva P&L	IOU	Electric	Rebate	50% up to \$3000
JEA	Municipal	Electric	Rebate	\$400 - \$800
Gainesville Regional Utilities	Municipal	Electric	Rebate	\$500
Progress Energy Florida	IOU	Electric	Rebate	\$450
Tallahassee Utilities	Municipal	Electric	Rebate	\$500
Lakeland Electric	Municipal	Electric	Fee for Service	Metered Energy Sales
HECO	IOU	Electric	Rebate	\$1,000
MECO	IOU	Electric	Rebate	\$1,000
HELCO	IOU	Electric	Rebate	\$1,000
KeySpan Energy	IOU	Gas	Rebate	\$1,500
Columbia Water & Light	Municipal	Electric	Rebate	\$400 - \$800
Ashland Electric Utility	Municipal	Electric	Rebate	\$0.40 up to \$1000
Central Electric Coop	Coop	Electric	Rebate	\$375 - \$500
Douglas Electric Coop	Coop	Electric	Rebate	\$500
Consumers Power, Inc.	Coop	Electric	Rebate	\$500
EWEB	Municipal	Electric	Rebate	\$600
Emerald PUD	PUD	Electric	Rebate	\$600
Salem Electric	Coop	Electric	Rebate	\$600
Austin Energy	Municipal	Electric	Rebate	\$0.25/kWh
Clallam County PUD	PUD	Electric	Rebate	\$500/40 sq ft
Clark Public Utilities	PUD	Electric	Rebate	\$2,000
Franklin County PUD	PUD	Electric	Rebate	\$500/40 sq ft
Grays Harbor PUD	PUD	Electric	Rebate	\$600
Port Angeles Utilities	Municipal	Electric	Rebate	\$500/39 sq ft
Wisconsin Public Power, Inc.	Municipal	Electric	Rebate	\$25-\$30/sq ft

Utilities Interested in the Lakeland Model

- Redding Electric
- Progress Energy Florida
- Duke Energy
- Southern Company
- Tallahassee Utilities
- Florida Power & Light
- Enbridge
- Tucson Electric Power

Progress Energy Florida: Request For Quote – June, 2007

- “This project proposes to develop a program to install solar thermal water heating systems located on our customer’s roofs. The solar thermal system will be wholly owned by Progress Energy. The output of these systems will be sold to the customer in units of thermal energy (kWh).”

Barriers

- Risk of Ownership
- Fear of Ownership

Decision Not to Proceed...

- Based on gut feeling
- Unsubstantiated decision

Risks of Ownership

- **Technology risk**
- **Investment risk**
- **Maintenance uncertainty**
- **Market penetration risk**
- **Weather-related risks**
- **Secondary property damage**
- **Insurability**
- **Risk of losing title**

Laying Down the Challenge

Provide funding that will pay for a highly credible, in-depth nationwide risk assessment study that will be widely available to all members of the residential, commercial and utility communities.