

Wisconsin's Solar Hot Water Market

Kari Heinrich
Focus on Energy
May 21, 2010

Focus on Energy

- Wisconsin's statewide energy efficiency and renewable energy program
- Helps eligible residents and businesses save energy and money by making smart energy choices
- Offers information, training, technical assistance, and financial incentives

Focus Solar Hot Water Target Markets

- Domestic hot water and public pool heating
- Residential
 - promote energy efficiency first
- Commercial: high-end users
 - Hospitality – hotels and resorts
 - Health care – hospitals, nursing homes, and athletic industries
 - Food – restaurants and processing
 - Municipalities – largely fire stations
 - Social organizations – nonprofits, schools, and nature centers

Trends: Solar Water Heating in Wisconsin

- 80 installers
- 1 panel manufacturer (Bubbling Springs)
- 1 control manufacturer (IMC Instruments)
- All major plumbing suppliers now carrying SHW
- Much potential in commercial-scale projects
- Market growth tied to natural gas prices

Focus on Energy Incentives

- 20-25% of the installed cost of water heating systems, 30-35% for non-profits
- Based on the energy savings of the system modeled by RETScreen
- Bonus incentive for efficiency + solar projects
- Many investor-owned utilities offer additional 10-35% of project cost

Solar Water Heating Incentives

Annual Energy Displaced in Therms	Standard Incentive	Maximum Standard Incentive	Efficiency First Incentive	Maximum Efficiency First Incentive	Maximum Cost Share
≤ 250 therms/yr	\$18.00/therm	\$2,500	\$20.00/therm	\$2,750	25%
> 250 - ≤ 2,500 therms/yr	\$9.00/therm	\$22,500	\$10.00/therm	\$25,000	25%
> 2,500 - ≤ 5,000 therms/yr	\$7.20/therm	\$36,000	\$8.00/therm	\$40,000	25%
> 5,000 therms/yr	\$5.40/therm	\$50,000	\$6.00/therm	\$50,000	25%
Nonprofit or Government	Appropriate rate above + \$4.50/ therm	Appropriate maximum above + 20%	Appropriate rate above + \$5.00/ therm	Appropriate maximum above + 20%	35%

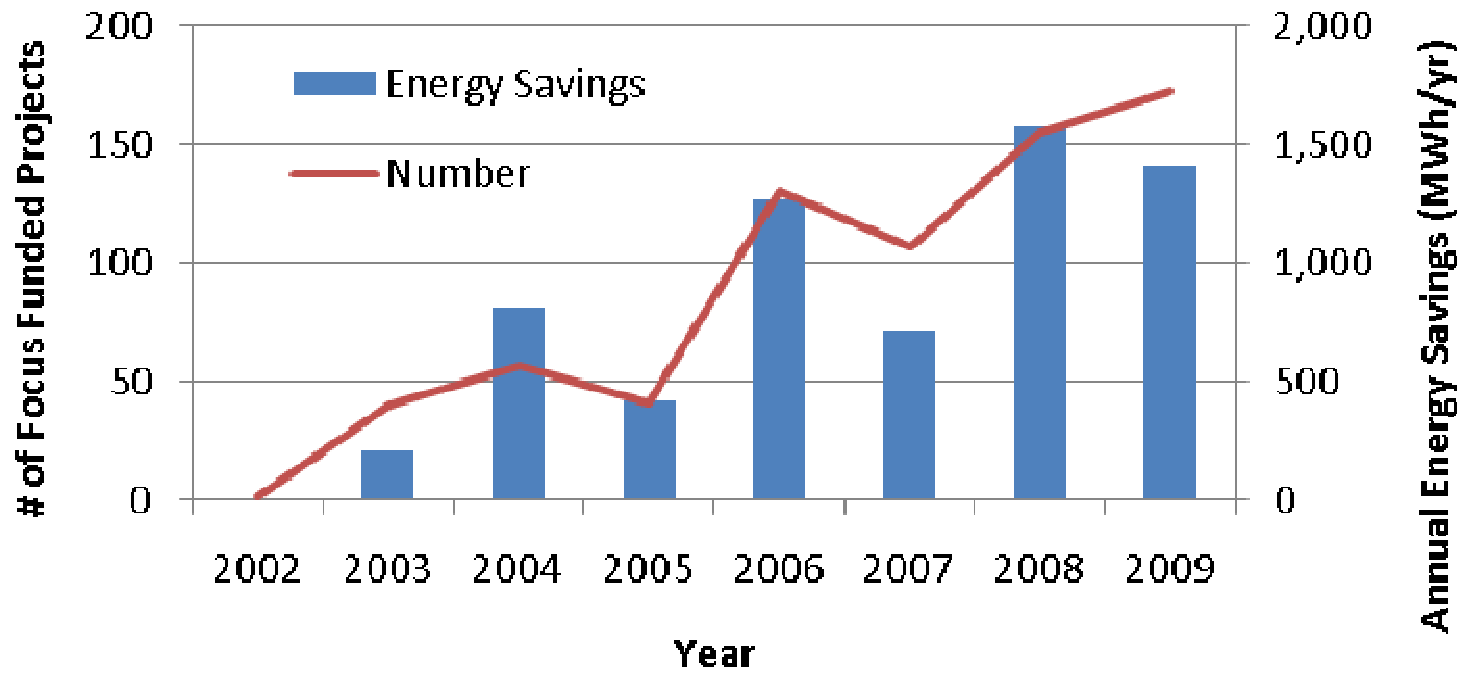
Solar Thermal Repair Incentives

Customer Type	Reward Factor	Maximum Reward
Residential	50%	\$1,500
Non-Residential	50%	\$1,500

Quality Assurance

- System and installer requirements for funding eligibility
- Collectors rated by Solar Rating and Certification Corporation (SRCC)
- Design review, commercial projects
- Verification testing after installation
- Focus Solar Hot Water Technical Advisory Committee

Solar Hot Water Installations



Focus on Energy Solar Hot Water Program

Residential System Rewards			kWh	Therms
2002	1	\$3,120	--	176
2003	25	\$68,846	11,729	4,531
2004	31	\$89,978	13,688	6,669
2005	19	\$43,079	10,800	4153
2006	111	\$256,596	76,683	24,141
2007	83	\$188,712	52,416	13,970
2008	101	\$233,905	89,934	8,458
2009	104	\$203,440	123,806	2,603
Total	478	\$1,087,676	379,056	64,701

2009 Residential System Data

Flat Plate	# of systems	Median price	Median cost/sq ft
63 sq ft or less, DHW	19	8,191	191
64 sq ft, DHW	21	8,306	130
72-81 sq ft, DHW	14	10,076	126
100-200 sq ft, w/Space Heat	21	16,320	124
200-400 sq ft, w/Space Heat	11	27,600	100

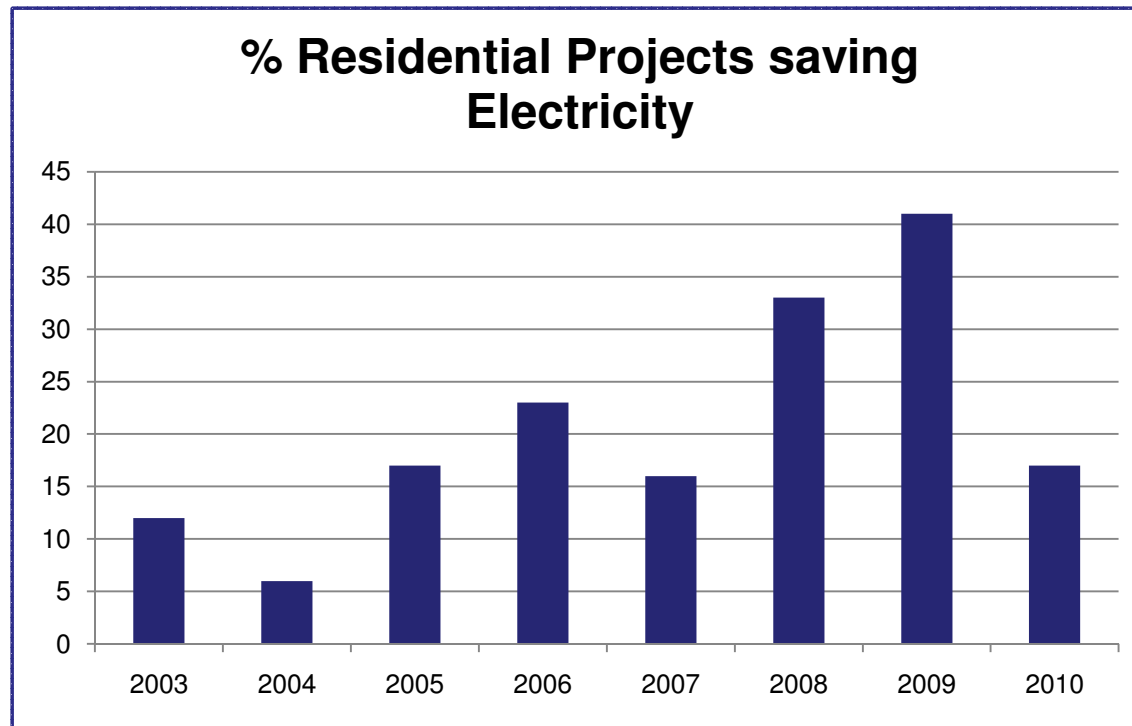
Evacuated Tube	# of systems	Median price	Median cost/sq ft
33-44 sq ft DHW	6	8,055	232
68-99 sq ft, w/Space Heat	8	10,650	142
165-220 sq ft, Space Heat	4	12,943	143

2009 Residential Systems

- 21 drainback, 83 pressurized
- 43 with space and/or pool heat (41%)
- 61 DHW-only
- 40% received \$500 efficiency bonus

# of Systems	Contractor Locale
4	SW WI
20	SE WI (Milwaukee)
24	S Central (Madison)
25	NE WI
8	NW WI
6	N Central
17	Central

Increase in Electric Water Heater Savings



Focus on Energy Solar Hot Water Program

Commercial System Rewards			kWh	Therms
2002	0	\$0	--	--
2003	1	\$4,137	--	424
2004	3	\$22,545	--	14,916
2005	1	\$7,400	--	5,564
2006	7	\$59,845	--	14,634
2007	10	\$47,659	--	7,041
2008	28	\$348,371	-721	39,252
2009	42	\$393,395	-5,027	34,868
Total	92	\$883,352	-5,748	116,699

2009: 42 Commercial Systems Completed

# of Systems	Contractor Locale
7	Central WI
3	N Central WI
5	NE WI
1	SW WI
18	S Central
8	SE WI

- 17 drainback, 25 pressurized
- 10 with space heat component (24%)
- 4 pool heating
- 28 DHW-only

2009 Commercial System Data

Drainback	# of systems	Median cost/sq ft
<320 sq ft, DHW-only	6	179
320-640 sq ft, DHW	4	142
<200 sq ft, w/Space Heat	2	241
200-400 sq ft, w/Space Heat	3	123

Pool Heating	# of systems	Median cost/sq ft
448-1920 sq ft	4	104

Pressurized	# of systems	Median cost/sq ft
<320 sq ft, DHW	11	159
320-400 sq ft, DHW	5	112
1120 sq ft, DHW	1	129

SHW by Business Sector, 2009

Commercial: 21

- 10 in a variety of apps (dentist, laundromat, landscaping firm, church)
- Healthcare: 5 clinics, 1 hospital (often non-profit)
- Hospitality: 3 hotels, 1 restaurant, 1 B&B



Super 8 (2009) and
AmericInn (2008),
Monroe, WI



2009 Projects by Sector, continued

Schools and Government: 13

- Six were school domestic/dorm projects
- Two pool systems, monitored by We Energies:
www.we-energies.com/REDATA



Fire station, Madison



High school pool system

2009 Projects by Sector, continued

- Multifamily projects: 8
- Industrial: 0
 - Despite appealing returns in industrial
 - Have had recent interest and two projects in 2008
- Agricultural: 0
 - Despite USDA REAP Grant



Apartments, Milwaukee, WI



(2008) Wigwam Mills, Sheboygan WI

2010 SHW Project Trends

- 58, 2009-approved residential projects in pipeline
- Over 100 applications received Jan-Apr for ENERGY STAR rebate
(SEEARP, \$2,000 flat rebate/system)
 - Most also received Focus incentive
 - First use of OG-300
- 40, 2009-approved commercial projects in pipeline
- 32 commercial applications received Jan-Apr

Thank You

Kari Heinrich

Solar Hot Water Program Manager

Focus on Energy

karih@weccusa.org