

Solar Water Heating

CERTs 2011
Clean Energy
Convergence



Solar is Solar, Right?

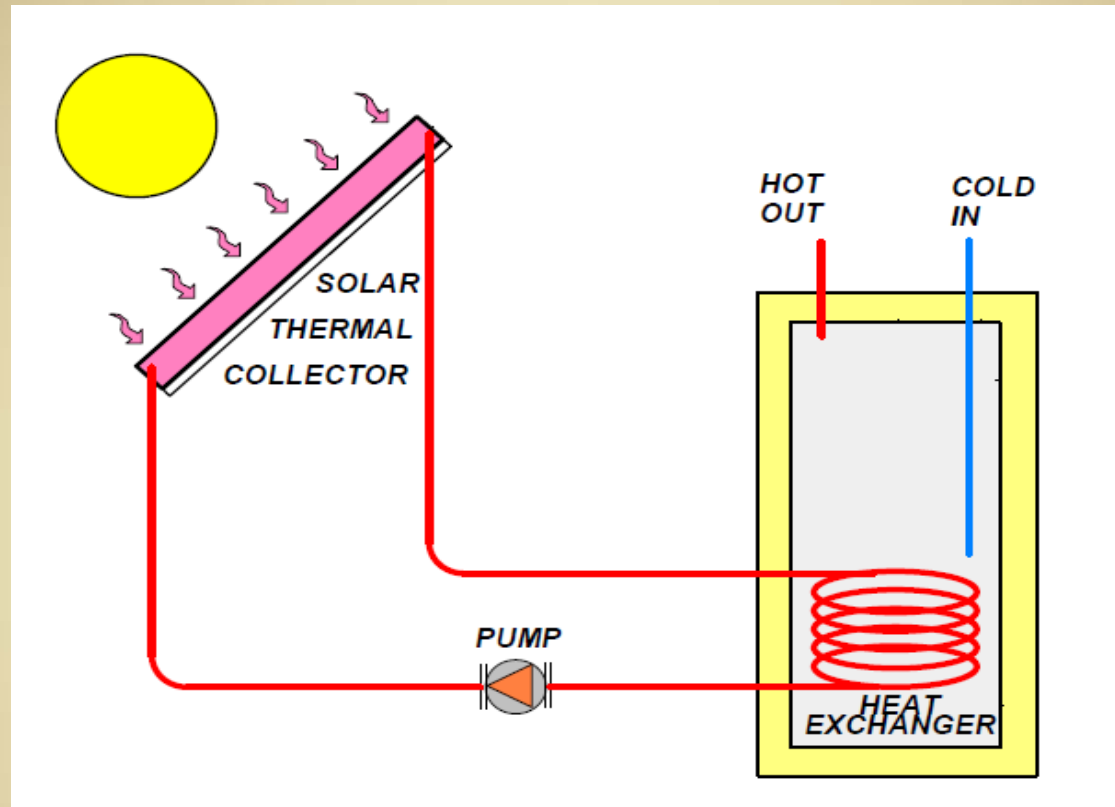
Not really

- Solar electric or photo voltaic (P.V.) is used to make electricity.

10% to 20% efficient.

- Solar thermal is used to make hot water or air. ***60% to 75% efficient.***

How does a solar water heater work?

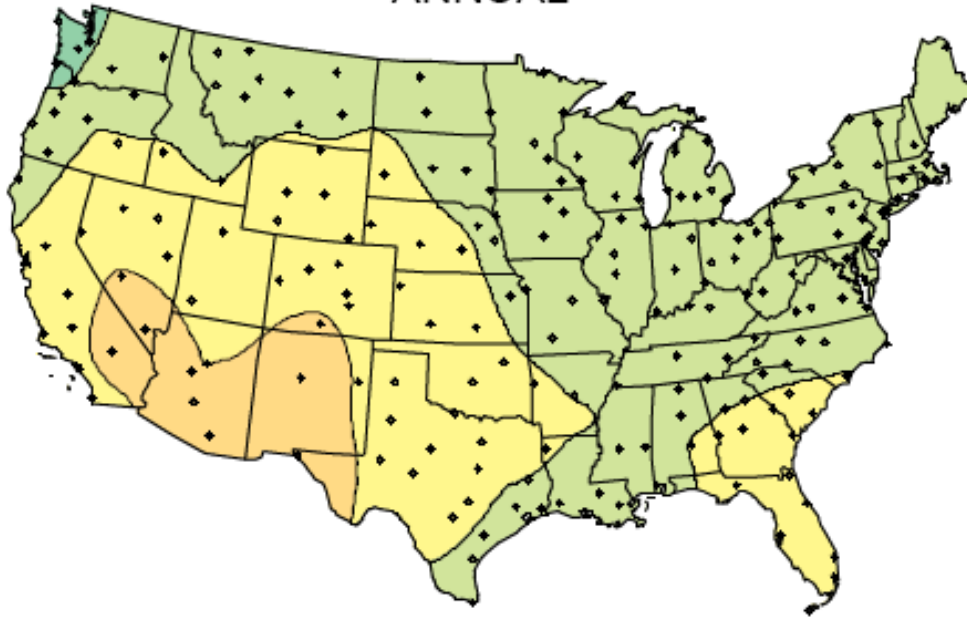


- Solar radiation heats antifreeze in a solar loop.
- Hot antifreeze heats potable water through a heat exchanger.
- Hot potable water is stored for later use.
- Solar heated potable water feeds existing water heater.

Do We Get Enough Sun in MN?

Average Daily Solar Radiation Per Month

ANNUAL



Flat Plate Tilted South at Latitude

We utilize radiation from the sun, not ambient temperature.

MN solar resource as good as parts of Texas and Florida

Why Solar Thermal?

- Solar Thermal is cost efficient now!
- Solar Thermal can cut energy bills by 50% to 75% for domestic water heating.
- Can be easily installed by plumbing, heating and renewable energy contractors.
- A solar water heater system for a family of 4, can displace as much carbon emissions as emitted from a car driven 12,000 miles annually.

Best Thermal Applications

- Commercial hot water
- Domestic hot water
- Agriculture
- Industrial process heat
- Swimming pools
- Space-heating

Who can solar thermal water heating benefit?

Residential

- Single or multi family
- Apartments, Dorms

Commercial

- Agricultural—Dairies, Egg washing, Wash down
- Schools—Kitchen, Showers, Pools
- Laundromats
- Restaurants, Cafes, Supper Clubs

Industrial

- Process food production
- Process water heating

**How can the collectors
be mounted?**

Flush Mount



Tilt Mount





**Ground
Mount**

**Awning
Mount**



**What will the solar
water heater look like?**



Typical solar
water heater
installation
has an 80
gallon solar
tank and two
4'x8'
collectors

Financial Incentives

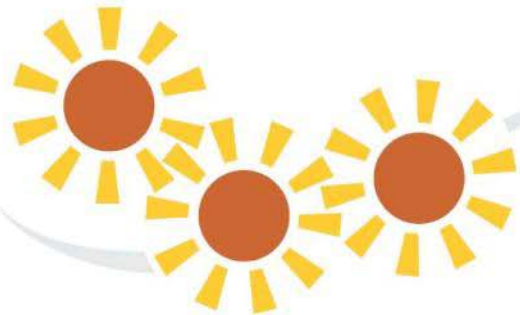
- Federal – uncapped 30% tax credit
- State- \$25 per sq. ft
- Utilities- various programs
- U.S.D.A.- 25% rebate of installed cost

To find all rebates and incentives visit;

www.dsireusa.org

THANK YOU

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engaging the sun