



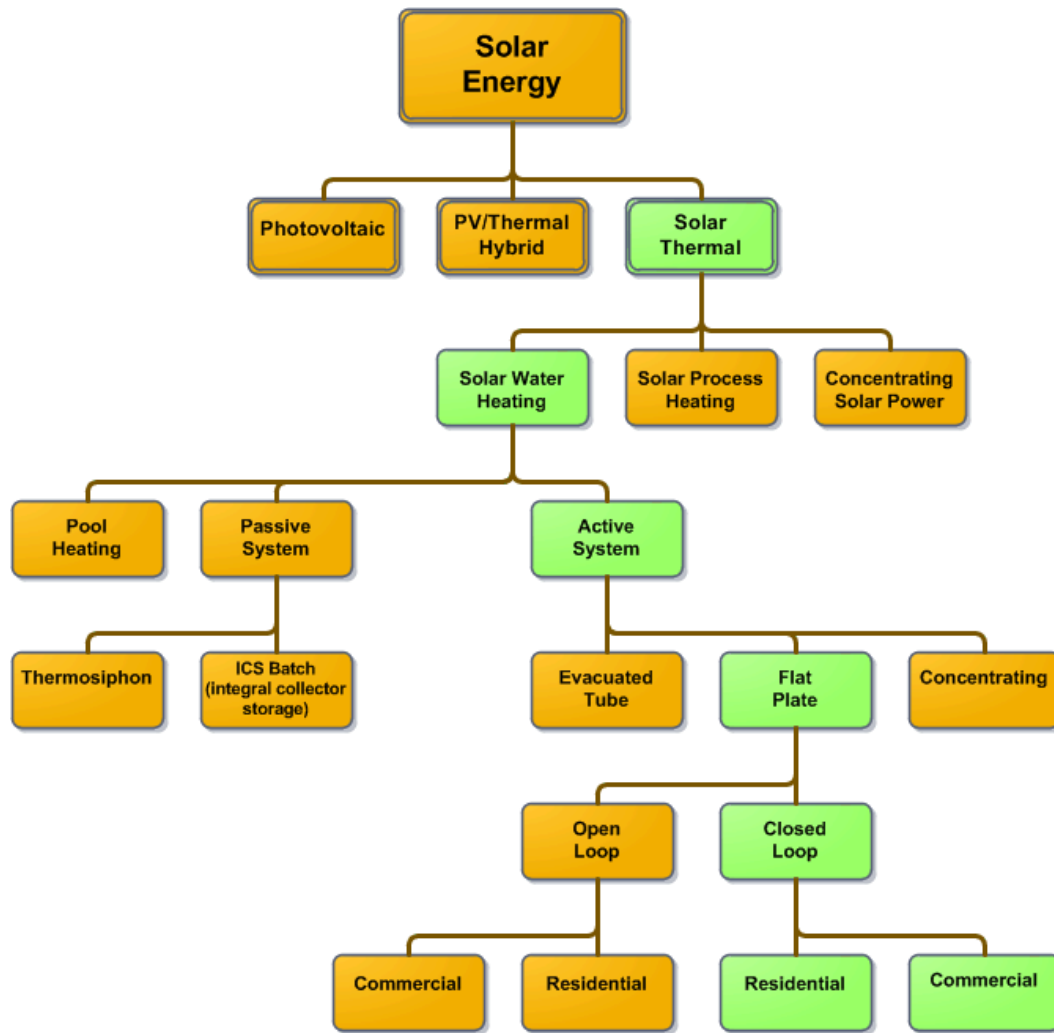
Solar Commercial Product Launch Webinar

October 7, 2011

The sun produces 400,000,000,000,000,000,000,000,000 watts of energy every second and the belief is that it will last for another 5 billion years.

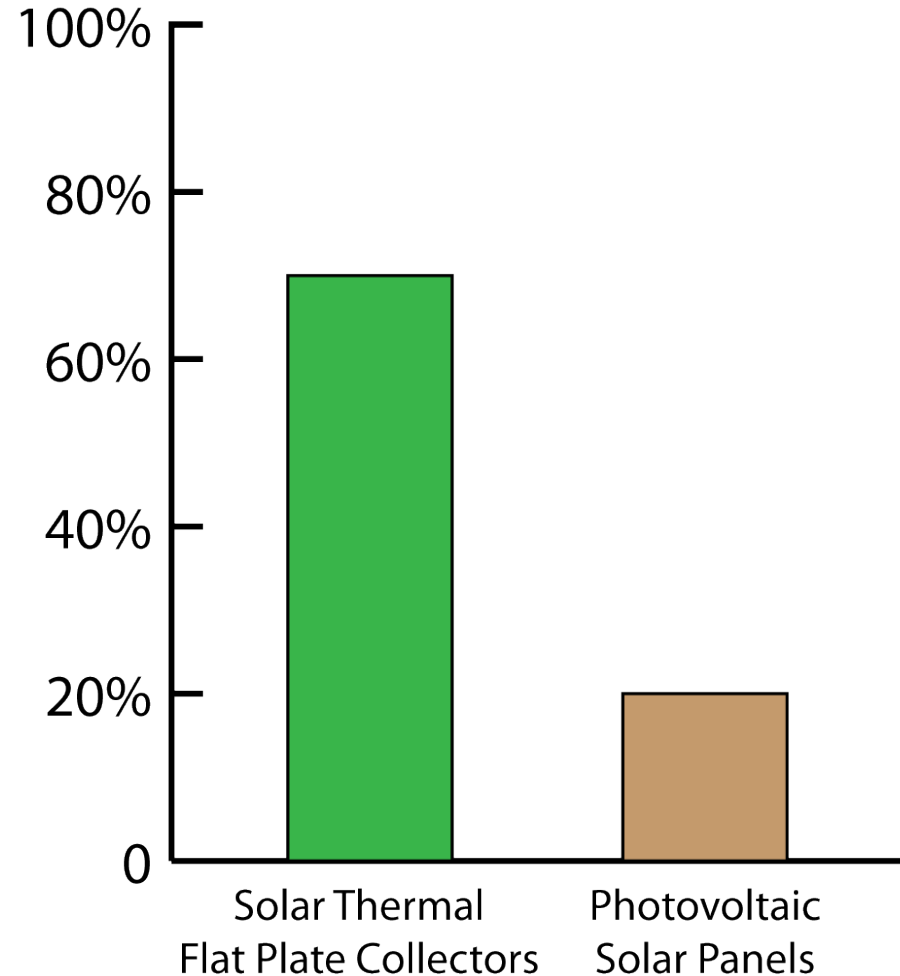
Source: Solar-Thermal.com

Solar Technology Roadmap



Solar Thermal vs Photovoltaic (PV)

- The sun provides about 1 kW per square meter on a sunny day (rule of thumb).
- Solar thermal *collectors* are 70% efficient.
- Solar photovoltaic *panels* are 15% to 20% efficient.
- Solar photovoltaic panels will take up 4 - 5 times more space to produce the same amount of energy.



Solar Thermal vs Photovoltaic (PV)



Energy Conversion Rate		Average price per kWh
Solar Hot Water	70%	\$0.055
Photovoltaic (PV)	15–20%	\$0.268



Outline

- Residential Solar Update
- Commercial Solar Overview
- Solar Commercial Market
- Solar Incentives
- Value Proposition
- Pricing, Lead Times, Shipping
- Target Applications
- Next Steps
- Web Resources



Residential Solar Update

- 15 of 16 systems ENERGY STAR™ qualified.
- FSEC certification - all residential pkg systems.
- 65 gallon direct solar tank first quarter 2012.
- 60° and 75° collector tilt kits now available.
- Warranty extension kits for residential solar tanks (10 years) and residential solar pump stations (5 years) to be released soon.

Commercial Solar Overview



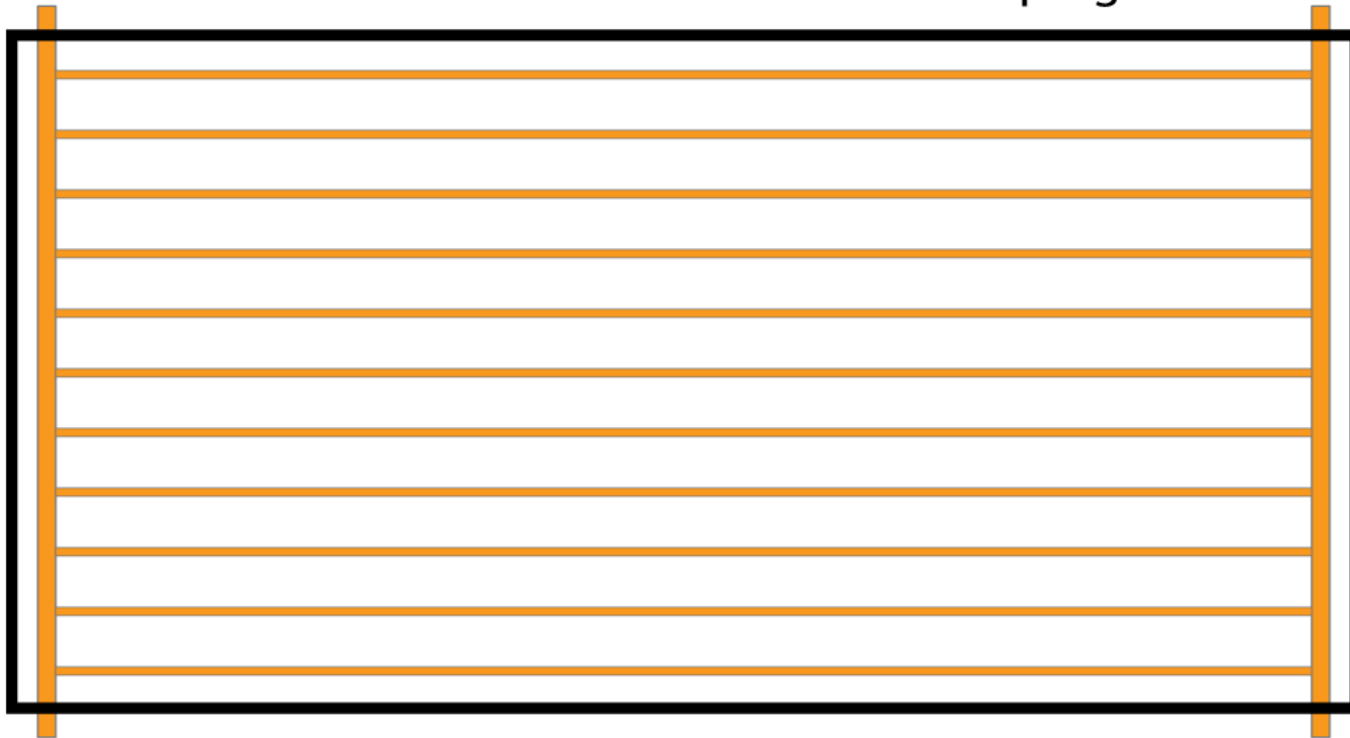


Commercial Solar Overview

- Solar Collectors
- Specialty Solar Tanks
- Custom Solar Tanks
- Solar commercial pump stations
- Engineering resources
- Marketing literature

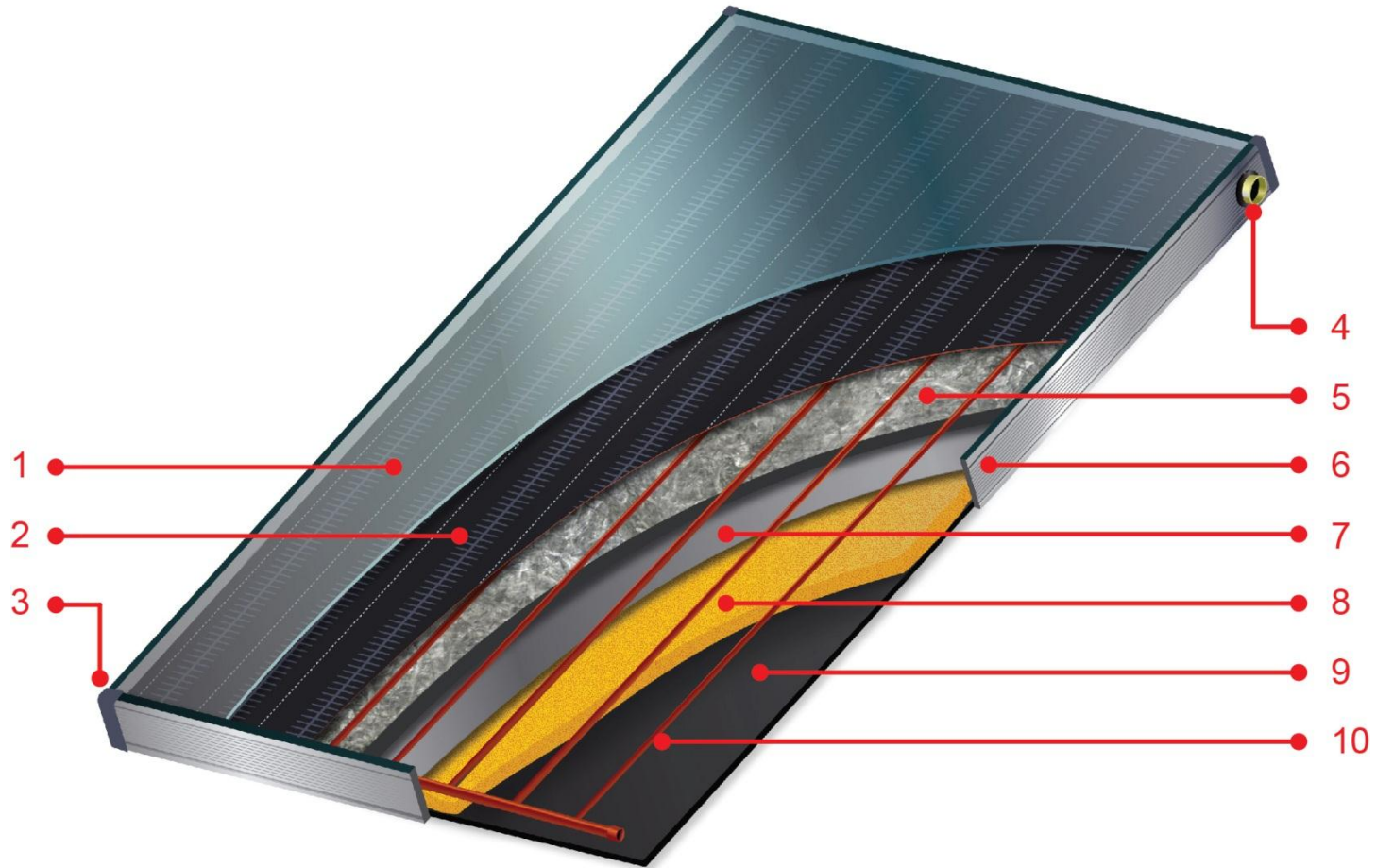
Chromagen™ Flat Plate Collectors

Collector Construction - Internal Piping



Parallel tube (harp) internal piping with 1 1/8 inch O. D. manifolds and 5/8" O. D. riser tubes. These collectors can be installed vertically or horizontally as shown here. This type of collector can be installed in closed loop and open (drainback) loop systems.

Chromagen™ Flat Plate Collectors





Chromagen™ Flat Plate Collectors

1. Low-iron patterned and tempered glazing provides superior strength, anti-glare surface and 91% solar transmittance.
2. Aluminum absorber plate with spectrally selective black coating provides high performance even in cooler climates.
3. Rugged nylon glass fiber moldings on all four corners protect collectors and adjacent property.
4. 1-1/8 inch outside diameter (O.D.) copper sweat inlet/outlet connections.
5. Glass wool insulation layer.



Chromagen™ Flat Plate Collectors

6. Black anodized extruded aluminum casing - interlocking construction - no fasteners that loosen over time and allow moisture infiltration.
7. Integrated aluminum foil insulation barrier.
8. Injected rigid Polyurethane foam insulation layer.
9. Durable black Polypropylene backsheet – resists punctures during transport and installation, resists corrosion for the life of the collectors.
10. Parallel tube configuration - ensuring optimal flow and a low pressure drop. Collectors may be installed vertically or in a horizontal orientation.



Commercial Solar Storage Tanks



Commercial solar tanks are available as pre-configured **Specialty Solar Tanks** and as **Custom Solar Tanks** built to specified application requirements.

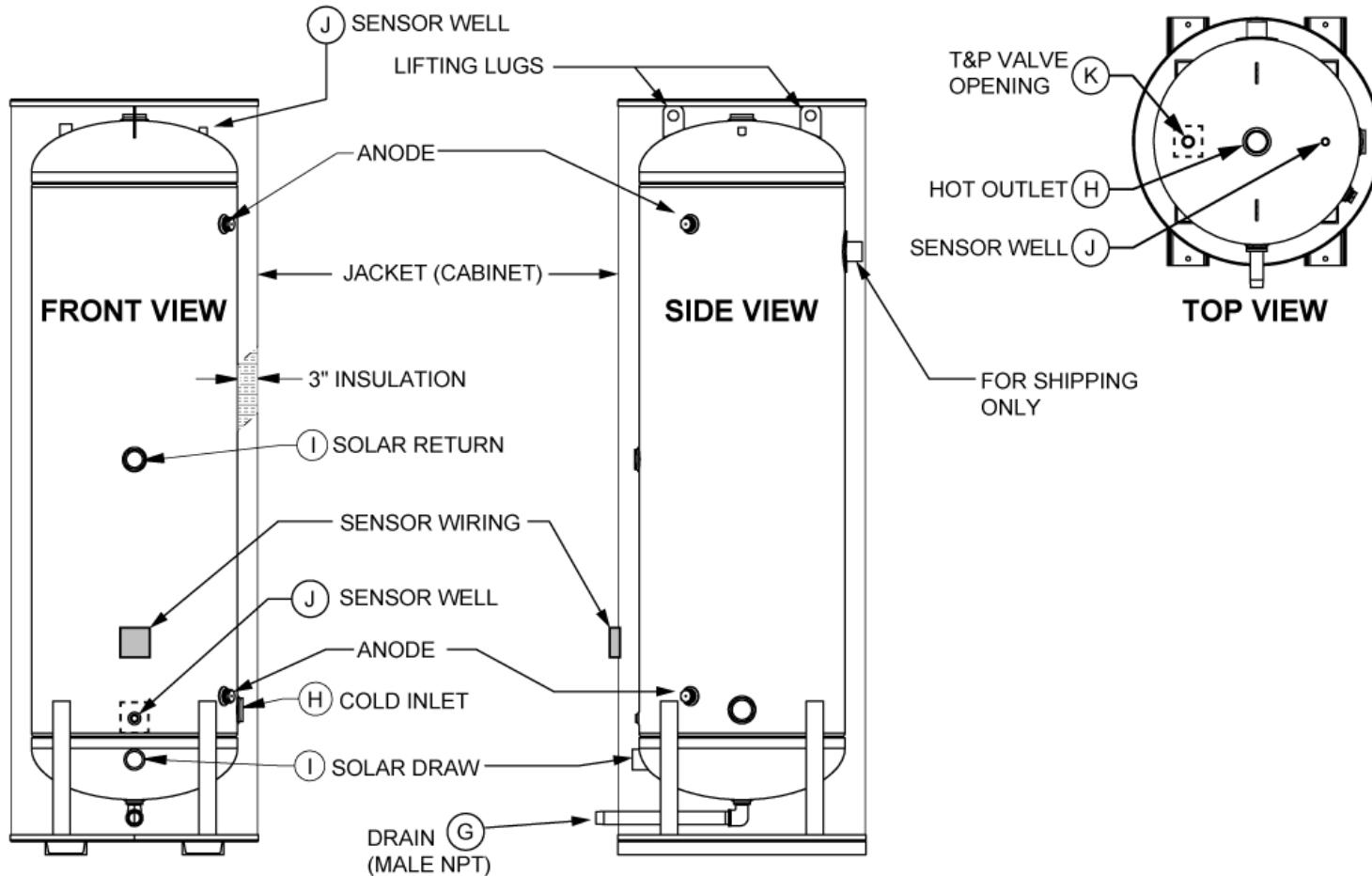
Manufactured in Renton, Washington.



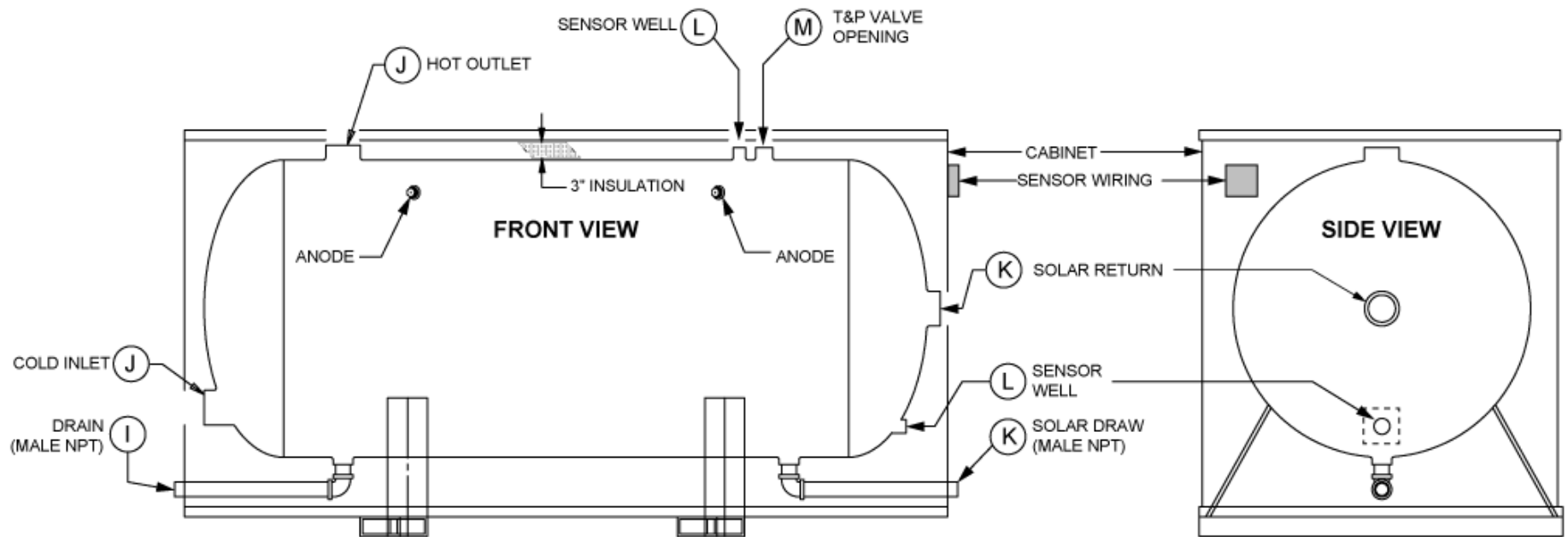
Specialty Solar Tanks

- Vertical models 140-2000 gallons
- Horizontal models 200-1000
- All tanks are ASME constructed
- Glasslined – commercial grade glass lining
- 3” of high density fiberglass insulation – R12.5
- Heavy gauge steel jackets - powder coat paint
- Factory-installed magnesium anodes
- Additional tapings for solar thermal applications
- Factory installed upper and lower temperature sensor wells with Pt1000 type sensors

Specialty Solar Tanks - Vertical



Specialty Solar Tanks - Horizontal





Custom Solar Tank Options

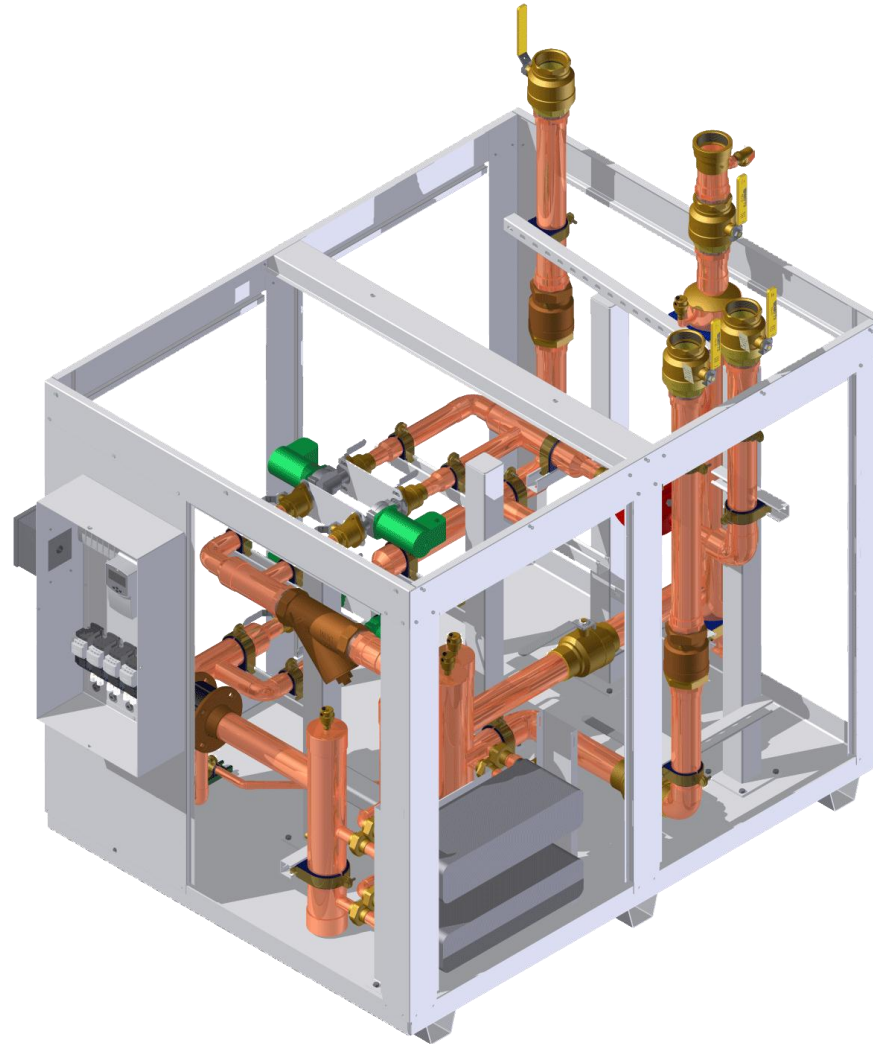
- Glasslined tanks
- Cement lined tanks
- Stainless steel tank construction
- Capacities up to 12,500 gallons
- Specified tank dimensions
- Specified tank openings – size and number
- Specified tank opening locations
- Outdoor models



Custom Solar Tank Options

- Additional insulation - provides R16 insulation value
- Supplemental/backup heat sources:
 - Electric heating element packages
 - Tank heaters - flange mounted removable single/double wall copper tube heat exchangers for backup heating from other sources:
 - Low pressure steam
 - Boiler water
 - Other renewable energy sources

Solar Commercial Pump Stations





Solar Commercial Pump Stations

- Factory assembled fully integrated pump stations – consistent intuitive design
- Redundant solar and water loop circulation pumps - with isolation flanges
- Stainless steel (316L) flat plate heat exchangers - single wall or double wall
- Fully programmable electronic solar control with LCD display
- SD memory card slot on solar control

Solar Commercial Pump Stations

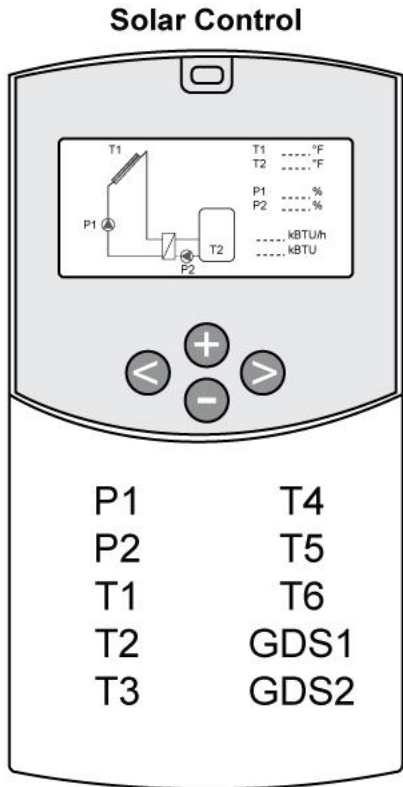
- Web module for online monitoring
- Standard energy metering – tracks performance and savings
- Optional MID certified energy meter – for REC / SREC registration
- Pulse type electronic flow meter
- Surface mount temperature sensors
- Temperature sensor wells (4) for optional energy meter or field supplied sensors



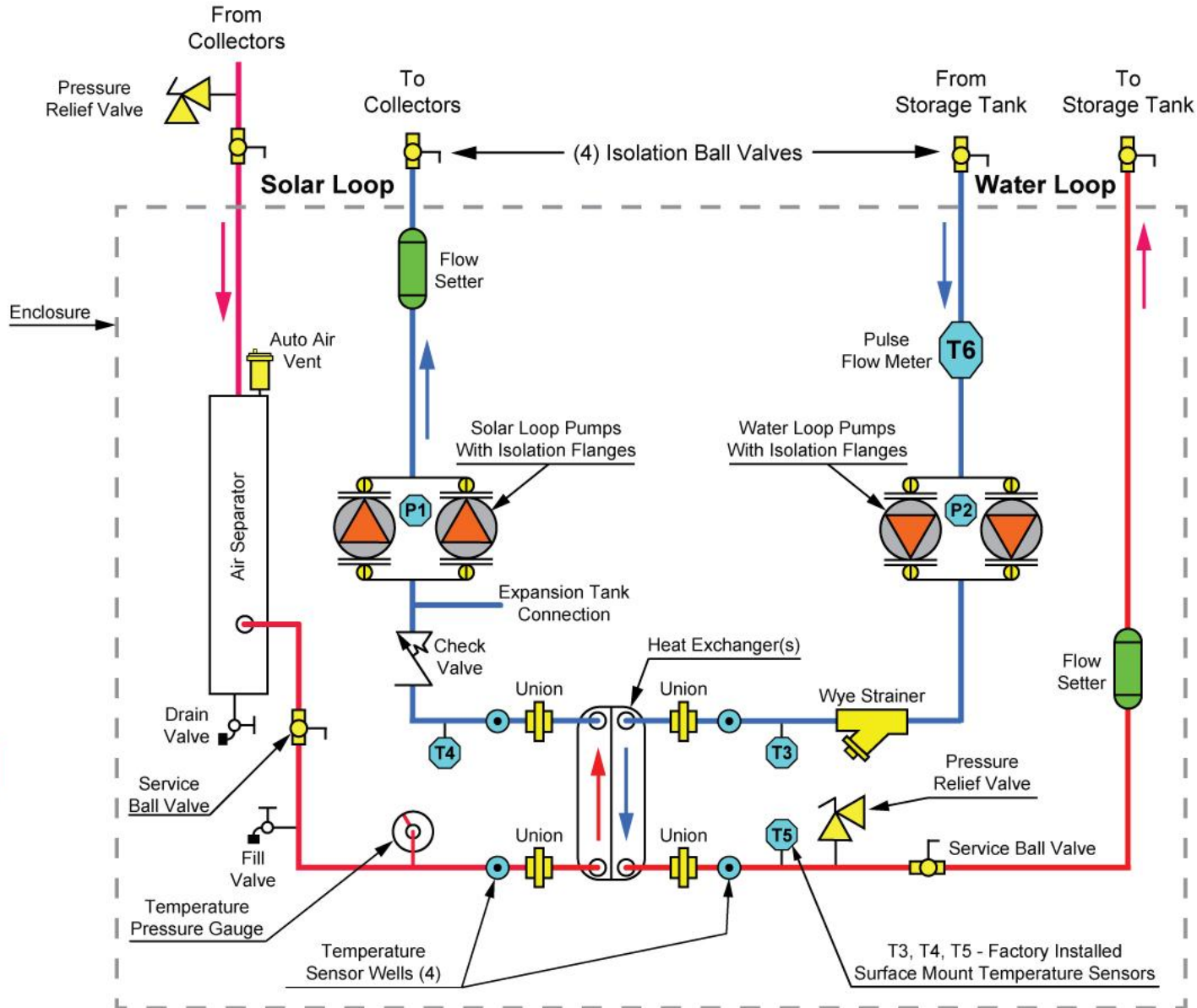
Solar Commercial Pump Stations

- Fluid balancing valves
- Full port isolation ball valves at solar and water loop connections
- Air stripper with automatic air vent
- Solar and water loop pressure relief valves
- Brass body wye strainer in water loop
- Solar loop expansion tank connection
- Drain line connection
- Removable access panels on all four sides

SOLAR COMMERCIAL PUMP STATION PID



TERMINAL	DEVICE
P1	Solar Loop Pumps
P2	Water Loop Pumps
T1	Temp Sensor Collector
T2	Temp Sensor Storage Tank
T3	Temp Sensor
T4	Temp Sensor
T5	Temp Sensor
T6	Pulse Flow Meter
GDS1	VFS Flow or RFS Pressure Sensor
GDS2	RPS Pressure Sensor





Engineering Resources

- Dedicated engineering resource for system sizing and design.
- Design support - our engineering staff will work closely with architectural and engineering firms to meet specified requirements.
- System piping diagrams for storage tanks and collector arrays.
- **Solar Commercial System Questionnaires**
- Professional system sizing reports



Solar Commercial System Questionnaire

state WATER HEATERS Solar Commercial System Questionnaire
500 Tennessee Walk Parkway • Ashland City, TN 37015 • 800.365.0024 • www.statewaterheaters.com

Date: _____

CONTACT

Project name: _____
 Customer \ Company: _____
 Contact person: _____
 Customer Address: _____
 Phone: _____
 Fax: _____
 E-mail: _____
 Project location: _____

FACILITY INFORMATION

Project Description: _____

Solar Contribution Requirements (if any): _____

New building /new system installation Old Building /integration with existing system

If integrating, describe existing system: _____

intended collector placement: _____ intended tank placement: _____

Roof slope: _____ Direction of slope: _____
 Area available for collectors: _____ Dimensions of tank location/access: _____

Distance between collectors and storage tank: Max: _____ Min: _____

Limiting factors for collectors tilt angle or tank placement: _____

Is shading an issue (include sketch): _____

Page 1 of 4

state WATER HEATERS Solar Commercial System Questionnaire
500 Tennessee Walk Parkway • Ashland City, TN 37015 • 800.365.0024 • www.statewaterheaters.com

AUXILIARY ENERGY SOURCE

Natural Gas
 Propane
 Electricity
 Oil
 Other _____

*Heat Demand (if known):
 gallons of oil/ ft³ Gas/ Oil/ Gas/ Other: Min/ month: Max /month:
 other _____

WATER QUALITY

Please specify if there are any water quality problems that might affect the system. _____

USAGE PROFILES

Please trace a graph below indicating usage profile with PEAK = 100% and everything else being a percentage of peak. Please LABEL your trace lines for DHW, Process Heating and Space Heating.
 NOTE: The daily usage graph is for a 24 HOUR period.

Daily Usage Graph (Daily Peak: _____)

Page 3 of 4

state WATER HEATERS Solar Commercial System Questionnaire
500 Tennessee Walk Parkway • Ashland City, TN 37015 • 800.365.0024 • www.statewaterheaters.com

Weekly Usage Graph (Weekly Peak: _____)

Monthly Usage Graph (Monthly Peak: _____)

GENERAL

- Please attach project overview drawing if possible.
- Please attach roof layout drawing if possible.
- Please attach pictures if possible.
- Please Indicate on the drawings North \ South

Page 4 of 4

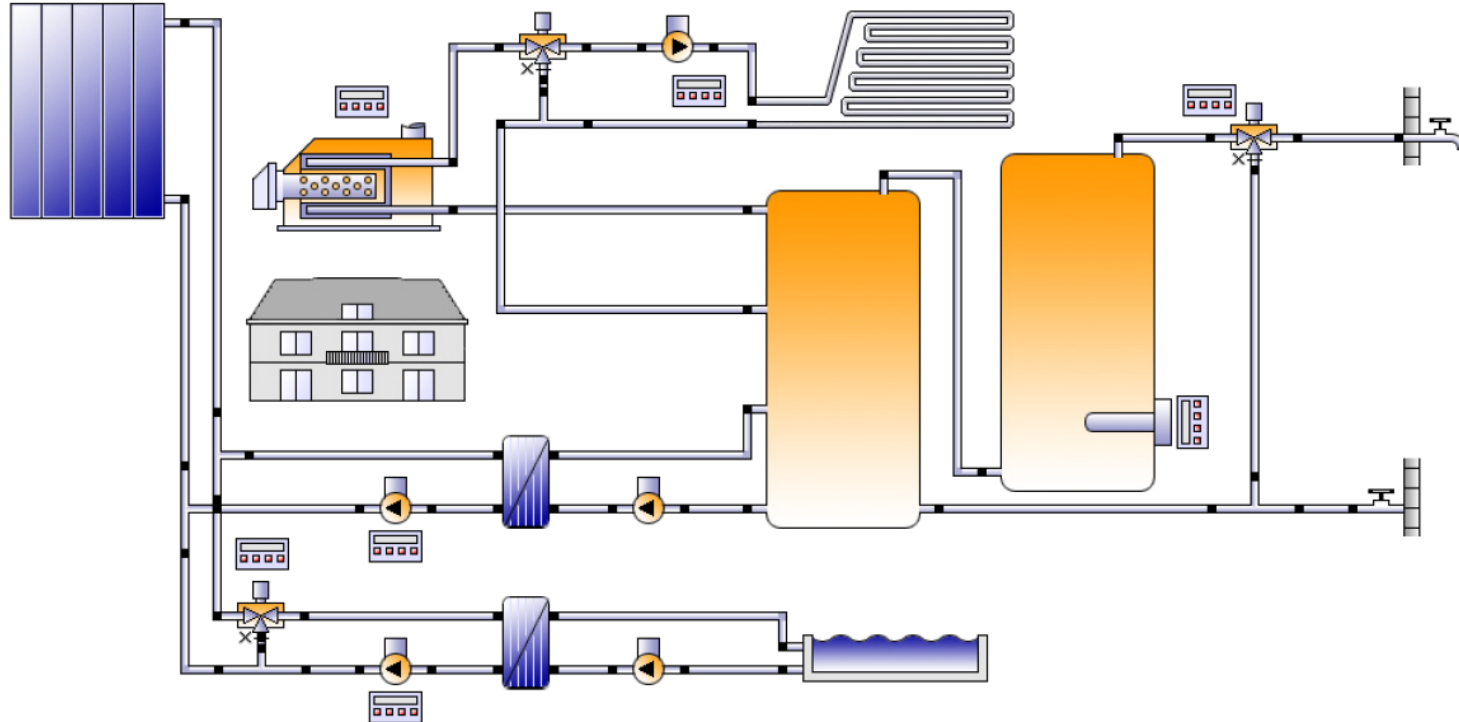
Professional Sizing Reports

Professional Report



Closed-loop Solar System

Closed-loop Solar Preheat with Gas Back Up

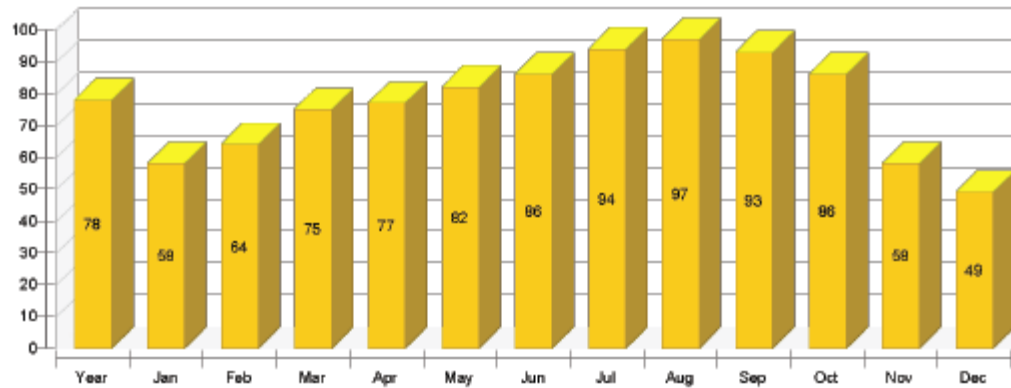


SAMPLE REPORT – download from our web site

Professional Sizing Reports

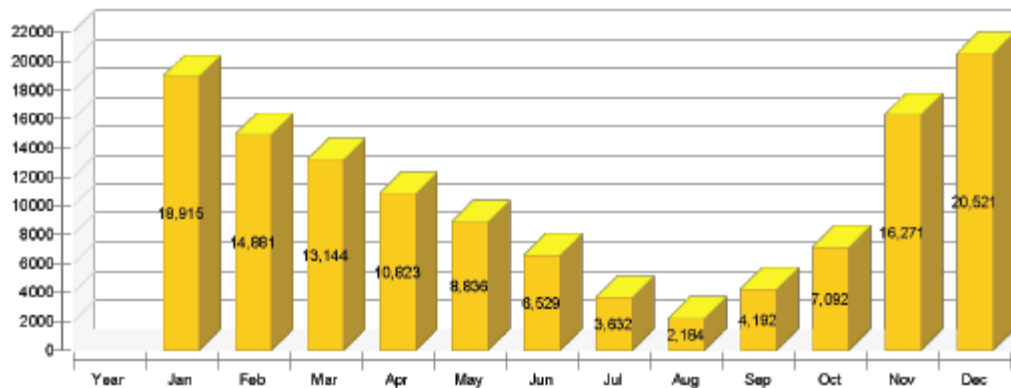
Solar fraction: fraction of solar energy to system [SFn]

%



Total fuel and/or electrical energy consumption of the system [Etot]

kBtu



SAMPLE REPORT – download from our web site



Marketing Literature

- Marketing literature now available on our web site:
 - Solar Commercial Brochure
 - Solar Commercial Storage Tank Specification Sheet
 - Solar Commercial Pump Station Specification Sheet
 - Solar Collectors Specification Sheet
 - Solar Commercial System Questionnaire
 - Sample Commercial Solar Sizing Report



SOLAR COMMERCIAL MARKET

Solar Commercial Market

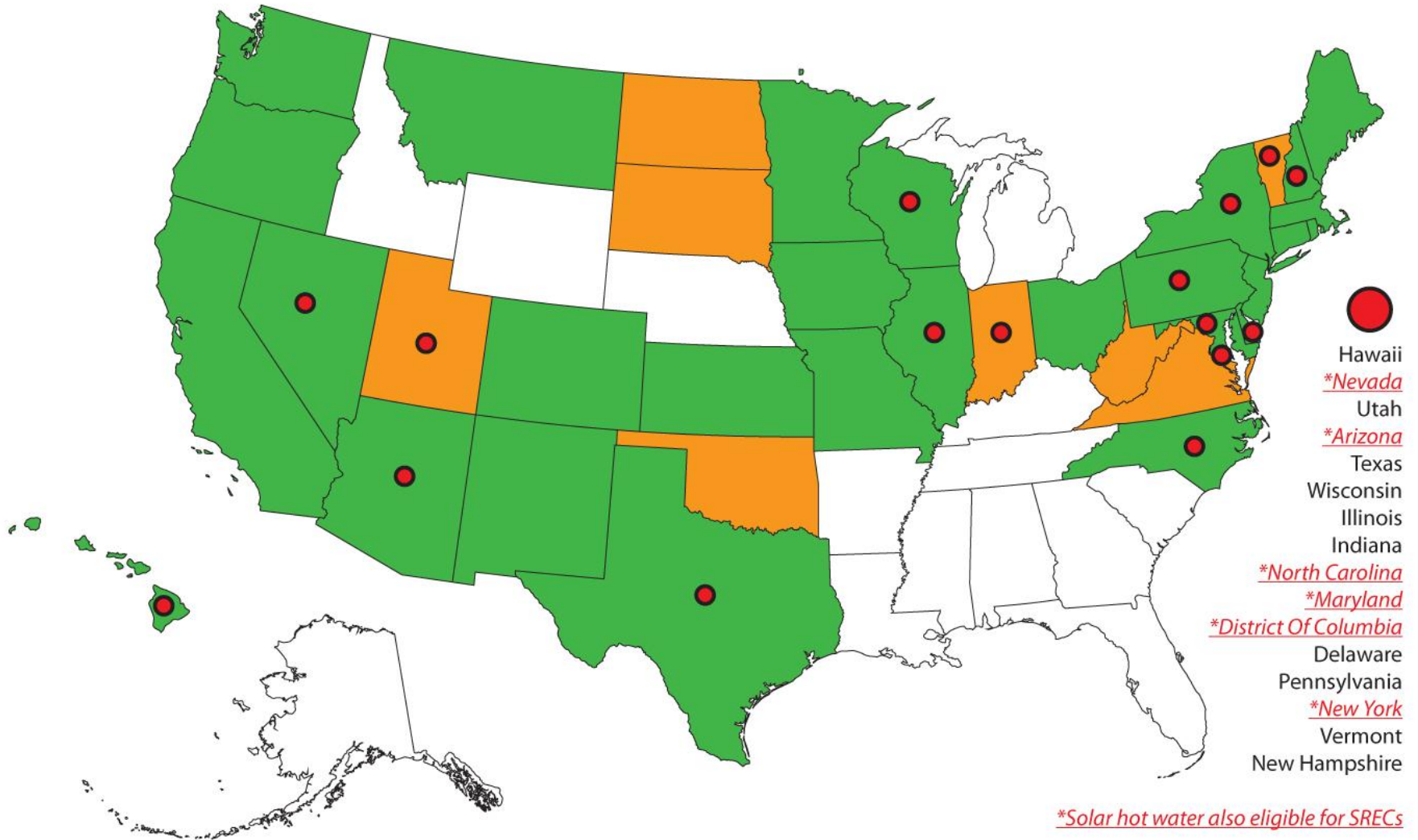
- Solar thermal commercial market has seen six consecutive years of growth
- Current growth rate of 20%
- U. S. solar thermal commercial installations by collector area:
 - 2009 - 2.6 million square feet
 - 2010 3.0 million square feet
 - 2011 projected 3.6 million square feet

Solar Commercial Market

- Government buildings - 30% solar thermal mandate for all new construction & major renovations > 5000 square feet.
- Renewable Portfolio Standards (RPS) and Renewable Portfolio Goals (RPG) driving market growth:
 - 29 states have RPS - *mandate*
 - 8 states have RPG - *voluntary*
 - 15 states plus DC - solar hot water *eligible for RECs*
 - 5 states plus DC - solar hot water *eligible for SRECs*

Renewable Portfolio Standards & Goals - RECs / SRECs

 Renewable Portfolio Goals  Renewable Portfolio Standards  Solar water heating eligible for RECs



Sources: DSIRE, FLS Energy, Renewable Energy World



SOLAR INCENTIVES



Solar Incentives

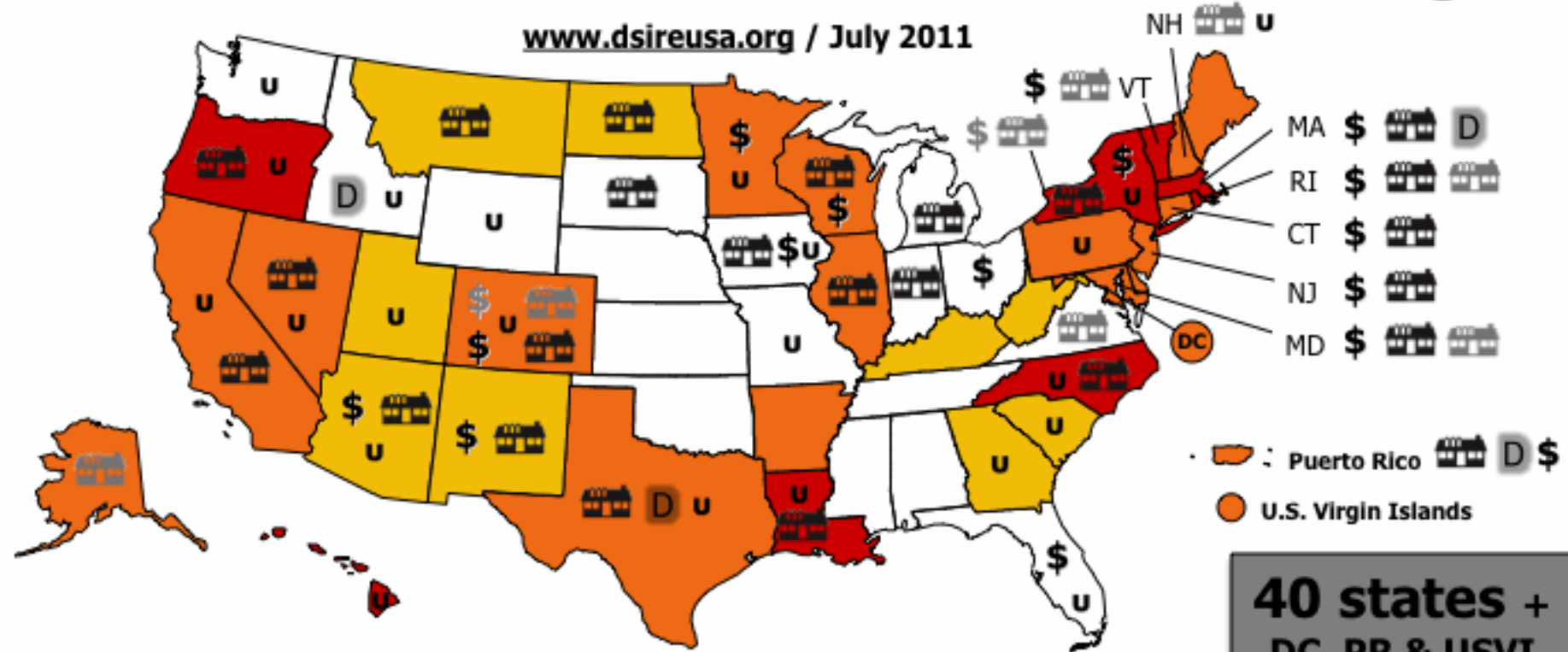
- 30% federal tax credit – total installed costs (no cap) through December 31, 2016.
- 100% accelerated depreciation through December 31, 2011.
- Helps customers attain energy efficiency goals and LEED certification.
- Renewable Energy Certificates (REC/SREC)
 - certified energy metering required.

Solar Incentives

- 17 states currently offer tax credits for solar thermal
- 19 states currently offer rebates for solar thermal
- 34 states have solar loan programs in place
- 24 states have direct cash incentives

Financial Incentives for Solar Water Heating

www.dsireusa.org / July 2011



40 states + DC, PR & USVI offer financial incentives for solar water heating



VALUE PROPOSITION

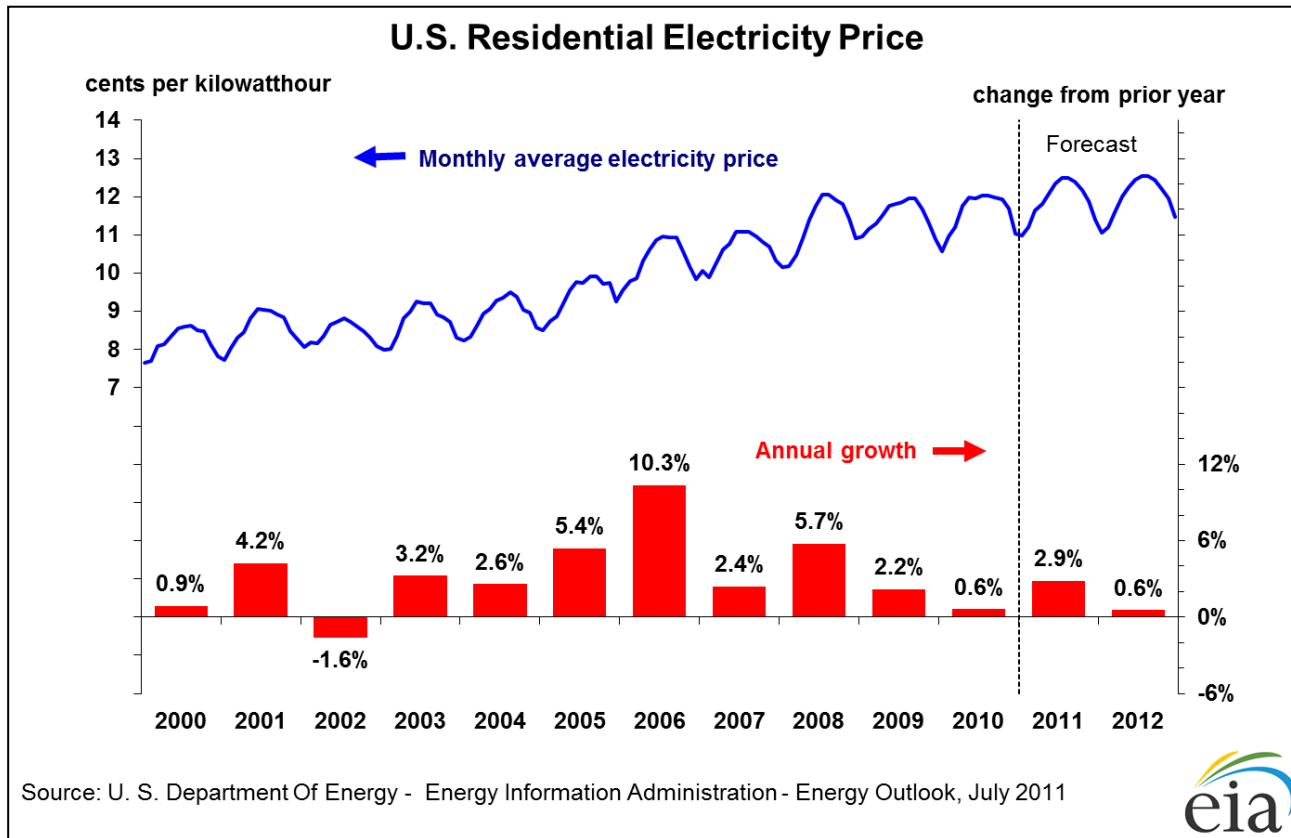


Value Proposition

- 70% or more reduction in operating costs, customers with larger hot water demands will benefit most
- Federal tax credit 30% total installed costs, no cap.
- State incentives tax credits, rebates, loan programs
- RECs, SRECs revenue streams
- Smart investment – hedge against rising energy costs and inflation
- Substantial return on investment and system payback.

Value Proposition

Rising Energy Costs



**61% increase in residential electricity rates
January 2000 to June 2011**



Value Proposition

REC/SREC - Potential Revenue Stream

Number 4' x 10' Collectors	Solar Pump Station Energy Ratings (Btu/hr)	Average Annual MWH (REC/SRECs)	REC/SREC Selling Price	REC/SREC Monthly Revenues	REC/SREC Annual Revenues
20	160,000	86	\$50.00	\$ 357	\$ 4,279
40	320,000	171		\$ 713	\$ 8,558
60	480,000	257		\$ 1,070	\$ 12,837
80	640,000	342		\$ 1,426	\$ 17,115
100	800,000	428		\$ 1,783	\$ 21,394

Based on 5 hour solar day - annualized Btu/hr converted to MWh



PRICING, LEAD TIMES, SHIPPING



Pricing

- Prices in slip sheets and solar price book are list prices
 - Non-stocking distributor receives 40% discount
 - Stocking distributor receives 50% discount (maintains minimum \$15,000 inventory of solar products; tanks, collectors, pump stations, accessories)
- Residential solar package systems and residential solar tanks qualify for VIP.
- Renton tanks, commercial pump stations, collectors, and accessories do not qualify for VIP.
- Standard payment terms for McBee and Renton products apply.

Lead Times

- Renton solar tanks 4 – 6 weeks for 1-2 tanks, contact Renton facility for larger orders.
- Commercial solar pump stations 6 – 8 weeks (production ready December 1, 2011)
- Collectors 4 – 6 weeks



Shipping

- All residential/commercial solar orders \$15,000 or more ship free
- Pump stations, collectors and accessories ship from McBee, SC and can ride free with qualifying commercial orders.
- Solar products cannot be used to complete a qualifying freight free commercial order from McBee.

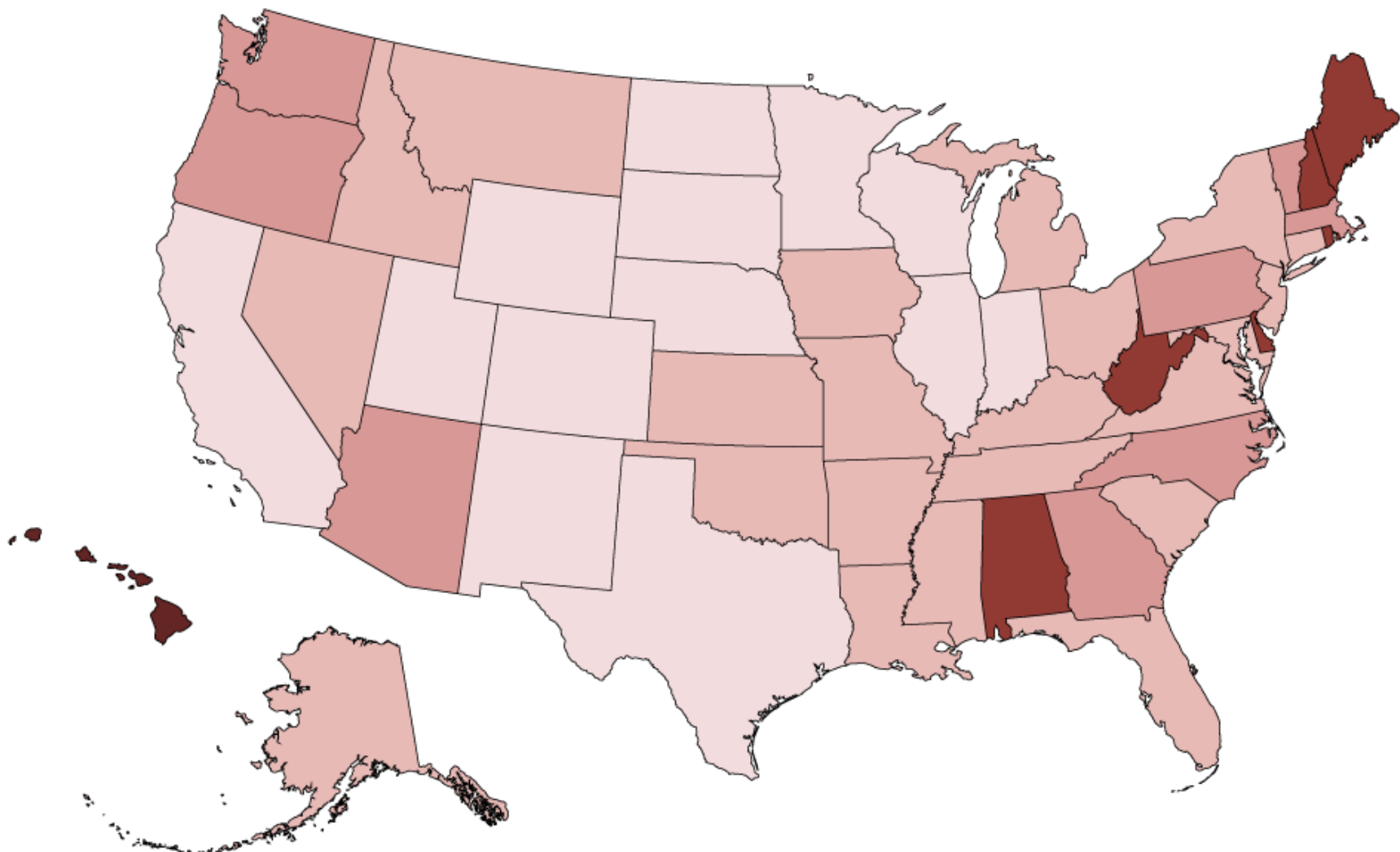


TARGET APPLICATIONS

Target Applications

- Large amounts of hot water use:
 - Hotels/resorts, hospitals/healthcare, military, colleges, prisons, food/meat processing facilities
- Types of hot water systems
 - Domestic water
 - Space heating
 - Process water
 - Pool heating
- High water heating & utility costs
- Water temperature between 120-180 °F
- Suitable roof infrastructure (space and weight load) or adequate ground space
- Good solar resources – not required but helpful

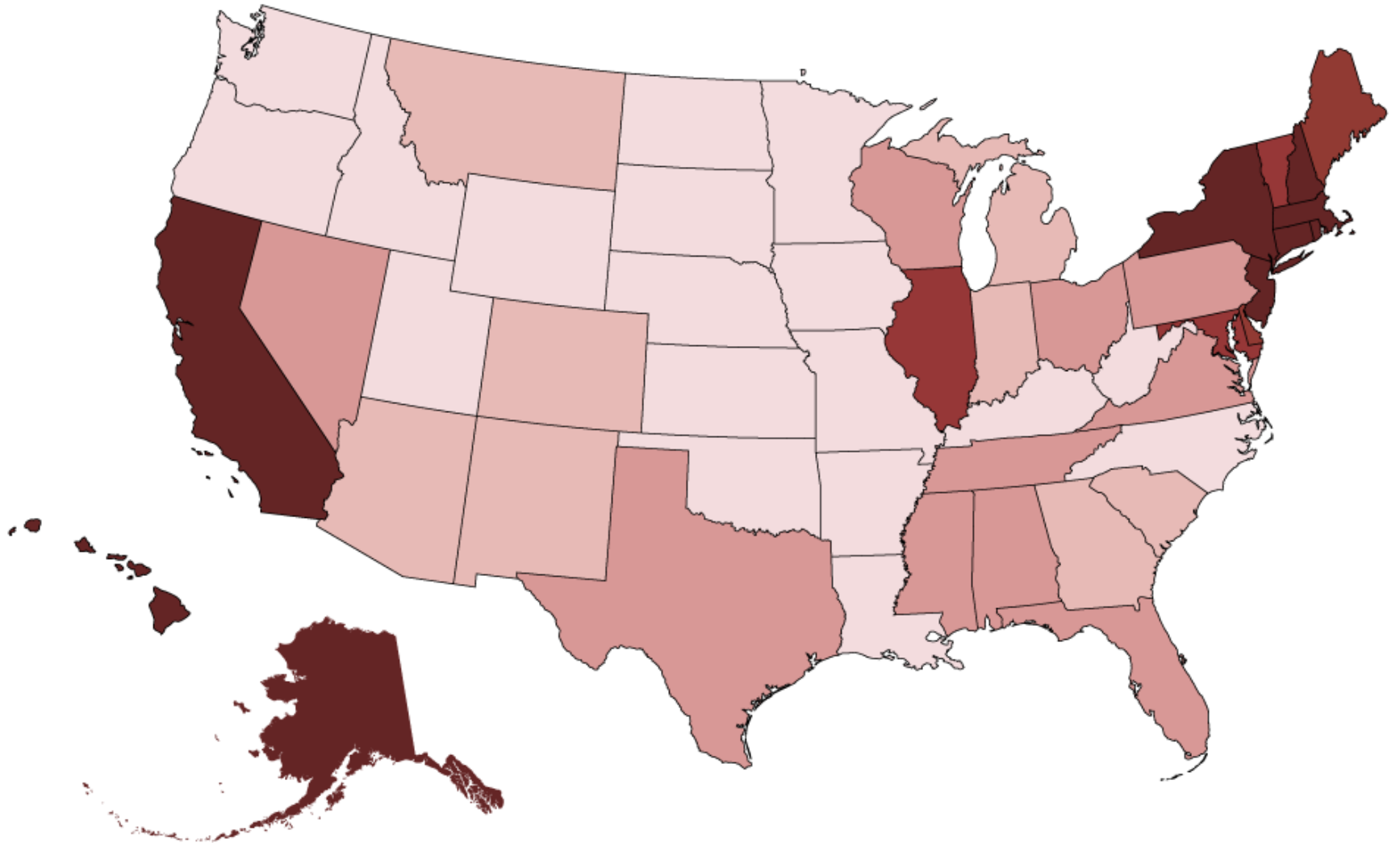
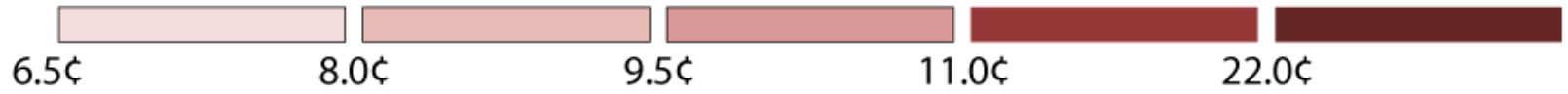
Average Commercial Natural Gas Prices (\$/therm)



Average Prices 2010

Source: AltaTerra Research

Average Commercial Electricity Prices (cents/kWh)



Average Prices 2010

Source: AltaTerra Research



NEXT STEPS



Next Steps

- Identify opportunities – gather information
- Complete a *Solar Commercial System Questionnaire*
- Contact your MDM to get the process started:
 - **Frank Proske** - Northeast, Mid Atlantic & North Central
fproske@hotwater.com
(570) 975-9314 mobile, (570) 869-1244 office
 - **Bill Hosken** – Southeast, South Central & Central
bhosken@hotwater.com
(615) 881-6777 mobile, (678) 261-4650 office
 - **Brad Curtis** – Southwest & Northwest
bcurtis@hotwater.com
(323) 806-6443 mobile, (909) 930-3604 office

Next Steps

- Alternative **Green** Quotations
 - Fill out a *Solar Commercial System Questionnaire*
 - Send it to the renewables market development manager
 - Let us prepare a *Professional Solar Commercial Sizing Report*
 - Provide your customers with a *renewable energy option* when quoting a standard water heating solution
- Promote solar thermal to solar photovoltaic “PV” customers
- Promote solar thermal to solar PV contractors and installers



WEB RESOURCES



Web Resources

- DSIRE & DSIRE Solar – National, State and Utility Incentive & Rebate Information
 - www.dsireusa.org www.dsireusa.org/solar
- “Commercial Solar Water Heating: Customer Trends and Perspectives”
Recommended solar commercial on demand webinar by AltaTerra
 - https://altaterra.site-ym.com/store/view_product.asp?id=773355
- SOLSYSTEMS – RECs and SRECs Explained
 - <http://www.solsystemscompany.com/faqs>
- Renewable Energy Certificate Marketer List National
 - <http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=2>
- EPA Green Power– REC / SREC information
 - <http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=2>
 - http://www.epa.gov/greenpower/documents/purchasing_guide_for_web.pdf
 - <http://www.epa.gov/greenpower/pubs/gplocator.htm>
 - <http://www.epa.gov/greenpower/gpmarket/tracking.htm>