

Solar Thermal

Harvey Bowers



Resources

- Steve Eayrs, Eayrs Plumbing and Heating , Homer, 907-235-2333
- E-mail: steve@eayrsplumbingandheating.com
- Alaska Center for Appropriate Technology (ACAT) www.acat.org
- Research Information Center (AHFC) bhall@ahfc.state.ak.us www.ahfc.com full library
- Alaska Solar Tour – Kenai May 14 www.AlaskaSolarTour.org
- Solar Design Manual for Alaska – Rich Seifert, CES www.alaskasun.org free download
- Cold Climate Housing Research Center CCHRC – www.cchrc.org
- Canadian Mortgage Housing Corp CMHC – Case Study #60, Equilibrium www.cmhc.ca
- American Solar Energy Association – www.Solartoday.org
- Home Power – www.homepower.com
- Solar Solutions by Bristol Stickney www.Plumbingengineer.com
- Equipment sales:
 1. Alaska Goldstar Plumbing 376-2875
- Ferguson, Viessmann solar systems, Brian Commercial Sales 800-478-7759
- AIS, Anchorage 563-4125 high temperature insulation www.alaskainsulation.com
- Radiant Solar – Pennsylvania, 800-466-7556 www.RadiantHeatPorducts.com
- Oventrop- Proctor Sales, Anchorage 907-562-2608 www.ventrop-na.net
- Heliodyne Solar Hot Water www.heliodyne.com

Solar Hot Water Collectors are certified by the SRCC:
Solar Rating & Certification Corporation



Renewable Energy Tax Credits

- Solar systems; Small Wind; Geothermal Heat Pumps
 - 30% of cost, no upper limit
 - For existing homes & new construction (no rentals)
 - Expires December 31, 2016
- Windows, doors, water heaters, insulation, HVAC, roofs, biomass
 - 30% of cost up to \$1,500
 - For existing principal residence (no new construction or rentals)
 - Expires December 31, 2016
- Commercial Solar Projects
 - 30% of cost, no upper limit
 - Treasury grants up to 30% of cost also available
 - Expires December 31, 2016

Net Zero Energy Building Antarctica



Energy Costs

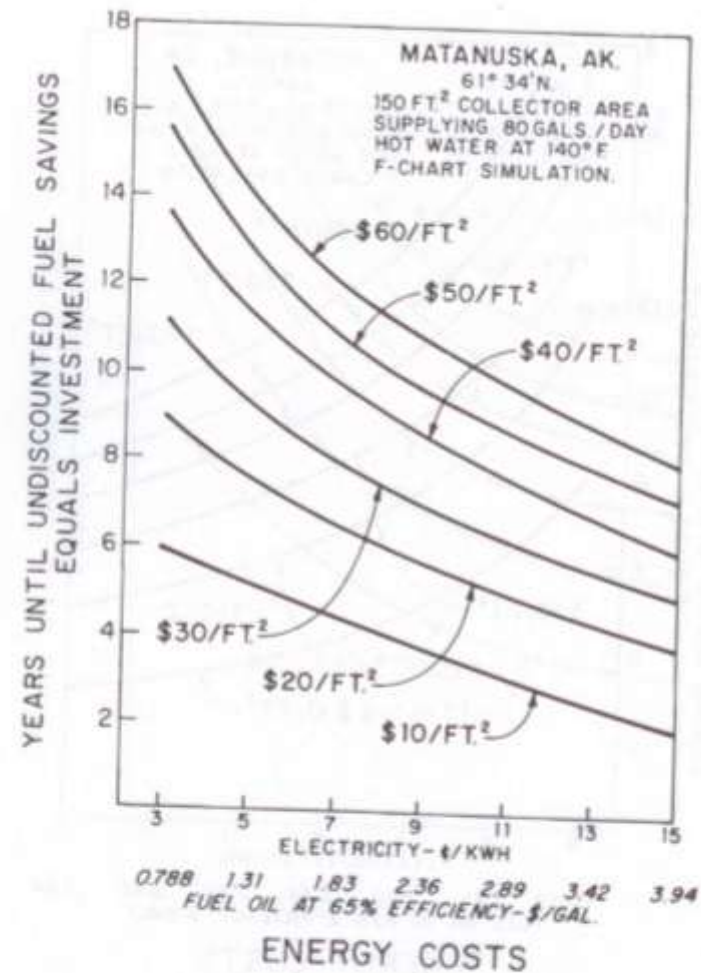


Figure 27. Payback period for solar domestic water heating system in Matanuska, Alaska.

SOLAR HOT WATER ... IN ALASKA

**-3 TO 4 TIMES MORE EFFICIENT IN CAPTURING SOLAR ENERGY THAN
PV PANELS (30-70% vs 10-20%)**

**-- A GREAT MATCH FOR AK SUMMERS BUT A CHALLENGE IN LOW
WINTER SUN & COLD**

**- MUST BE SOUTH FACING AND NO SHADE, STEEP TILT, SOUTH WALL
OR OVERHEAD ROOF TO KEEP OFF SNOW IN WINTER**

- CLOSED LOOP SYSTEM – USE GLYCOL ANTI-FREEZE SYSTEM

The SunRise Home



Masonry Heater



The SunRise Home

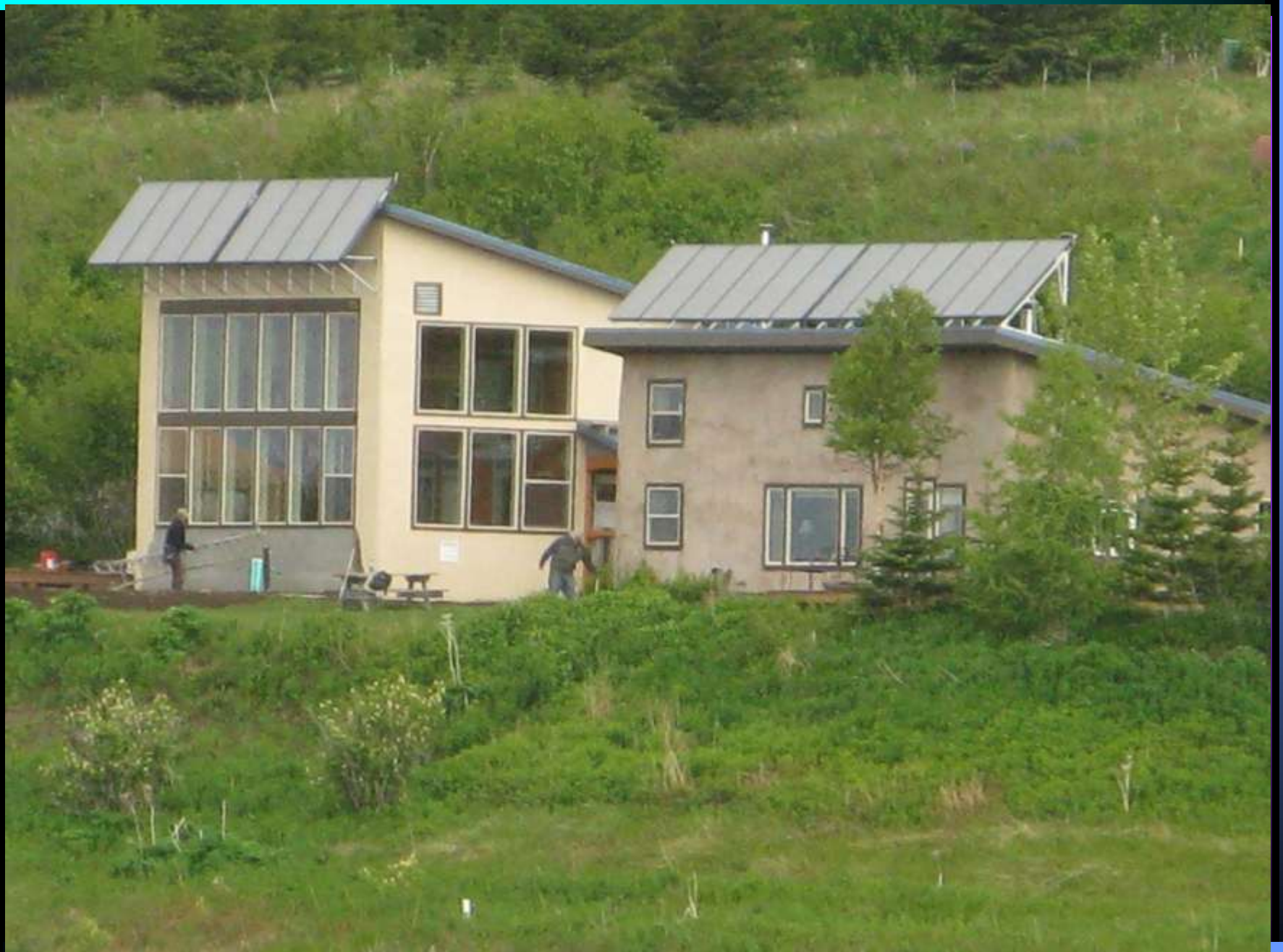


5,000 Gal Seasonal Storage Tank heated in the summer via solar heat.











Vac Tube









SOLAR ENERGY
Hot Water, Space Heating,
Solar Electric, Wind Power

Suburban
Propane

Solar Panels



Mat-Su Data

kWh/m²/Day

Sunda Seido 5-16 AS

Absorber surface 3.6m² (38.75 sf)

Max temp 190 C; Operating 247 C

Month	Global Radiation	Mean Outside Temperatu
	[kWh/m ² /Day] ▾	[°F] ▾
Jan	0.3840	13.2800
Feb	1.0800	18.1400
Mar	2.8080	23.3600
Apr	4.1520	35.7800
May	5.0640	45.8600
Jun	5.3760	54.1400
Jul	4.7520	57.3800
Aug	3.6480	55.5800
Sep	2.3040	47.6600
Oct	1.1520	35.4200
Nov	0.4320	21.9200
Dec	0.1680	13.4600
Year	31.3200	35.1650



Riverdale Equilibrium Home



"EARTH CORE WALL" HOUSE - COMPLETED IN 2000
NO FURNANCE, NO BOILER AND NO BACKUP
Kingston, NH



Solar Thermal Collectors



Cold Climate Housing Research



Solar Solutions

