



ACEP
Alaska Center for Energy and Power

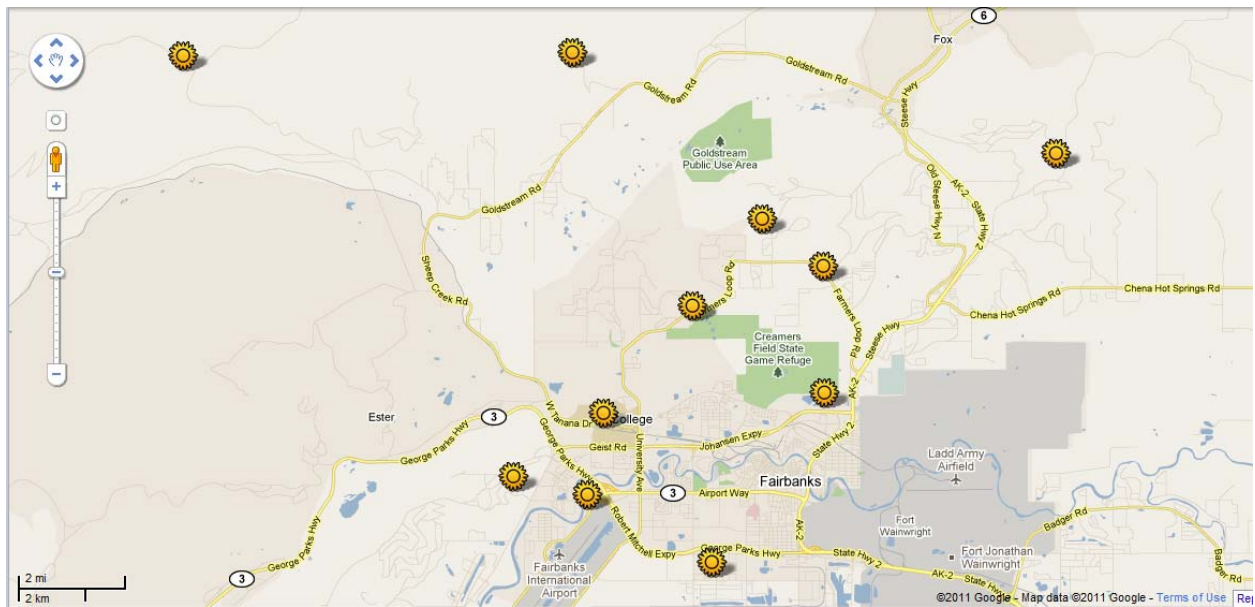
Participating sites as of May 10th 2011

Alaska Solar Tour 2011 in Fairbanks
Saturday, May 14th 2011 from 10am-4pm

Stop by the ACEP office (814 Alumni Drive) or call Markus at 474-1143 if you have any question. Visit www.uaf.edu/acep or www.alaskasolartour.org for updates on participating sites.

Participating sites:

Click on the link below the picture to open the Google map of participating sites.



<http://maps.google.com/maps/ms?e=UTF8&hl=en&msa=0&msid=205570229568208272794.0004a2f0f306df7f0e238&ll=64.88714,-147.788773&spn=0.1629,0.85556&z=11>

A - Sunrise Home - Passiv Haus at Latidue 64

The Sunrise home is the northern most Passiv Haus in North America and a milestone in energy efficiency.

The home is super insulated with over 12 tons of cellulose and powered and heated by a 480 SF solar thermal system with an internal 5000 Gal annual heat storage tank and a custom masonry heater. There is no conventional fossil fuel source or backup heat. The home features many prototype designs and ideas from the mass loaded foundation system to the diffusion open wall system without a typical vapor barrier. The home was specifically designed to utilize passive solar heat gains as much as possible whilst maintaining a comfortable indoor temperature. Since mid-February the passive heat gain from the sun maintained the home at 68-72F without additional heating.

Besides superinsulation the home features many Green Building techniques from VOC free adhesives, paints and stains to dual flush toilets and high efficient appliances. Local materials were used as much as possible during construction and the natural feel creates a connection between the inside and the outside and creates a feel of 'home". Air filtration with proper ventilation creates a healthy indoor climate. All the systems are networked and integrated with a smart panel which allows for remote monitoring and interaction with the homes systems.

The current missing link is the installation of a 5KW Photovoltaic system which is planned for this summer to bring the home to a zero energy building.

Key elements

- 2,300 SF living space (200 SF seasonal Storage), 3 Bedrooms, 2-1/2 bathrooms
- Slab at R-63 with 180 tons of insulated internal mass for passive and active heat storage
- Walls at R-75 dense packed cellulose
- Roof at R-115 blown-in cellulose in cold attic truss
- Windows glazed for maximum solar heat gain coefficient on all south facing glassing, no windows due north
- Thermal shutters from R-20 to R-40 on all windows
- Preheated ventilation air with a German HRV Zehnder ComfoAir 350 in combination with a Comfond 400 LF ground loop.
- Heating demand of 4.33 kBTU/(ft²yr) modeled in PHPP07 (Passiv Haus software)
- Airtightness of 0.48 ACH₅₀ on blower door test at pressurization and depressurization.

The Cold Climate Housing Research Center has installed many sensors throughout the different elements of the home to monitor and research its performance. The home is a prototype that helps us to learn how to optimize the integrate systems to make them more costs efficient and applicable in future projects and retrofit applications. The data collected with the experience gained will help to show that even in our extreme cold climate buildings can function very well without traditional heating systems and ever increasing utility expenses.

Design - Build by REINA, LLC - Thorsten Chlupp

For more information about Passiv Haus design go to: <http://www.passiv.de/English/PassiveH.HTM>

Contact information:

Thorsten Chlupp, REINA LLC at 457-1297 or info@reina-properties.com

Directions:

Head southwest on Chena Pump Road, turn right on Old Chena Ridge Road across from Chena Small tracks by the Transfer Site, take the second left onto Allan Adale Road, the home is the fifth driveway to the left - 2595 Allan Adale Road.



Newsminer Story: Builder uses solar power to heat Fairbanks home in the winter

<http://www.newsminer.com/bookmark/12332362-Builder-uses-solar-power-to-heat-Fairbanks-home-in-the-winter>

B - Karl Kassel - SUNSET ROOST

Sunset Roost is an off grid super insulated passive solar designed, 1,860 square-foot octagon house, including many natural artistic interior design elements. The structure is heated and energized by a unique synergistic system of renewable sources. The home sits atop a hill with expansive views to the southwest which present memorable sunsets behind Denali during the winter months. (Hence the name Sunset Roost.) Large windows allow solar gain and contain the relaxed homey interior environment while providing access to inspiring vistas. In many regards, this home defies labels and must be experienced to be truly appreciated or understood.

Technical clues:

- 3kw wind turbine on a 80-foot guyed tilt up tower
- 1600w solar PV
- 160 square feet solar thermal
- award-winning masonry heater with hydronic loop for domestic hot water
- 2 cords of firewood heated the house and 2/3 of our domestic hot water for the entire winter
- large indoor planters for decoration and thermal mass
- extensive rock-work throughout house for decoration and thermal mass
- 12,000 gallon seasonal thermal storage (water) tank
- 120 gallon domestic hot water tank
- 50 gallon pre-heat tank
- radiant floor heat (not needed or used yet) supply heat provided by a variety of sources
- R65 remote walls
- R85 roof
- argon-filled triple pane fiberglass-frame windows
- home heated over seven months exclusively by passive solar (68 degree minimum indoors)
- 6kw diesel generator (has run 3 times between Christmas and May 7)
- propane on-demand hot water heater for back-up or top-off as required
- soaking tub in master bath kept warm by the masonry heater
- flooring; stained concrete, cork and bamboo
- interesting accessories, owner made cabinet door pulls and towel racks, etc.
- Energy Star appliances, dual flush toilets, LED and CFL lighting
- much more...

Through efficient basic design, Sunset Roost embodies exceptionally comfortable living with minimal energy consumption. Renewable energy sources supply the vast majority of the demand. This is one of the most energy efficient homes in Alaska.

Directions:

From the Sheep Creek Rd/Goldstream Rd/Murphy Dome Rd intersection, take Murphy Dome Rd 2 miles then turn right on Spinach Creek Rd. Follow Spinach Creek Rd 4 miles to the end, and turn left on Old Murphy Dome Rd. Go about 200 yards; we are the second driveway on the left. There is a sign at the driveway, #4615 Old Murphy Dome Rd. For help, call Karl Kassel, 455-6115.



Newsminer Story: Cutting edge techniques keep Fairbanks home toasty with almost no fuel

http://www.newsminer.com/view/full_story/12338908/article-Cutting-edge-techniques-keep-Fairbanks-home-toasty-with-almost-no-fuel?instance=home_lead_story

C - **Pikes Waterfront Lodge** installed solar panels which produce 15,000 kWh/year. They are participating in SNAP and produce power even in the winter! The solar panels are the first large commercial installation in Alaska. Ask for Jay Ramras at the front desk and he will provide you information about the installed system. He will be in and out on the 14th so give Pikes a call before you go over there and make sure he is around.

1850 Hoselton Drive, 456-4500, www.pikeslodge.com/going-green.html

D - Phil and Suzanne Osborn

Date Constructed: December 2006

System Capacity: 1,200 watts

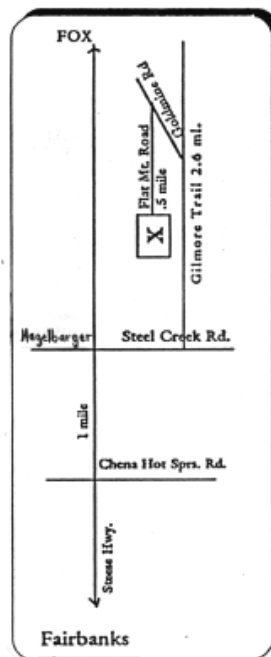
System Cost: \$13,500

Monthly Output: average 77 kWh

"I've always been interested in solar applications in Fairbanks, and the tax credit and SNAP programs made it feasible. I am excited about making a difference, every sunny day, and the idea that this can and should catch on more and more makes me proud to be one of the pioneers. I homesteaded out on the Steese in 1968, and this is a continuation of that spirit. My tracker silently follows the sun around all day, and this commercial grade device provides steady power most of the year. It will be interesting to see what the next ten years bring."

Phil and Suzanne will be around from 2-4pm since they will be gone part of the day visiting other sites of the Solar tour.

Directions:



1451 Flat Mountain Rd., 457-8086, www.wildviewacres.com

E - Spirit of Alaska Solar Panels – with Solar contractor Greg Eagan on site

The Spirit of Alaska Solar Panel Arrays are grid-interactive, solar electric systems sitting atop of some of their branches. On weekends and holidays when the bank is closed Spirit of AK sells excess power generated by our solar array back to our local electric utility thereby reducing our overhead.

Visit the Johansen branch to get system information and talk to **Greg Eagan from Remote Power** (<http://www.remotepowerinc.com/>) who will be on site from **10 am to noon** on the 14th.

Spirit of AK also has an interface from their solar panels to their webpage that shows how much electricity is being generated by each of their solar panels (Gillam & Johansen). The Johansen is getting hooked up soon. Here's the link: <http://www.spiritofak.com/info-center/go-green.html>

Directions:

-> at the corner of the Johansen Expressway and Hunter, across from McDonalds
<http://www.spiritofak.com/info-center/new-johansen-branch.html>

F - Eric Troyer and Corrine Leistikow – SNAP producer

Eric's array consists of 21 130-watt panels mounted on top of a pole fixed frame. It is rated at 2,730 watts. It averages 188 kWh per month. It is at a 90 degree angle to the horizon during the winter and at a 65 degree angle in the summer.

Eric and Corrine live at 2051 Pine Cone Road.

G - Frank & Julie DeLong residence – SNAP producer

930 Senate Loop

Directions:

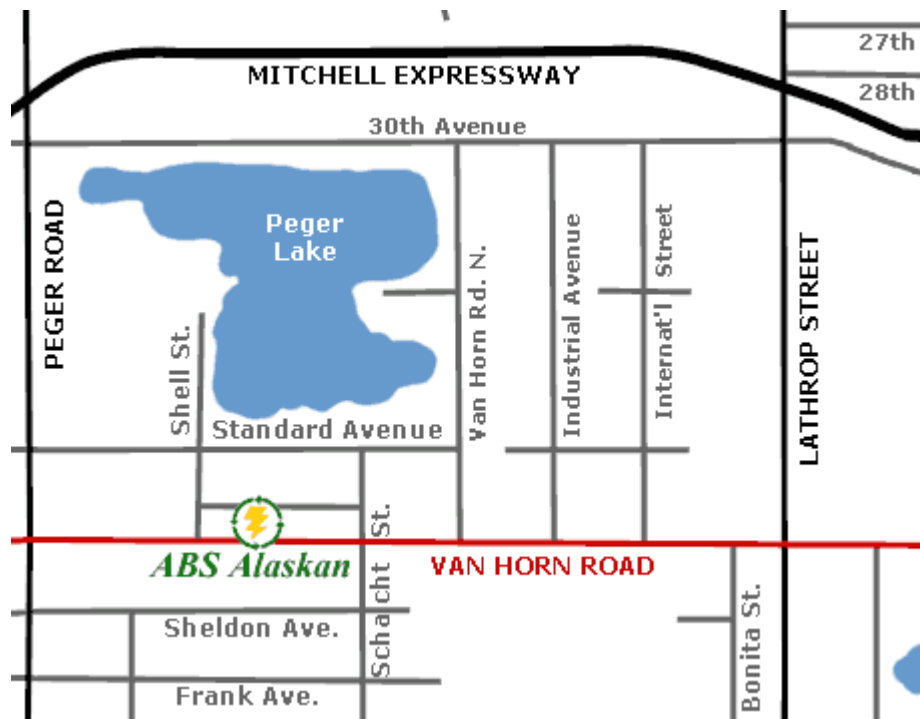
From Farmers Loop (3.7 mile across from Dog Musers Hall) go up Summit Road and take your 3rd left on Senate Loop (about half a mile). Drive to the top of the hill and at the crest of the hill look for the Solar Tour signs and DELONG sign. A Short drive way. Panels are behind the house.

Tom DeLong will be on hand to show and tell and answer questions. His cell is 347-6215

X - ABS Alaskan – Installer of Alternative Energy & Remote Power Products

Visit your local contractor – Jim and his team will answer your questions regarding alternative power systems. ABS will be open from 9am - 5pm on the 14th.

Directions:



2130 Van Horn Rd., 451-7145, www.absak.com

M- Plant Kingdom – view site only, no tour available



3,500 watt grid tied photovoltaic fixed solar array installed by local contractor Greg Egan (Remote Power Inc.) of Fairbanks in 2007. This system consists of 20 monocrystalline 175W Solar World PV panels and a SMA 4000 Watt grid tie inverter. This system has produced 3,500 KWh of clean, safe, renewable power over the past year.

The folks at Plant Kingdom are pretty busy right now and can't offer a tour of their system this year. Try to catch them in their off season if you want to learn more about their system.

620 Fideler Rd., <http://www.theplantkingdom.com/>, 457-5268

N - CCHRC – view site only, no tour available

The Cold Climate Housing Research Center operates four separate solar photovoltaic arrays as part of its Hybrid Micro Energy Project (HMEP) – a demonstration of renewable energy systems to provide year round heat and power. Each array has the ability to track and is grid-tied with battery back-up. CCHRC monitors and reports on the performance of each array. The four arrays have a total combined rated capacity of 10,160 watts.

They are also in the 3rd year of testing flat plate and evacuated tubes for solar thermal applications in Alaska.

CCHRC is closed on the 14th but stop by during the week and take a tour of their facility.



1000 Fairbanks Street, <http://www.cchrc.org/>, 457-3454

O - Eric Muehling – Solar cabins - – view site only, no tour available

An array of solar Photo Voltaic (PV) panels produces 10 KW of electricity on a sunny summer day. All interior lights are compact fluorescent. These provide plenty of light while using less energy. The Biolet (TM) composting toilet provides odorless indoor convenience in a private "bathroom. The walls are 14-inches thick making this green cabin super-insulated (R-50 walls).



If you want to learn more about the cabins go to:

<http://naturecabins.com/solar.html>

NOTE:

The cabins are occupied with renters and there cannot be an inside show-and-tell of the inverter on May 14th. However, feel free to visit the site and to contact Eric (eric@muehling.us) if you have any further questions.

Directions:

6.0 mile Farmers Loop (about 1.2 miles from the golf course). Turn on Midnight Sun Street and go to the end. Midnight Sun Street is a narrow one-lane drive. It would be best if people parked at Farmers Loop and walked the 1/10th mile to the solar cabins.
