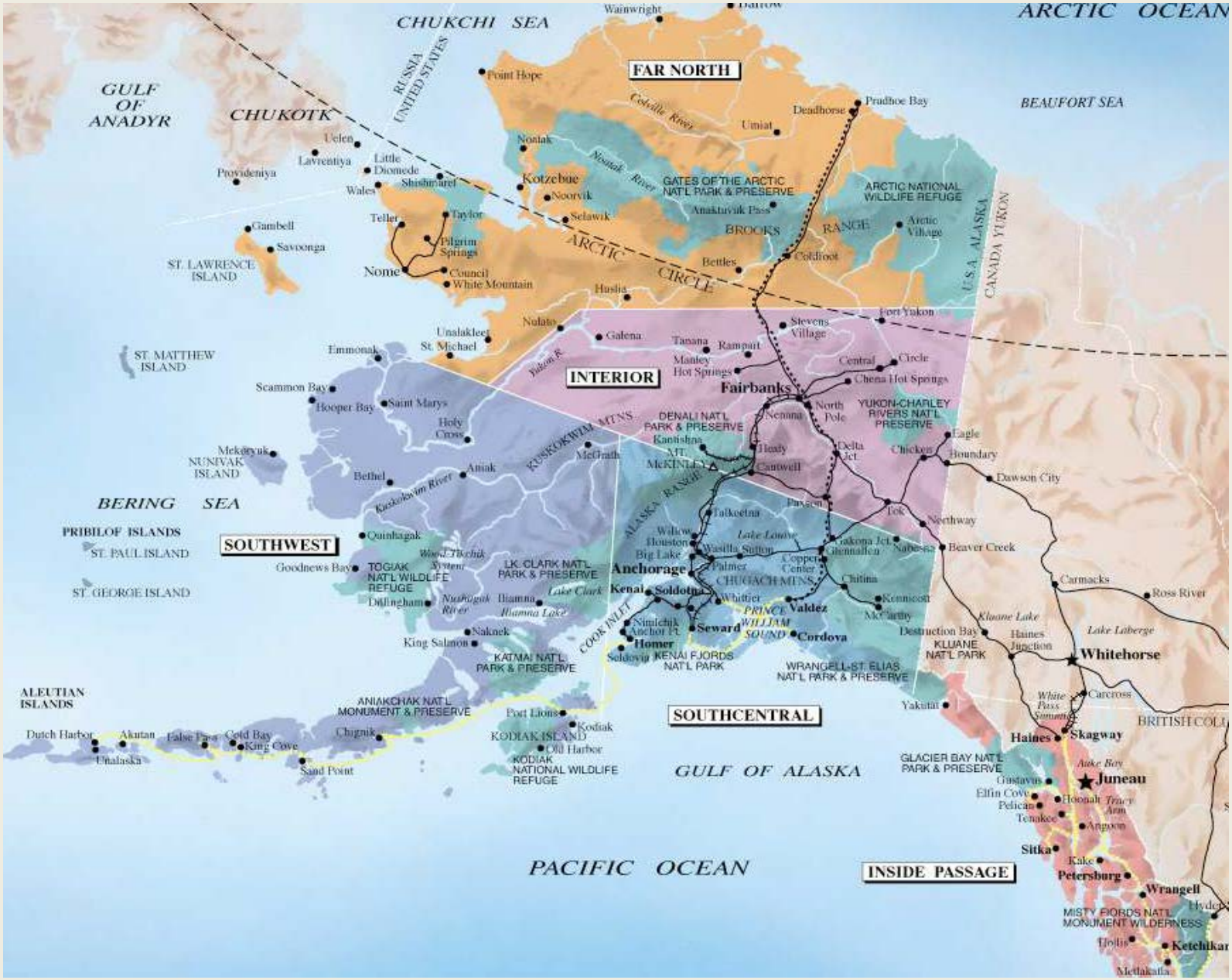
Practical Alaskan Grown Remote Energy Solutions

COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF ALASKA FAIRBANKS

Many remote communities and stranded energy



Fish camp-food preservation energy

Photo credit: M. Bacsujlaky

Summer potlatch camp cooking

Photo credit: M. Bacsujlaky

Fall hunting camp

Photo credit: M. Bacsujlaky

Collecting wood because….

Photo credit: M. Bacsujlaky

Fuel is flown in at $8.50/gallon!

Photo credit: M. Bacsujlaky

Spring remote mining operations

Fly-in mining camp

“Remote” may be right at home

Photo credit: M. Bacsujlaky

Assessing remote energy use and sources

What fuels and **how do** you use and conserve?

What types of fuels do you currently use remotely?
(white) gas, diesel fuel oil, propane, driftwood, cordwood

What do you **use** it for?
Cooking, drying or canning fish on the riverbank, laundry, sanitation, refrigeration, space heating, car, truck, boat, 4 wheeler, snow machine, lighting, communications, home electronics, CB radio

What efficiency actions can you take to reduce need? bulb replacements, type of appliances, extending usage over the day to avoid concurrent load draws

How do you use energy at camp?

1. List the items currently that use energy at your camp/cabin
2. Estimate how many hours each is us and by which fuel/source
3. Figure out how much each uses – fo generator figure out start up surge, estimate peak and continuous load

Which conditions are present for producing?

- *How windy is it, what times of day/year?*
- *How fast is the river or stream water moving nearby?*
- *How much direct & indirect sunlight is there?*
- *Are there hot springs nearby?*

Tour of off the shelf factory appliances for remote areas……

Photo credit: M. Bacsujlaky

Freezing with 12 volt

ABS Alaska, *www.**absak**.com*

Propane oven and stove

ABS Alaska, *www.**absak**.com*

Compost toilet (w/electric fan)

ABS Alaska, *www.**absak**.com*

Propane on-demand hot water heater

ABS Alaska, *www.**absak**.com*

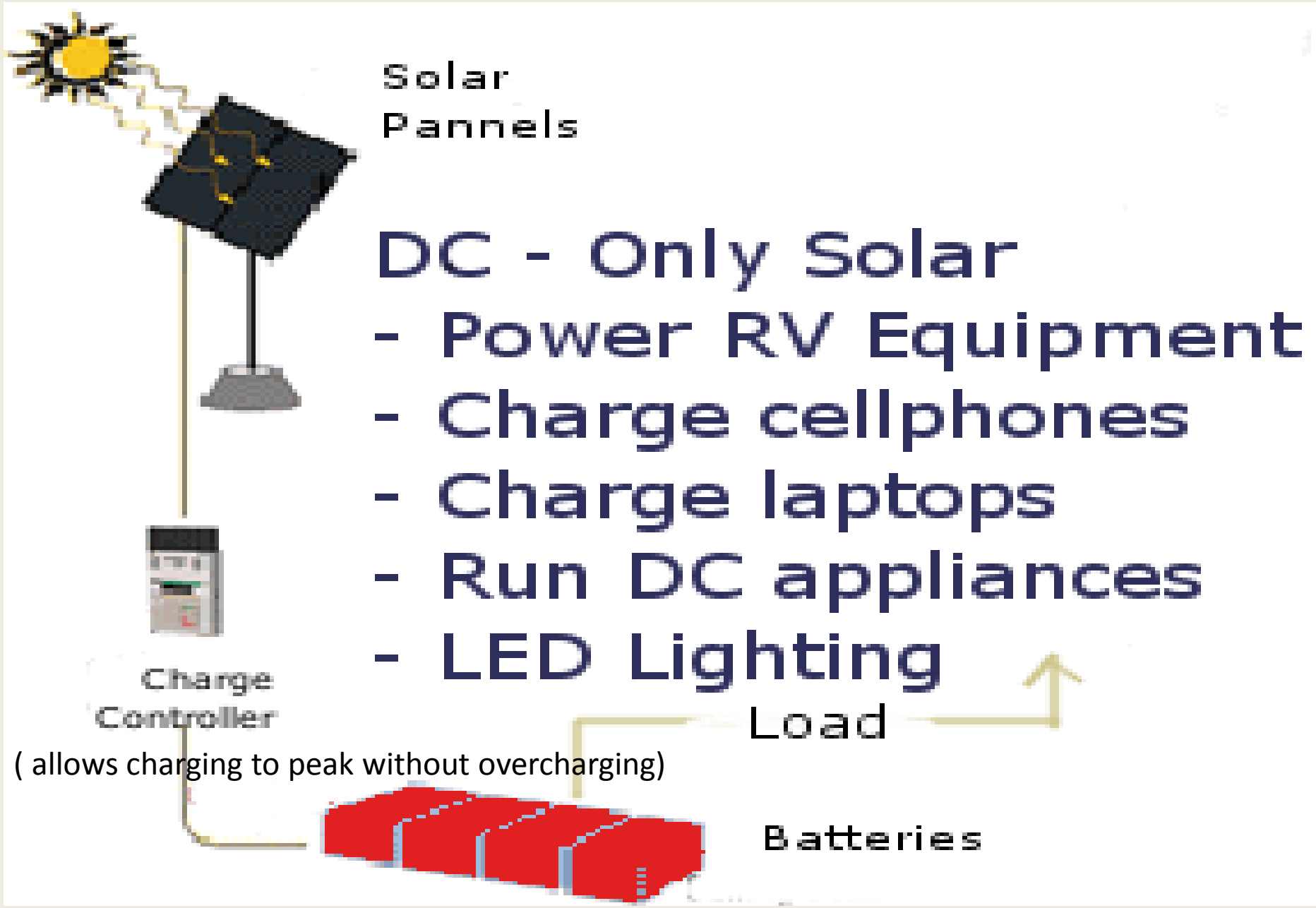
Washing with 12 volt

ABS Alaska, *www.**absak**.com*

Teaching battery bank basics

ABS Alaska, *www.**absak**.com*

DC charge



(allows charging to peak without overcharging)

Battery backup considerations for Monitor, Toyo, Dewalt tools….

Pure sine wave inverters handle igniter start-up without ruining your circuit boards on your equipment while modified wave inverters may not….

(http://www.secamerica.com/products/inverters/index.php)

Power production considerations

- Roof mounted wind turbines are often not up high enough and can transmit vibrations into the cabin

(Dayne Ellanna, CTC Instructor)

- Solar Panels best are mounted at 90 degrees if used in the winter

(Richard Seifert, solarheroak@gmail.com)

- Some river turbines are built for low volume, high velocity (Pelton wheel) while others work best for high volume and low velocity (propeller style)

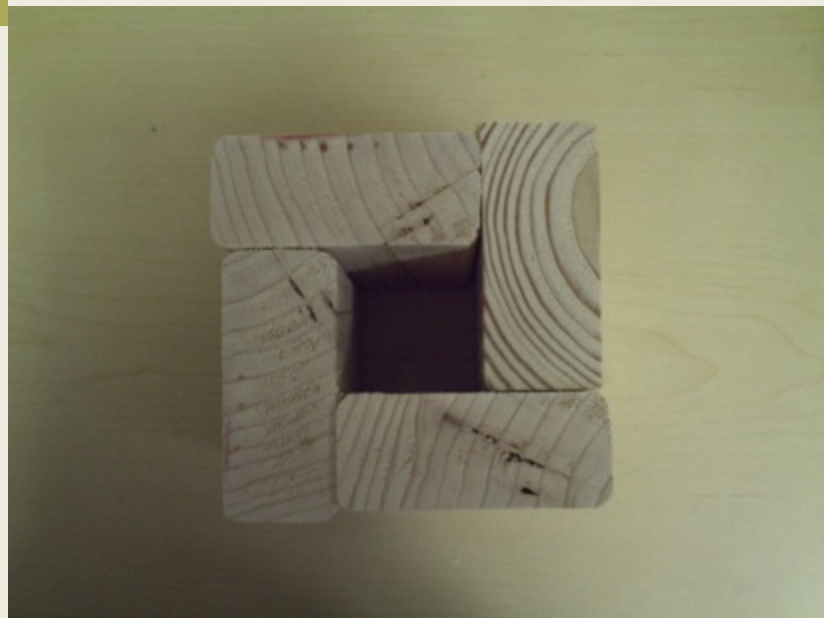
(ABS Alaska, *www.**absak**.com)*

Innovative Remote Solutions

(by mostly Interior inventors who are willing to share their work by media as well as some attending)

Burn box consumable stove- Larry Dunn

(actual box passed around)



Solar air heaters-Lakota Enterprises

(Photos at this point- will include footage)

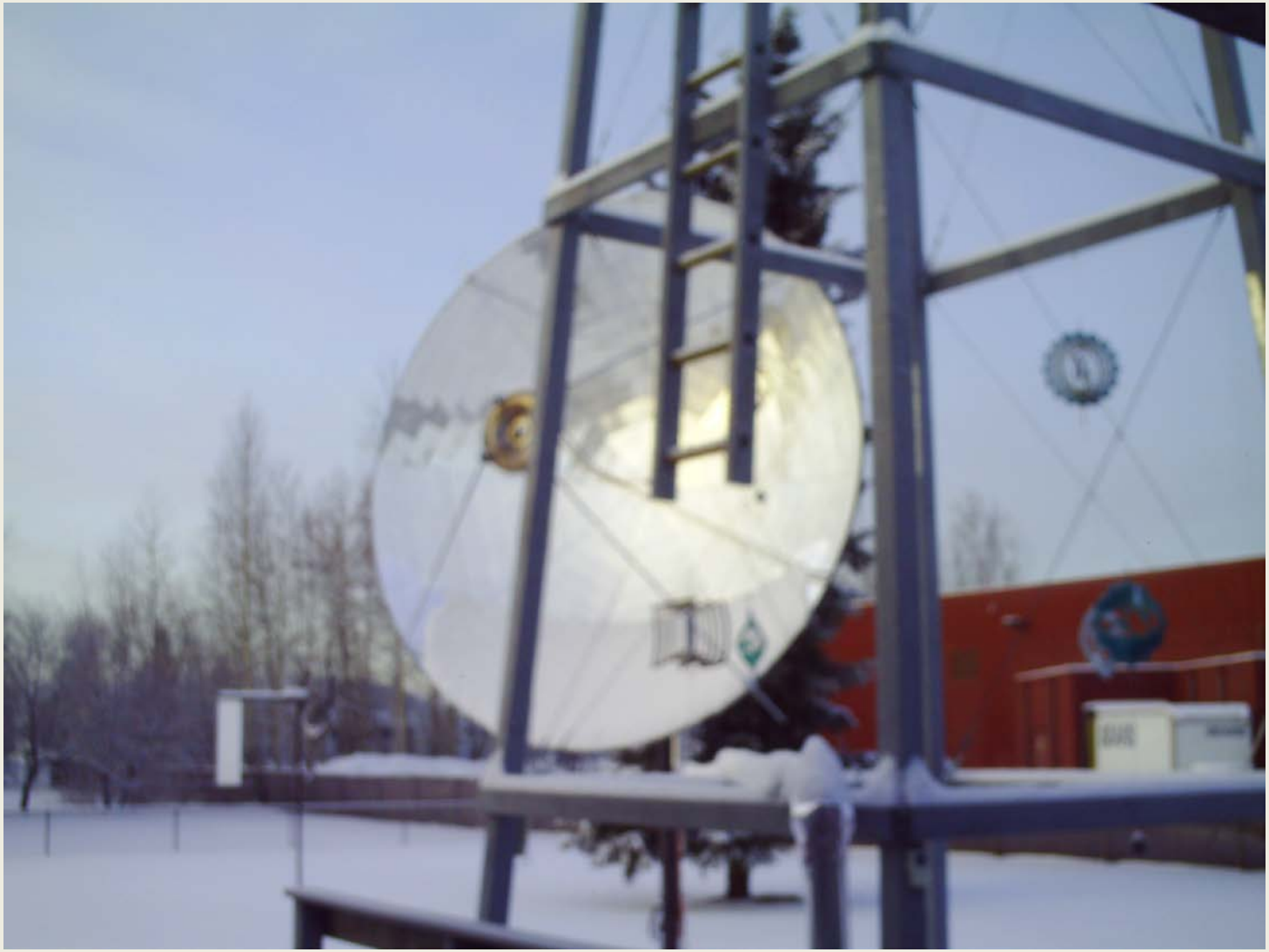
Passive hotwater heater- Jim Scott

A mobile, remote solution-Dayne Ellanna

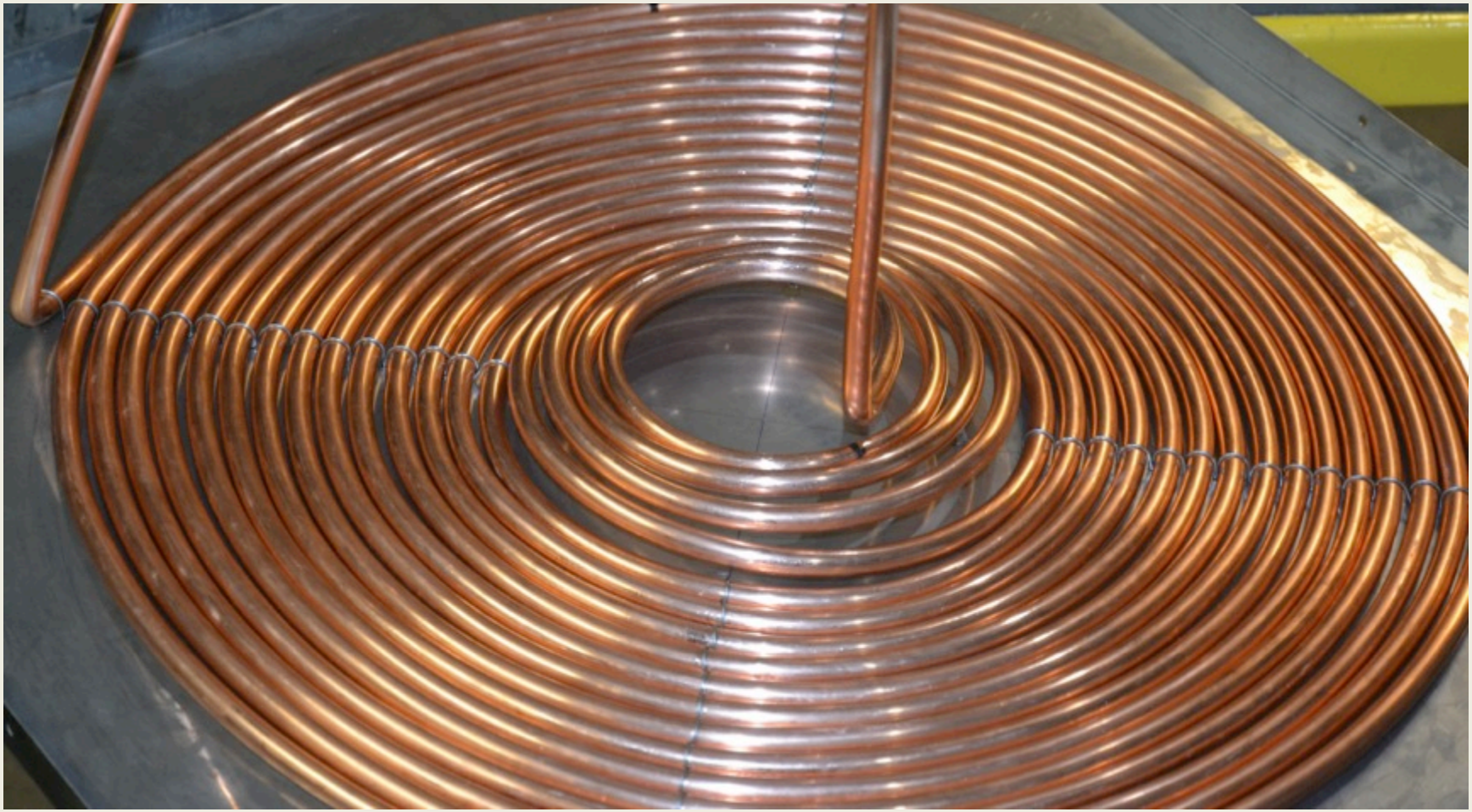
(interview and tour by inventor shown)

Parabolic solar heater- Phil Hueth

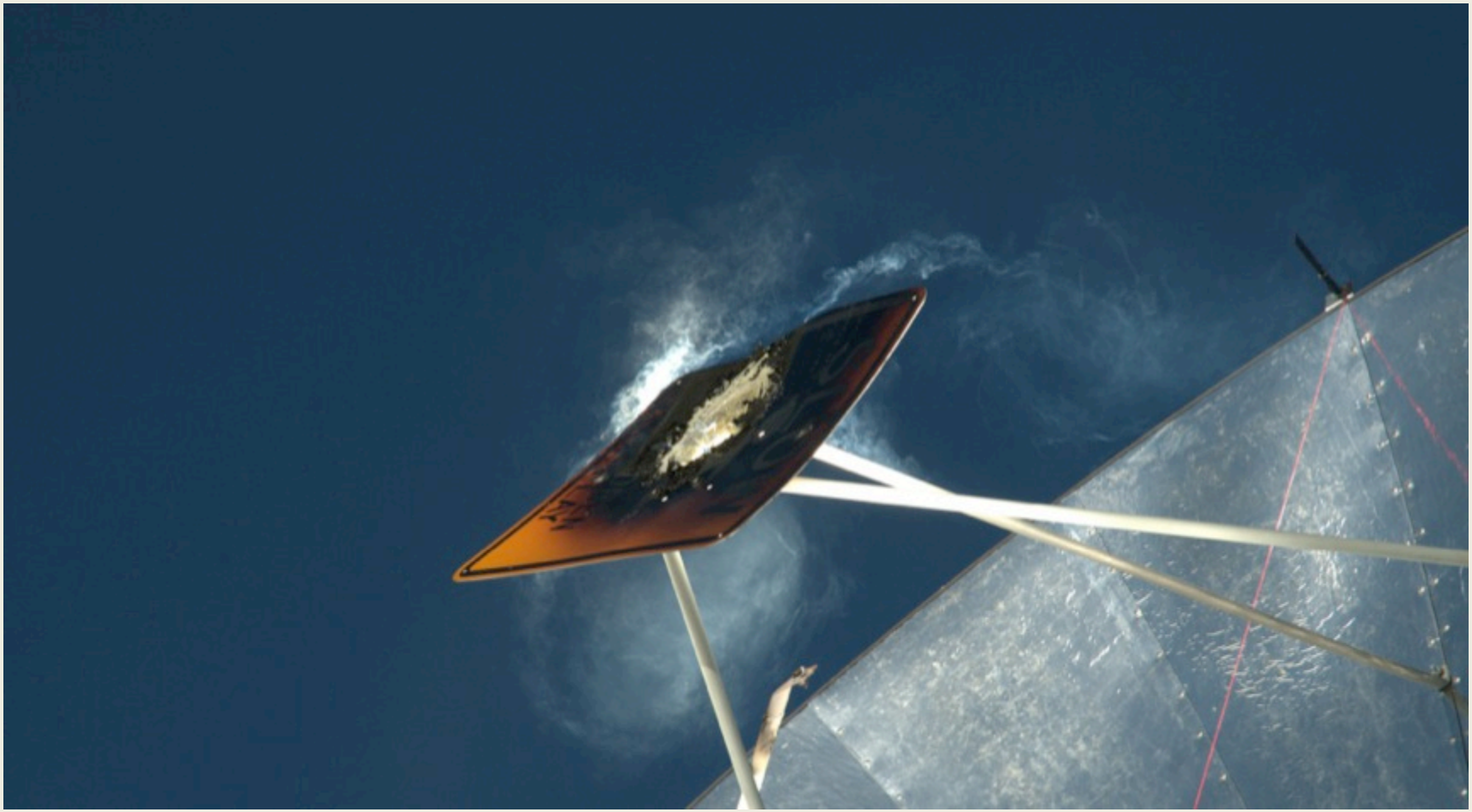
(photo tour of development over time)



Tubing for heated water



Focal point – molten aluminum sign



Copper tubing on stainless steel- melt down with steam

Setting focal point off of center (on washing machine basin)

Stainless steel gas line set at off center focal point

Prepare heat sink cavity with local sand

Putting down the first layer of fin tubing

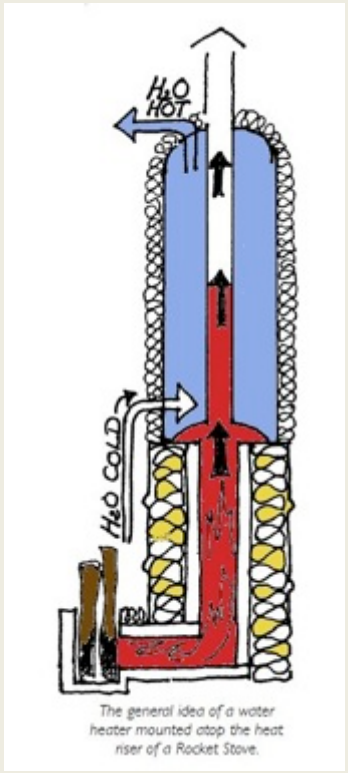
Circulation pump

Wind and solar together

Rocket stove concept slide

Under development since the 70s' with 3rd world nations

- Use much less wood
- Parts are available near by for little or no money
- Require few special tools or skills to assemble



The general idea of a water heater mounted atop the heat riser of a Rocket Stove.

Adaptations of this
-Water Heater
-Hot tub
-Drum Stove
-Others

www.cobcottage.com

Homemade rocket space heater-Gary Currington (slide show/music compiled by inventor)

Pipeline cookstove- Krause

non-electric pellet stove-Wiseway

http://www.youtube.com/user/wisestove (YouTube video of owner explaining item)

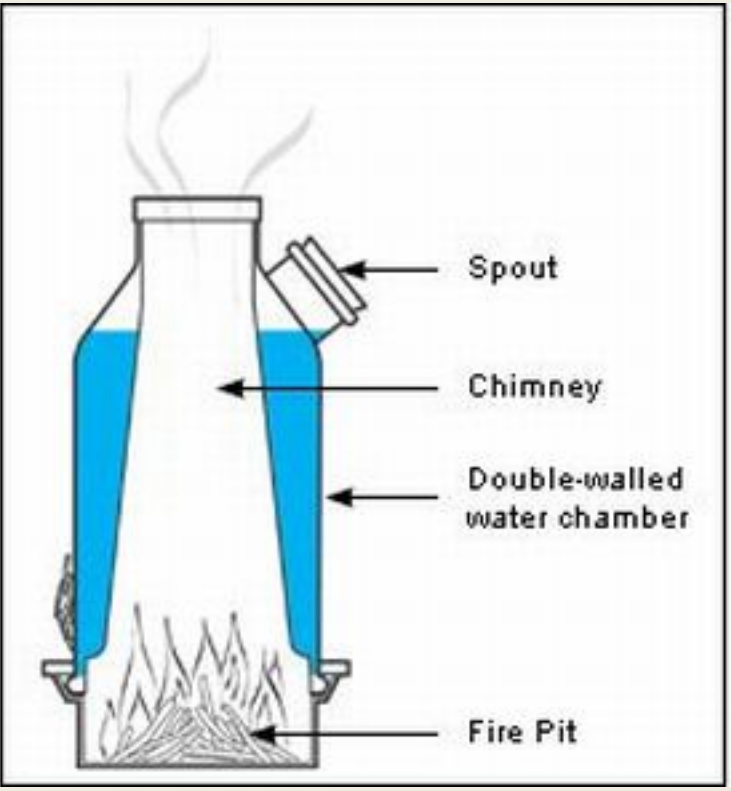
http://www.wisewaypelletstoves.com

Commercial rocket stove -Kelley

Kettle- for heating water and cooking

http://www.youtube.com/watch?v=TMCR-ie9H_w

(Example brought and handed around)



www.kellykettleUSA.com

Commercial rocket stove –Biolite

http://www.youtube.com/watch?v=KnfV_3LM5l8

www.biolitestove.com

Gasification Experimental Kit (GEK)- All Power Labs

http://www.youtube.com/user/allpowerlabs

www.gekgasification.com

Any questions?

Thank you!

Art Nash, UAF CES Energy Specialist
alnashjr@alaska.edu
907-474-6366