Energy

Energy

Who to ask: Community Councils or Governments

114. How much does electricity cost in your community per KWH?

_____

How much does it cost for a gallon of heating fuel in your community?

_____

Annual Rural Alaska Household Energy cost %

Space Heating	*38%*
Water Heating	*15%*
Lighting	*13%*
Electronics	*8%*
Refrigeration	*7%*
Cooking	*7%*
Clothes dryers	*7%*
Computers	*1%*
Other	*4%*
Total	*100%*

Source: Village Appliance Usage Spreadsheet, October 2008. University of Alaska Fairbanks' Cooperative Extension Service.

What is energy and how is it used?

Energy is all around us. It's what makes things work. When you get out of bed in the morning, you need energy to stand. It takes energy to get your cup of coffee. Energy is used to make a light bulb glow and for the microwave to work when it's plugged in. It takes energy to heat your home and run your car.

Although there are many forms of energy, this section will focus on local utility and home energy use in rural Alaska communities.

With steadily increasing food, transportation and fuel costs across rural Alaska, it's extremely important for villages to think about short and long-term goals for reducing energy bills and creating sustainable energy sources for today and future generations. The State of Alaska has set a goal that 50% of Alaska's energy usage come from renewable sources by 2025.

Rural Alaska residents spend up to 60% of their income on energy costs. Within this, 80% of these costs are attributed to home heating and electricity usage.

We are a world addicted to energy.
How we're generating it is extremely important.

115. Is the local utility using any renewable energy sources?

☐ Yes ☐ No ☐ ?

If yes, what type?

☐ Wind

☐ Solar

☐ Thermal

☐ Hydro

☐ Other _____

If not, what is the primary source of electricity and heat in the community?

☐ Diesel

☐ Coal

☐ Wood

☐ Other _____

116. Has there been any renewable energy feasibility studies done in the community?

☐ Yes ☐ No ☐ ?

If yes, what type and when?

_____

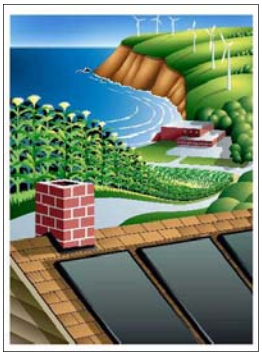
_____

Long term renewable energy plans and increased investment in renewable resources is necessary for long-term community sustainability. Many communities through-out the state have been exploring various options for renewable energy. Some have done feasibility studies and created long-range energy plans. Many Tribal and City Governments have identified renewable energy as a priority in their community plans and through council resolutions. Others have already implemented large and small-scale technologies such as wind, hydro, solar, etc.

If your community is interested in exploring options for renewable energy and energy efficiency projects, there are many great organizations right here in Alaska that can help.

- The Alaska Energy Authority
- Alaska Housing Finance Corp.
- Rural Energy Alaska Project
- Cold Climate Housing Research Center
- University of Alaska
- RurAL CAP Energy-wise Program

A renewable energy feasibility study looks very closely at what type of renewable energy options that would work best in your community. These studies are crucial if these technologies are being considered. Renewable energy systems are very expensive so it's important that communities know if they will generate enough energy to be economically sustainable.



117. Are there any small-scale wind turbines or solar panels being used in the community?

☐ Yes ☐ No ☐ ?

If yes, by whom?

_____

In the fall of 2010, the Native Village of Napaimute installed solar panels and a small wind turbine to provide year-round power to their tribal office
Photo Courtesy Mark Leary

Also in 2010, the Central Council Tlingit & Haida Tribes of Alaska, installed solar panels to supply power to an energy efficiency demonstration home in Angoon
www.sustainangoon.org
Photo Courtesy Central Council Tlingit and Haida Indian Tribes of Alaska

The cost for small-scale alternative energy technologies has gone down dramatically over the years. They are more readily available and there are a number of resources available that can help to cover the costs. Communities from across the state have been utilizing small wind turbines, solar panels and other technologies as a supplemental source for providing electricity to their tribal offices, clinics, homes and other buildings more now than ever before.

If homeowners or businesses in your community are considering small-scale alternative energy options, it is very important to have a good plan.

Depending on how the technologies are installed, some may still need to tie into the local utility grid. It is extremely necessary to involve the local utility owners from the start. If they do grant permission to tie into their grid, you will need to get it in writing in the form of a M.O.A. It may also be necessary to gather input from local residents. This is especially important if a small wind turbine is going to be installed in or near a residential neighborhood or near the school.

Contact other communities that have used similar equipment and ask them about the steps they took and what type of struggles they encountered. Although each community is unique, a lot of lessons can be learned from your neighbors.

118. Has there been any energy audits or weatherization assessments performed in homes or businesses in the community?

☐ Yes ☐ No ☐ ?

If yes, by whom and to how many homes and businesses?

_____

_____

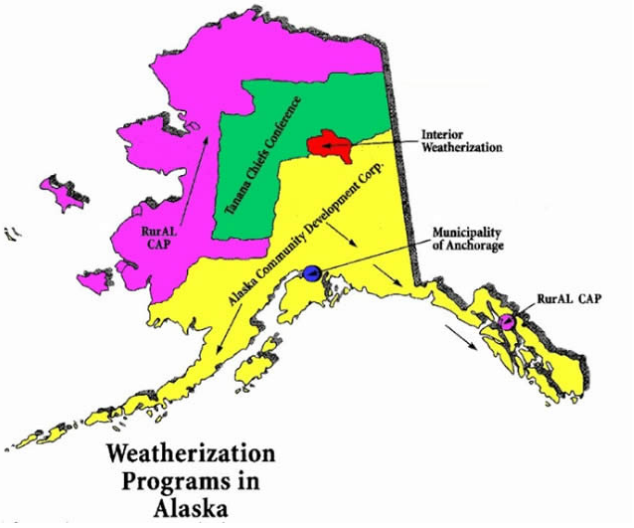
119. Has there been any home weatherization work done in the community?

☐ Yes ☐ No ☐ ?

If yes, how many homes were weatherized and by who?

_____

_____



Weatherization Programs in Alaska

Although long-range energy plans are necessary for rural Alaska villages, it is also important to focus on what we can do in the short term. Creating an energy-efficient lifestyle is not something that can be done overnight, but small modifications do have the potential for large energy savings and reduced emissions.

Energy audits, also referred to as weatherization assessments are preformed to assess how much energy a home or building is consuming and what steps can be taken to make it more energy efficient. There are many online tools that can help to guide you through the energy audit process yourself. Many local and regional housing authorities across the state have been trained to perform home weatherization inspections and retrofits. Many have now established weatherization departments within their organizations.

Home weatherization can help homeowners prolong the life of their homes from the harsh Alaska weather conditions, conserve energy, and reduce energy bills. The Alaska Housing Finance Corporation (AHFC) offers a variety of energy and home weatherization programs. There are currently five Weatherization Assistance Program providers in Alaska and fifteen regional housing authorities.

http://www.alaskacdc.org/wa_prog.php

Homeowners that meet income requirement may qualify for free home weatherization work. Visit the AHFC website www.ahfc.state.ak.us/energy/energy.cfm for more information.

Did you know that many of the appliances and electronics in your home are using energy even when they are shut off? These are often referred to as **vampire electrical loads** or **phantom loads**.

Your electronics can draw energy even while they are off, costing you money. Having your electronics grouped together on a power strip and flipping the switch off when you are not using the appliances will save you money. Worried about having to reprogram the TV every-time? No worries, they do make "smart" power strips that actually only allow power to continue to the designated outlet.

"Many appliances continue to draw a small amount of power when they are switched off. These "phantom" loads occur in most appliances that use electricity, such as VCRs, televisions, stereos, computers, and kitchen appliances. This can be avoided by unplugging the appliance or using a power strip and using the switch on the power strip to cut all power to the appliance." U.S. Department of Energy.

The CCTHITA used a TED meter to measure energy usage before and after energy saving retrofits on their sustain Angoon house in 2010.

Wouldn't you like to know what those items were and exactly how much electricity they were stealing from your pocketbook?

There are items on the market today that will allow you to do just that. Devices such as the TED (The Energy Detective) meter and the Kill-o-Watt meter are fairly inexpensive and easy to operate. They allow homeowners to see in real-time just how much energy appliances and electronics are using in their home, even when turned off.

Kill-o-Watt Meter

Being aware of the amount of energy and money being wasted, homeowners can take little steps to reduce consumption and regain more manageable electric bills.

Home Heating:
Your heating system is the largest energy user. It is important that they are maintained regularly. If your heating system is over 15 year old, it might be a good idea to look for a newer high efficiency system.

Use a programmable thermostat. You can automatically turn the heat down at night or when you're not home. This can help save up to 10% on your heating bill. If you do not have a programmable thermostat, you should manually turn it down before leaving the house for the day and turn it back up when everyone is back home in the evening.

Lighting:
Did you know that a significant amount of rural Alaska energy bills are spent on lighting in the home? Save energy and money by simply turning off the lights when they are not in use.

Many people are switching to compact florescent (CFL) bulbs. For every 60-watt bulb that is replaced, you can save $20 every four hours of use per day, per year. Today, the price of CFL's are very comparable to incandescent, but last over 10 times longer and use a lot less energy. Although CFL's are excellent, they do contain small amounts of mercury and should not be disposed on in the landfill. It's a good idea to start a safe collection location for CFL's in the community so that they can be shipped out for proper disposal.

LED bulbs are also a great alternative. They last about 25 times longer than an incandescent bulb, use even less energy then a CFL, and are becoming more price comparable to CFL's as time goes by. They do <u>not</u> contain any mercury or other hazardous materials.

Use these instead

Incandescent

CFL LED

Appliances

Large appliances in the home can use a lot of energy. These include the refrigerator, stove, dishwasher, washer, drier, freezers, etc. If your appliances are old, consider purchasing more energy efficient models that have the Energy Star label. They may be more expensive initially, but over the lifetime, will save you money.

Refrigerators/Freezers. The refrigerator should be kept at a temperature between 37° and 40° F. The freezer should be kept at 5° F if it's attached to the refrigerator or 0° F if it's a stand alone storage freezer. You can check the temperature by placing a refrigerator thermometer inside. It's also important to clean the coils regularly and make sure that the door seals are air tight. Make sure to cover food before it's stored in the refrigerator so excess moisture does not build-up. Never let frost build up thicker that 1/4 inch in the freezer. It will also save energy if you keep your refrigerator and freezer full, even if it's bottles of water. It takes a lot less energy to keep a full refrigerator or freezer chilled. Lastly, don't open the doors too often and close them as soon as possible.

Stoves. The oven should not be placed next to the refrigerator. It will make the refrigerator work harder and use more electricity. To cut energy costs, use the stove less. Try not to open the oven door too often to check on food. It drops the temperature an average of 25° F each time this is done. Only preheat when you are cooking breads and pastries. Pots and pans should be covered and matched to the right size burner when cooking. Stoves are not very efficient for cooking small meals. Cook or preheat small portions in the microwave or toaster oven. Make sure the seal on the door has no tear or rips in it, as it will allow a significant amount of heat loss.

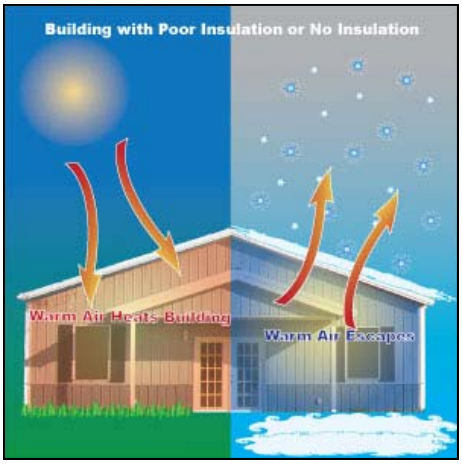
Dishwashers. Look for Energy Star dishwashers if buying a new one. Dishwashers use both electricity and hot water to operate, but use less water and energy than doing dishes by hand. It's important to make sure the dishwasher is full, but not overloaded. Dishes should be scraped to remove big chunks of food, but do not pre-rinse. You should also use the air dry function to dry the dishes.

Washers/Dryers. Traditional washers use a lot of water for each load of clothes—approximately 40 gallons. Energy Star rated machine only use about 10 gallons. Front loading models are more efficient than top loading machines. When washing clothes, you can save money by switching the water setting to cold. Yes, cold water still cleans clothes just fine. Only wash full loads. The lint filter in the dryer needs to be cleaned out regularly. When possible, dry clothes outside.

Water Heater. In most homes, the water heater is the 2nd largest energy user, accounting for a significant portion of your home energy bill. It takes a lot of energy to heat water. When purchasing a new water heater it's important to buy one to fit your needs. If you purchase one that's too big, you'll be paying to heat water you're not even using. To help minimize the energy being consumed by the heating water set the temperature to 120°, fix leaky faucets, install low-flow showerheads, set the washing machine to cold and only run the dishwasher if full. If the manufacturer recommends it, wrap your water heater with an insulating blanket. It will help keep water heated longer.

Windows and Doors. Windows and doors are common areas where heat is lost from homes. These areas should be sealed with weather-stripping and caulk. You should consider replacing single paned widows with energy efficient ones. It's also important to consider your window coverings. Insulated or heavy curtains/blinds can help keep heat in during the winter and keep unwanted heat out during the summer. During the winter, plastic window film can also help prevent heat loss.

Insulation. Warm air naturally travels to cold areas of a home. If your home is not well insulated, you are probably loosing a significant amount of heat. Most leaks are found in larger areas like the attic and under the house. If you can see the rafter in these areas, you most likely do not have enough insulation. You should also insulate all pipes, behind light socket, and electrical outlets. Some communities are exploring different home insulation methods such as outside insulation. The Alaska Housing Finance Corporation offers programs that can help to pay for insulation and its installation.



Space Heaters. Some energy efficient pace heaters can actually help to lower your energy bill. If you turn down your home heating system and use the heater in frequently used areas of the home. Different models and usage will vary. Traditional space heaters use a lot of energy, even the smaller models. They are also a fire hazard and should be used only in open areas away from anything flammable. They should be turned off before you go to sleep. There are also propane and diesel powered heaters. These are also a fire hazard and should only be used in well ventilated areas.

What can you do to cut energy usage in your home?
There are simple projects that you can do to make your home more energy efficient. The list below provides some suggestions, but does not include everything.

FREE

- Turn down the thermostat.
- Turn off the lights when leaving the room.
- Keep the refrigerator and freezer doors closed.
- Keep refrigerators and freezers full.
- Use the shortest time washing or drying clothes.
- Set washer loads for "cold" instead of hot.
- Clean the lint trap on the clothes dryer.
- Unplug cell phone charges when not being used.
- Use heat tape only when needed.
- Take shorter showers.
- Avoid space heaters.
- Use the "sleep" mode button on your TV.

For about $10

- Use plastic transparent window film.
- Use power strips.
- Replace weather stripping.
- Caulk around leaky windows.
- Install foam gaskets under switch plates and outlet on exterior walls.
- Use spray foam insulations around windows and door frames.

For about $25

- Install insulating blanket on water heather (if manufacturer recommends one).
- Install low-flow shower head.
- Install a digital thermostat that can be programmed to lower the temperature at different times to meet your lifestyle.

Over $25

- Insulate your home and pipes.
- Replace inefficient or broken windows.
- Replace air vents that are not working properly.
- Purchase an on-demand water heater.
- Purchase energy smart appliances and electronics.