



Alaska AISES Professional Chapter

Alternative Energy

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- What is Alternative Energy?
 - Wood Burning
 - Indoor Stove
 - Wood Boiler (s)
 - Solar
 - Hydro
- Programs Available
 - Alternative Energy
 - Energy Conservation (Weatherization/Maintenance)

What is Alternative Energy?

Alternative Energy is defined as: energy that is not popularly used and is usually environmentally sound, such as solar or wind energy (as opposed to fossil fuels).

Wood Burning is very popular in Alaska and is considered a renewable energy source if the demand matches the supply. As wood is cut and burned, new trees grow to replace those taken.

Solar is becoming more of a viable source of energy even in Alaska with the more efficient Solar technologies being developed and the costs to manufacture the technology come down.

Hydropower has been around for a long time but just recently has become a viable Alternative Energy source with the creation of micro-hydropower systems capable of providing power to individual home owners.

As fuel costs stay at all time highs, Alternative Energy is gaining support in the forms of lower manufacturing costs and assistance from government subsidies or credits



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Wood Boilers

- Wood boilers are very similar to oil or gas boilers
 - Hot water baseboard
 - Forced Air
 - Domestic Hot Water
- Things to Consider
 - Higher Initial Cost
 - Size makes a difference - Heat Energy Storage
 - Convenient Loading, Maintenance
 - Reuse of existing heating infrastructure
 - Can be primary with existing boiler as backup

Wood Boilers are becoming increasingly popular due to their ability to work with existing home heating infrastructure and the convenience of loading wood outside your home.

While Wood Boilers can be a good investment, there are many things to consider when researching your purchase.

- Wood boilers are often larger, heavier and contain more hardware so they have a higher purchase and installation cost
- Wood boilers must be accurately sized to the heating requirements you have
- Heat storage is a valid concern when designing your final solution



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Solar Power

- Solar power can be converted to electricity or heat
- Pros/Cons
 - High Initial Investment
 - Location governs feasibility
 - Storage of Energy Expensive
 - Entirely renewable
 - Subsidies Available
- Example Cost (\$30K for 4.5kWh)

Solar power has a lot of support right now especially in lower latitude locations due to the consistent power that can be made

While the cost of solar power has come down dramatically, it is still one of the more expensive solutions

Location plays a major part in your solar decision due to requirement to have sunlight on the solar array for as long as possible.

Should you choose to have solar as a primary energy source, storage of that energy is important. Many cities have programs to buy excess energy, not all have it. GVEA's SNAP program is one form of energy reimbursement but it does have some gotchas: member funded, cost of resale depends on number of participants and number of members paying into it, is a voluntary program by GVEA so long term commitments may be a factor

Solar power for electricity and heating are covered by energy credits.



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- Micro-hydropower is available to most homes near streams or rivers
- As little as 2 ft head can provide power
- Pros/Cons
 - Moderate Initial Investment
 - Winters provide more power than summers
 - Location and infrastructure are very important
- Example Cost: \$30K for 5kWh

Hydropower is becoming more of a possibility with the advent of new technologies that are sized for homeowners

Head is defined as the amount of water drop from between the source and destination of the stream/river being used. This value along with the flow-rate of the water source in question define the type of system you can install.

Most solutions do have a significant investment both in the hydropower system and the infrastructure necessary to get the power to your location.



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Assistance Programs

- **GVEA**
 - Sustainable Natural Alternative Power (SNAP)
(\$1.50 /kWh up to 25kW)
- **Alaska**
 - Energy Rebate Program (\$10K max, no income limit)
 - Weatherization (income based)
- **Federal**
 - Solar Tax Credit (30% of cost up to \$2K)



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References

- ABS Alaskan
<http://www.absak.com/>
- Alaska Housing Finance Corporation
<http://www.ahfc.state.ak.us/energy/energy.cfm>
- Database of State Incentives for Renewables & Efficiency
<http://www.dsireusa.org/>
- Search Terms
Solar, micro-hydropower, gasification

ABS Alaskan : This site is a surprisingly good source of information and prices for alternative energy sources. It allows you to find different solutions and also has complete packages to give you an idea of the components required.

Alaska Housing Finance Corporate: This state provided website has a general overview of Energy Assistance provided by the State of Alaska. This site would serve as a good resource for those wanting to keep an eye on the Energy Assistance plans being developed for Alaska with the current budget surpluses from oil revenues.

Database of State Incentives for Renewables & Efficiency: This website provides federal and state references for those homeowners looking for energy credits or subsidies. Information is succinct and location specific.

The Internet is filled with good information on alternative energy so rather than include specific sites, use these keywords in your search to find the most relevant sources to meet your needs. Keep in mind that many sites also sell solutions so they may not have all the possible variations to your needs.