

| 9 - GLOSSARY

Biodiesel - Made from oily seeds, algae, or waste oil. Biodiesel can be mixed with or used to replace diesel.

Bioethanol - This fuel is made from sugary or starchy crops, grasses, and woody/cellulosic biomass. Bioethanol can be mixed with gasoline.

Compact Fluorescent Lamps (CFLs) - A type of fluorescent light designed to replace an incandescent light. Compared to general service incandescent lamps giving the same amount of visible light, CFLs use up to 75% less energy and have a longer rated life.

Distributed generation - Small, decentralized, generating systems located in or near the place where energy is used. (Also known as DG, Distributed Energy Resource, or DER.)

Distribution system - Distribution lines carry power from substations to electricity end-users. These lines are generally between 4 and 13 kV.

Energy audit - An inspection of a building to determine where and how the building may be wasting energy and what improvements (through conservation and efficiency) can be made.

Energy conservation - The process of reducing energy use through changes in everyday behaviors. Turning off lights when leaving a room and lowering thermostats are some easy and effective examples that conserve energy—and changing behavior generally doesn't cost anything yet saves money.

Energy efficiency - The process of ensuring that mechanical systems—such as homes, businesses, and appliances—use energy as effectively as possible. Replacing leaky windows, using more energy efficient light bulbs, and buying ENERGY

STAR appliances are some examples of easy systems modifications that save energy and money.

Energy plan - A statement of long-range actions and policies to help guide the future of a tribe's energy use.

Interconnection - The connection between a generating system and the utility grid, enabling power to be moved in either direction.

Methane-based biogas - This fuel can be made through anaerobic digestion of animal droppings, landfill waste, or food or paper processing waste. Biogas can be mixed with or used to replace gaseous fuels like natural gas and propane.

Net metering - Under a net metering agreement, electricity that is fed back into the grid is credited at the full retail rate (the same retail price the customer pays for power they consume from the grid).

Photovoltaics or PV - A cell or panel of cells that convert sunlight directly into electricity using semiconductor materials.

Syngas - This gas mixture can be made from gasification of a variety of feedstocks and is used for industrial synthesis of fuels and other chemicals.

Transmission system - The high-voltage lines and associated equipment used to transmit electric power over long distances, generally from generators to subtransmission and distribution grids. Transmission lines have voltages ranging from 115 kV to more than 500 kV.

Wind power class - A simplified and standardized measurement to compare wind

resource. Classes ranging from 1 (power density less than 200 watts/m²) to 7 (power density greater than 800 watts/m²).

Wind turbulence - Uneven, chaotic wind conditions. Often caused by obstacles such as trees, buildings, or large land features, turbulence causes the forces on turbine blades to vary, affecting potential energy production.

| 10 - APPENDICES

Appendix A: Energy Plan Goals and Motivations Questionnaire

This questionnaire will help identify and focus your tribe's goals and motivations for completing an energy plan. It is intended for tribal council members and other people involved in high-level tribal planning.

Motivations:

What do you want to accomplish through the energy plan, and **why** is energy planning important for your tribe?

Goals:

How will your tribe meet the demands of your energy plan? What concrete steps will you take?

The following are some questions to help you brainstorm motivations and goals for creating your plan.

1. Describe the strengths and weaknesses of your tribe's current energy situation.

2. Select the 3–5 factors that are most important for your community and which you most feel should inform the energy planning process:

- Economic
- Scientific
- Environmental
- Sovereignty
- Historical
- Organizational
- Cultural
- Local/global obligations
- Other: _____

3. For each factor chosen above, answer the following questions:

- What does this factor mean in the context of your tribe and energy planning?
- What about your tribe's experiences and history make this factor important?
- How do you envision this factor being incorporated into your tribe's energy plans?
- What are 1–3 concrete energy goals that your tribe can accomplish relating to this factor?
- How will your tribe benefit from accomplishing these goals?

Appendix B: Do-it-yourself Residential Energy Audit

A simple residential energy audit is an analysis of the energy used for space heating, the largest residential energy cost. Additionally, every other area of energy use—appliances, lights, hot water—can be audited separately, or combined for a full house audit.

An audit of space heating energy involves identifying cracks and holes that let heat escape, identifying insulation levels, determining the desired level of insulation, and identifying ways to increase the efficiency of the heating equipment. To find cracks and holes, carefully examine every wall, window, door, chimney, and joint between building materials in the house, both from the interior and the exterior. Look for places where daylight shows through a crack, places that feel drafty, and places where wires or pipes go through walls. Use the sample checklist to guide your search.

A building pressurization, or blower door, test is an excellent way to identify leaks. Conduct such a test by following these steps:

- Close all exterior doors, windows, and fireplace flues.
- Turn off all combustion appliances, such as gas furnaces and water heaters.
- Turn on all exhaust fans (generally located in the kitchen and bathrooms) or use a large window fan to suck the air out of the rooms.
- Patrol the house with a burning stick of incense, looking for wavering smoke, or with a damp hand, feeling for drafts.

Home Energy Audit Checklist

Air leaks

- Electrical outlets
- Switch plates
- Window frames
- Baseboards
- Weather stripping around doors
- Fireplace dampers
- Attic hatches
- Wall- or window-mounted air conditioners
- Pipes
- Wires
- Foundation seals
- Mail slots
- Doors
- Windows
- Exterior corners
- Exterior chimney
- Exterior foundation

Attic

- Air leaks
- Low insulation on hatch
- Low insulation on floor
- Poor seal around hatch
- No vapor barrier
- Insulation covers vents

Basement

- Low insulation in floor above basement
- Low insulation above foundation
- Low insulation around hot water heater
- Low insulation around pipes
- Low insulation around ducts

Bills

Heat source: _____
Heat price: \$ _____ per _____
Max heat bill: month _____ \$ _____
Day temp: _____ Night temp: _____
Elec price: ¢ _____ per 1st _____ kWh
¢ _____ per next _____ kWh
Max elec bill: month _____ \$ _____
Ave. elec bill: \$ _____

This test will make it easier to find cracks by creating a low pressure zone inside the house, which pulls outside air into the house through even the smallest cracks. Searching for cracks can be time-consuming, but every crack plugged will save money and energy.

The next step is to determine the locations and insulating abilities of insulation. Minimally, look in the attic and basement to see where insulation exists. Ideally, determine the type and R-value of insulation in every wall, floor, and ceiling, and the R-value of every door and window. It is recommended that to try to determine if insulation exists in some walls between heating living spaces and the outdoors. The most common way of doing this is to look through an electrical outlet. Making sure the electricity is off, take off the outlet cover and poke into the wall with a long thin rod. If there is resistance, there is insulation. Shine a flashlight into the opening and try to see the type and R-value of the insulation. Use the form on the next page to record levels of insulation found.

Check to see if heating equipment labels display annual fuel utilization efficiency (AFUE). AFUEs below 75% are inefficient and below the current minimum standards, while AFUEs over 90% are highly efficient. If the AFUE is not displayed, there are several indirect ways of estimating if heating equipment is operating inefficiently. The lifetime of a furnace or boiler is generally around 15 or 20 years; if the furnace is 15 years old or older, it may be cost effective to replace it with an energy efficient model such as a condenser. Find out when the furnace or boiler last had a professional tune-up. These tune-ups are well worth the money, and should occur every year

for oil heaters, every two years for gas furnaces and boilers, and every three years for heat pumps. Examine the heater for these characteristics of low efficiency: continuously operating pilot light, combustion gases regulated only by natural air flow, wide flue pipe, heavy heat exchangerProgram (<http://www.ornl.gov/~roofs/Zip/ZipHome.html>).

Insulation Evaluation for Home Energy Audit

Room	Wall/Floor/Window/ door/ceiling/pipe	R-#

Appendix C: Issues to consider when planning an Energy Conservation Event

Audience

- Office workers
- LIHEAP recipients
- Homeowners
- Home renters
- Business owners
- Tribal administrators
- Schoolchildren
- Employees of a tribal enterprise
- Seniors
- Parents
- General audience

Topics

- Weatherization
- Lighting and daylighting
- Heating and HVAC
- Home appliances and hot water
- Office appliances
- How to save money quickly
- How to save money over time
- How to shop for appliances
- How to audit energy use
- How to read energy bills
- How the utility can help
- Demo of efficiency products
- LIHEAP and how to receive it
- Rebates, incentives, and assistance programs
- Where to find more information
- Tribal energy plans

Presentation methods and materials

- Lecture or Powerpoint
- Games and activities
- Question & answer
- Discussion
- With a meal
- Information handouts
- Applications for assistance programs
- CFLs
- Weatherization materials
- Low-flow faucets
- Motivational/reminder posters or fridge magnets

Presenters

- Tribe member
- Utility representative
- NWSEED
- LIHEAP representative
- Building manager
- Consultant/contractor

Venues

- School
- Community center
- After-school program
- Tribal office
- Private home
- Place of employment
- Continuing education series
- Day, night, or weekend

Expenses

- Presenter fee
- Space rental
- Food
- Publicity expenses
- Information handouts
- Supplies

Publicity

- Mail flyers to audience
- Post flyers at location
- Ad in newsletter
- Ad in newspaper
- Ad on radio
- Phone calls
- Workplace emails
- Announcement at community events
- Publicity through speaker's organization
- Word of mouth

Evaluation of event

- Number of people contacted
- Number of ads
- Number of positive responses
- Number of attendees
- Amount of materials handed out
- Responses on evaluation forms
- Number of people on sign-up sheet
- Number of follow-ups contacts