

# *DOE Tribal Energy Program*

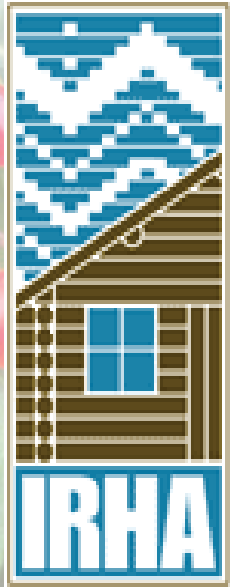


Interior Regional Housing Authority  
Energy & Weatherization Program

A Step Toward Conservation

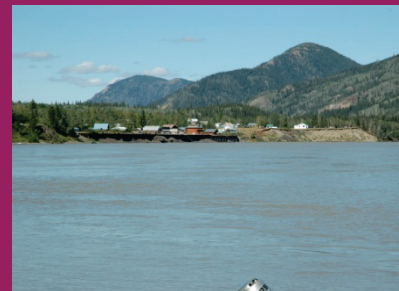
[www.IRHA.org](http://www.IRHA.org)

# About IRHA



- The Interior Regional Housing Authority (IRHA) is a non-profit organization with authority derived from both state and federal law
- IRHA was formed in 1974 along with thirteen other Alaskan housing authorities to administer programs of the U.S. Department of Housing & Urban Development (HUD) throughout the state.
- IRHA serves the 29 tribes of the Doyon Region, encompassing remote traditional villages, and Alaska's second largest city, Fairbanks. Our service area is larger in land area than the entire state of Texas.

Serving this vast region effectively is a tremendous challenge. Through partnership with its member tribes, IRHA develops locally driven plans to improve and expand affordable housing in communities large and small. Employing local residents whenever possible, IRHA contributes to village economies, and provides valuable job training and experience.



# DOE Program overview



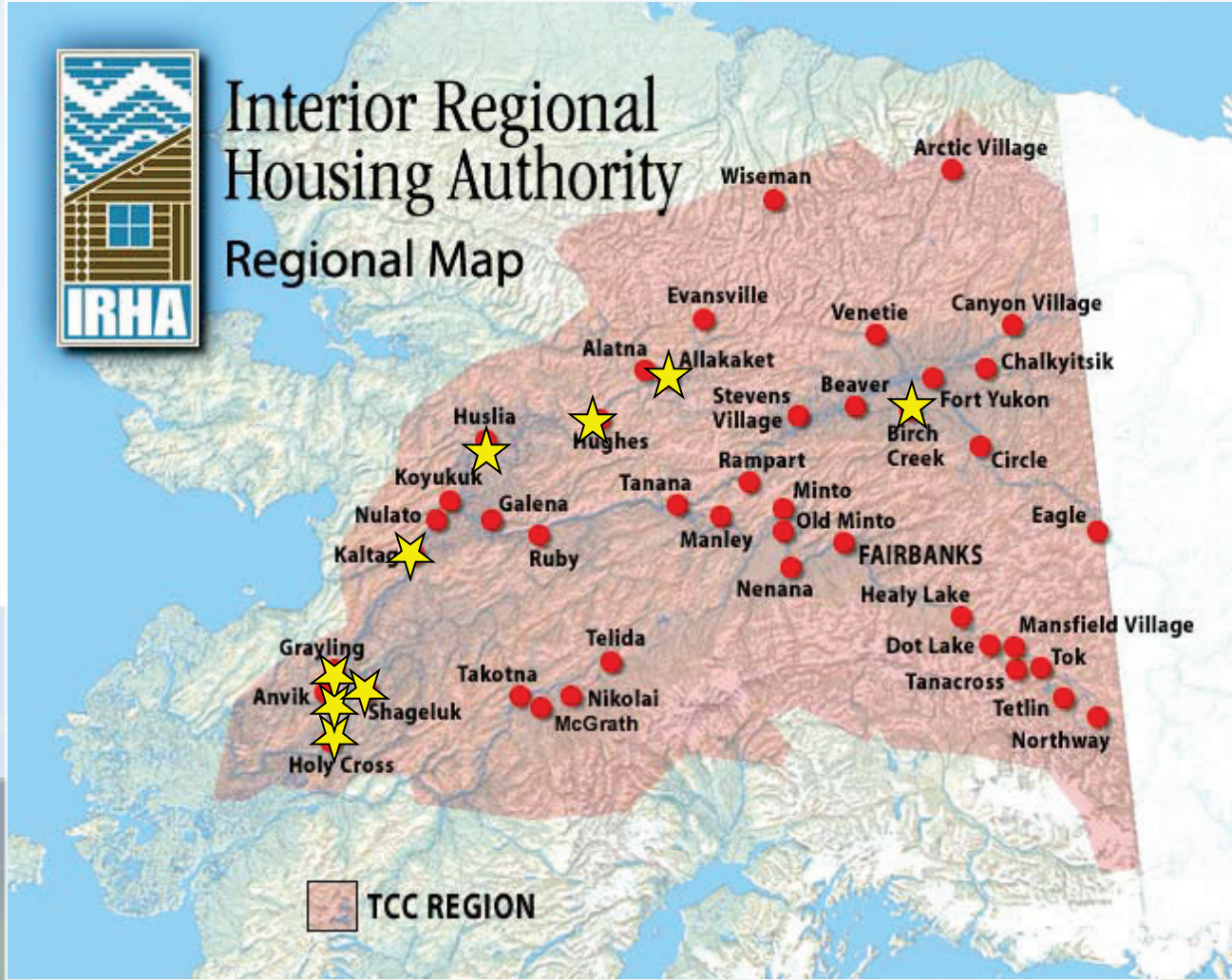
- **Project Objective:** Develop an energy conservation program relevant to each specific community, educate tribal members and provide the tools to implement the conservation plan. The program seeks to achieve both energy savings and provide optimum energy requirements to support each tribe's mission
- **Background:** Villages served by IRHA experience some of the highest energy costs in the nation while earning income is significantly below the national median income. The communities included are off the road system so access is limited to small plane or barge so meeting basic needs such as heat and electricity has been a challenge for the communities.



★ → Communities participating in DOE program



# Interior Regional Housing Authority Regional Map



# Energy Crisis in Rural Alaska



- **Why are prices so high?**
  - Alaska is largely road less, and essential supplies that arrive by barge or airplane will cost much more.
- Alaskans in rural areas will spend 40 percent of their annual income on energy this winter compared with 4 percent for the average Alaska household, according to a University of Alaska Anchorage study published in May.
- According to a study by the Institute of Social and Economic Research, the annual net population loss from rural Alaska has more than doubled since 2006. The report says the recent spike in oil prices is a big challenge to rural residents.
- Electricity is so expensive that some communities have been turning off their generators. In Venetie, a Gwich'in village of about 400 people in Interior Alaska, in recent months, the lights have turned off at 8 p.m. and haven't come back on until about 6 a.m. In the winter it's dark almost 22 hours a day.
- In rural Alaska, food prices are double or more than food prices in urban areas
- There are several local buildings that are inefficient
- Community generators are oversized



# *Project Status*



## **Accomplishments**

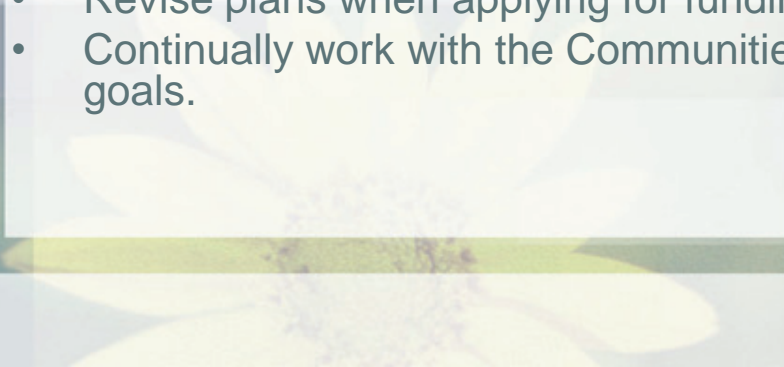
- Held Energy Workshops in all 9 villages
- Worked with all 9 communities on creating an Energy Plans
- Assessments of community buildings were conducted
- Hired a local community member to collect Energy Use Data and track usage on community buildings
- Awareness of energy use
- Educated community members on energy efficiency and how they could save energy within their own homes and do their part in reducing the energy load and demand on the local generators.

## **Lessons Learned**

- Teaching people about energy efficiency and recognizing phantom loads
- Alternative Energy Options available and suitable for the village
- What people can do within their homes to cut the overall community load

## **Activities yet to be completed**

- Revise plans when applying for funding
- Continually work with the Communities and Tribes to help achieve their goals.



# Allakaket



- Allakaket is located on the south bank of the Koyukuk River, approximately 190 air miles northwest of Fairbanks and 57 miles upriver from Hughes
- The first mission on the Koyukuk River, St. John's-in-the-Wilderness Episcopal Mission, was established in 1906 at the old site of Alatna. A post office was opened in 1925. In 1938, the name of the community was changed to Allakaket (the old name for the mission), and the name Alatna was assumed by the small Eskimo community across the river.
- The population of Allakaket is 125 (2007)
- Allakaket is mainly a Koyukon Athabaskan community
- The local government is the Allakaket Traditional Council



# Allakaket Energy Plan



## Energy Costs

- Gas: \$7.00 per gallon
- Heating oil: \$6.50 per gallon
- Price per kWh: \$0.73
- The chart shows the cost of electricity bills for 6 buildings in Allakaket
- The average electric bill for the Washeteria is \$3,159.11
- The Washeteria is the only facility in the community, besides the school with running water

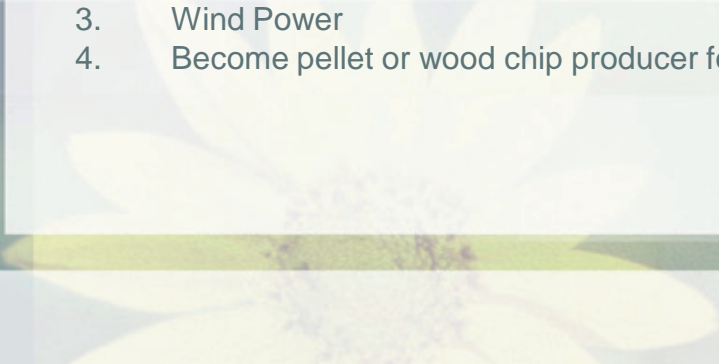
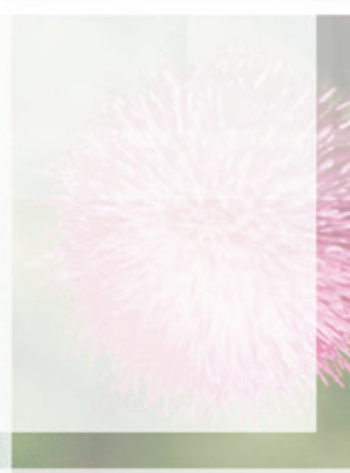
**Vision Statement:** Allakaket will research and invest in affordable green, renewable energy sources available within and surrounding the community. We will also educate our community members on energy efficiency. (May 2008)

## Action Plan (how we reached the vision):

1. Community planning—started spring 2007, workshops began March 2008
2. Educate community on energy efficiency measures
3. Research/Feasibility studies on new technology and renewable sources
4. Apply for grants
5. Install renewable technologies

## Community Energy Priorities (in order from most important to least important):

1. Waste Heat Recovery; clinic, washeteria and tribal hall
2. Solar Power
3. Wind Power
4. Become pellet or wood chip producer for surrounding communities





# Workshops



- The main concern for community members is the high cost of energy
- Members discussed ways to reduce energy costs such as using smaller engines and boats when traveling
- Community priorities are alternative energy projects
- Through the workshops, a community energy plan and vision statement was developed



# Birch Creek



## Suggestions -

Currently Birch Creek is currently running a 65 kW generator with a load of 13 kW. The generator can be replaced with a smaller model so they are not running such a big generator. Birch Creek has the opportunity to explore for other natural resources such as natural gas and oil which is vast in their area and may need the extra power in the near future.

- Birch Creek is located along Birch Creek, approximately 26 miles southwest of Fort Yukon
- Birch Creek Jimmy was the founder of Birch Creek. He was joined by other extended family members. In about 1916, the group moved three miles upstream to the site of the present village. It was used as a seasonal base for harvest activities until the early 1950s, when the establishment of a school encouraged village residents to adopt a less nomadic way of life.
- The population of Birch Creek is 26 (2007)
- There are 7 families in Birch Creek (2000)
- Most residents are Dendú Gwich'in Athabascans, and are active in subsistence activities
- The local tribal government is the Dendú Gwich'in Tribal Council

# Birch Creek Energy Plan



## Energy Costs

- Gas: \$7.50 per gallon
- Price per kWh: \$0.60
- The tribe owns the electric company
- Gas: \$7.50 per gallon
- Price per kWh: \$0.60
- The tribe owns the electric company

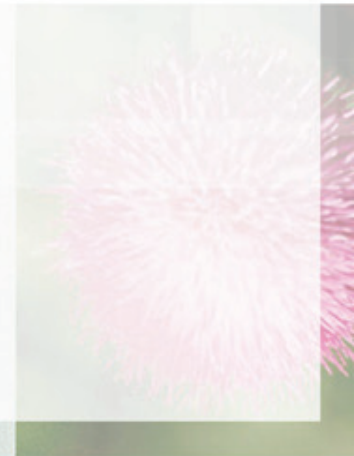
**Vision Statement:** Birch Creek will lower the cost of electricity through education and exploring local energy resources to become less dependent on diesel generation while maintaining a high quality of life and creating local jobs. (May 2008)

## Action Plan (how we reach the vision):

1. Community planning—started spring 2007, workshops began March 2008
2. Education
3. Explore other energy sources
4. Feasibility studies on energy sources
5. Energy camp for education
6. End-Use Efficiencies
7. Install renewable energy technology
8. Look at alternative methods of refrigeration

## Other community goals:

- Elder's travel for artwork workshops
- Fill community health aide position
- Seek funding for cultural activities
- Plan meetings at a campsite
- Get people to move home (in-migration)
- Create education/vocational programs (GED preparation, computer lab)
- Create higher education preparation programs
- Build a community library/recreation room
- Create jobs
- Create more stores
- Create position for a counselor in the community
- Create athletic programs



# Workshops



- Birch Creek residents were concerned with energy costs and developing infrastructure
- Community priorities are:
  - Lowering energy costs
  - Developing community programs
  - Emphasizing education for the youth
- Birch Creek has completed a community energy plan and a vision statement



# Hughes



Hughes is about 210 air miles northwest of Fairbanks, and it is on a bluff on the east bank of the Koyukuk River

Hughes was a riverboat landing and supply port for the nearby gold fields. Many of the local Natives remained in Hughes and the community began to grow slowly. Incorporated in 1973, the city was gradually modernized

The population of Hughes is approximately 72 (2004)

- The approximate number of families is 39 (2000)
- Hughes is a Koyukon Athabascan village
- The local government is the Hughes Village Council. This is a board consisting of a 1st Chief, 2nd Chief, and (3) three Council Members. These tribal officials are elected by the tribal memberships and have staggered terms ranging from 1-3 years

- **Gas: \$8.50 per gallon**
- **Heating Oil: \$7.50**
- **Price per KwH: \$0.61**
- **The average electric bill for the health center is \$432.17**



# Hughes Energy Plan



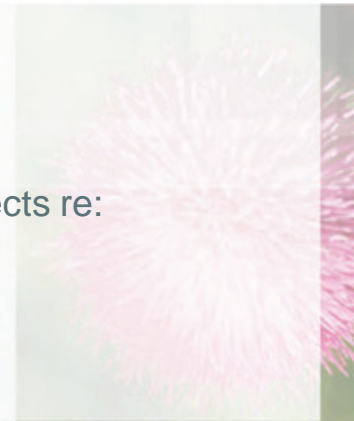
**Vision Statement:** Hughes will use efficient cheaper energy, while investing in appropriate alternative energy sources.

**Action Plan** (how we reach the vision):

1. Community planning
2. Energy Education—Started December 2007, finished October, continues informally
3. Increase end-use efficiency—Start spring 2008, done December 2008 (ABSN)
4. Plan future grant proposals for community infrastructure (including energy)—start spring 2008, on-going
5. Applying for feasibility grants for alternative energy—April/May 2008-December 2008
6. Installing/implementing alternative energy sources—5 years or less  
Get on smaller 37kW generator (currently on 78kW generator) –One year

**Ways that energy goals fit into current other community goals:**

- Complete/improve water and sewer→ cheaper, energy efficiency
- Better health care→ cheaper, energy efficiency
- Improve education→ Educate on energy savings and goals
- Increase youth and community motivation→ involvement, student projects re: energy
- Using local resources→ to produce energy
- Saving money→ energy is a huge community cost



# Workshops



- Hughes residents were primarily concerned with rising energy costs
- Keeping the community self-sufficient and improving the community are other priorities



## Suggestions and Ideas

*One of the community concerns is self sufficiency. There is so much going on in Hughes right now, the construction of two homes, building a new clinic, and the water sewer project. They want to continue to see their community thrive after all these projects are completed. A solution they saw was tourism. I suggest the Alaska Marketplace for seed money, along with the funding sources we suggested for the community energy projects: Alaska Energy Authority, Rasmuson Foundation, and Community Development Block Grant.*



# Huslia



- Huslia is located on the north bank of the Koyukuk River, about 170 river miles northwest of Galena and 290 air miles west of Fairbanks
- Huslia's population is 255 (2007)
- Most residents are Koyukon Athabascan
- Cutoff Trading Post (also called Old Town) was established in the 1920s about 4 miles overland, or 16 river miles, from modern Huslia. In 1949, the community moved to the present site because Cutoff flooded frequently and the ground was swampy. Huslia (originally spelled Huslee) was named after a local stream. In 1950, the first school was established, followed by a post office, airport and road construction in 1952. At this time, families began to live year-round at Huslia. In 1960, a health clinic was constructed, and in 1963, 29 individual hand-pumped water wells were installed. The City government was incorporated in 1969.
- The local tribal government is the Huslia Traditional Council

**Gas: \$6.25 per gallon**

**Heating Oil: \$7.00 per gallon**

**Price per KwH: \$0.32**





# Huslia Energy Plan



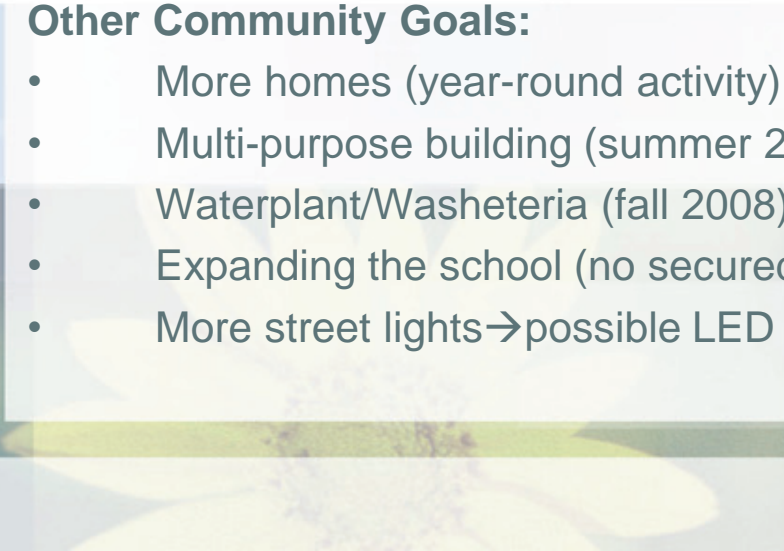
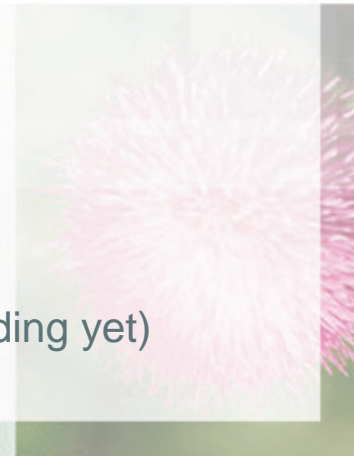
**Vision Statement:** Huslia has a vision to see cheaper costs of energy, and educate our community on energy efficiency. We will use the resources we have now and explore other alternative energy sources.

## **Action Plan:**

1. Assess appliances in homes/buildings
2. Weatherization
3. Research/educate on energy (January 2008-present)
4. Share information with other communities (through TCC council, IRHA newsletter)
5. Feasibility study on alternative energy options
6. Research new technology (example: wood boilers)

## **Other Community Goals:**

- More homes (year-round activity)
- Multi-purpose building (summer 2008)
- Waterplant/Washeteria (fall 2008)
- Expanding the school (no secured funding yet)
- More street lights → possible LED lights (no secured funding yet)



# Workshops



- Huslia residents main concerns were lowering the cost of energy and other costs associated with energy
- Top priorities include implementing solar power and educating community members in energy efficiency
- Other community goals are more homes and new facilities, such as a multi-purpose building and new washeteria
- Huslia has completed a community energy plan and vision statement





- About 30 people attended the community meeting
- **Vision Statement:** The community of Anvik will educate community members on the importance of energy efficiency; and seek funding for clean Alternative Energy Projects, to become less dependant on heating fuel.
- **Action Plans for homes:** Use timers and power strips, turn off breakers, if necessary when not home or traveling, and install and use energy efficient appliances.
- **Action Plan**
  - **Determine how much money we spend on electricity, community wide and in homes.**
  - **Build Community Support**
  - **Seek Funding**
- **Priorities**
  - **Less dependence on heating fuel**
  - **Educate youth & the involve the community to implement energy efficient practices, work together to use less energy, for less demand on local generators – less use – lower the cost to the consumers**
  - **Research the best alternative energy source: Hydro, Wind, or Solar for community needs, Wood fire boilers on community buildings: City, Laundry, Clinic, & houses**
  - **Repair Heat waste recovery w/ AVEC at the school (Been out of order for about a year)**
  - **Waste oil Burner**
  - **Presenters from power company and state agencies on suggestions and solution to less dependence on fuel**
  - **More energy efficient homes, including new construction, retrofits, and weatherization**
  - **Work together with other communities in the area on projects, as a group**
- Electricity is about \$140 to \$350 per month in homes





- Anvik Will be receiving weatherization services from Tanana Chiefs Conference in the Spring of 2011.

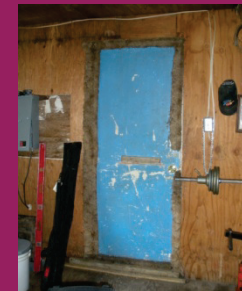
- IRHA will also be following up with Anvik to finish their local community center and rehab homes if funds are available



# Shageluk



- Community population 86 people
- Monthly Energy Cost:
  - Tribal Building \$150 up to \$200 per month
  - Residential \$120
  - Fuel \$6.50 per gallon
  - Gas \$6.00 per gallon
- Community Vision: Shageluk will seek funding to implement Alternative Energy sources to community buildings, work with local organizations to plan a bulk fuel orders for a lower cost. Educate community members on using less energy and involved youth in energy efficient projects,
- Community Goals
  - Different building designs: more energy efficient, for new construction and retrofits.
  - Use efficient appliances
  - Wind Energy; find the study done on wind energy from students at the school
  - Education, educate the entire community on lowering the energy usage
- Community Support: Youth Group, Committee, Village Corporation, City, School, Power Company – AVEC
- 5 Big Fuel Users in the community: School, Airport, City – Washeteria, Corporation
- Within the next year
  - Research energy efficient appliances
  - Energy education programs for youth up to elders
  - Youth involvement



# Shageluk



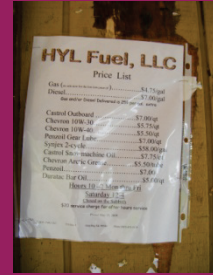
- IRHA Will be proving weatherization services to Shageluk with funding from the Alaska Housing Finance Corporation
- 6 Homes will be weatherized
- 2 new homes are currently being constructed and fished up this month
- 1 homeowner is getting self help services



# Grayling



- 170-180 population, only about 8-10 elders in the entire community
- Cost of Energy
  - Gas is \$4.75 per gallon
  - \$7.00 per gallon for heating oil
  - \$175 for a bottle of propane
  - Electric bills range from \$80-\$90 in the summer months
  - \$200-\$350 in the winter months
- Vision
  - Explore funding opportunities for Alternative Energy projects and work together as a community to use less energy and educate community members on becoming more energy efficient.
- Goals
  - Research renewable energy such as Solar, Wind – TCC did a wind study a couple years ago, they have class 7 winds, Hydro – Build a Dam, and explore the option on using local coal which is 7 miles up river on the bank.
- Community Support: Tribe, City, Village Corporation, School District, AEA, Surrounding Communities
- Re-look at plan and make changes as needed
- Research coal extraction from up river
- Following up -
  - TCC Wind study



HYL Fuel, LLC	
Price List	
Gas (L)	\$4.75/gal
Heating Oil	\$7.00/gal
Propane (20 lb. tank)	\$175.00
Control Oil	\$7.00/gal
Control Oil - 20 gal	\$140.00
Control Oil - 40 gal	\$280.00
Control Oil - 60 gal	\$420.00
Control Oil - 80 gal	\$560.00
Control Oil - 100 gal	\$700.00
Control Oil - 120 gal	\$840.00
Control Oil - 140 gal	\$980.00
Control Oil - 160 gal	\$1120.00
Control Oil - 180 gal	\$1260.00
Control Oil - 200 gal	\$1400.00
Control Oil - 220 gal	\$1540.00
Control Oil - 240 gal	\$1680.00
Control Oil - 260 gal	\$1820.00
Control Oil - 280 gal	\$1960.00
Control Oil - 300 gal	\$2100.00
Control Oil - 320 gal	\$2240.00
Control Oil - 340 gal	\$2380.00
Control Oil - 360 gal	\$2520.00
Control Oil - 380 gal	\$2660.00
Control Oil - 400 gal	\$2800.00
Control Oil - 420 gal	\$2940.00
Control Oil - 440 gal	\$3080.00
Control Oil - 460 gal	\$3220.00
Control Oil - 480 gal	\$3360.00
Control Oil - 500 gal	\$3500.00
Control Oil - 520 gal	\$3640.00
Control Oil - 540 gal	\$3780.00
Control Oil - 560 gal	\$3920.00
Control Oil - 580 gal	\$4060.00
Control Oil - 600 gal	\$4200.00
Control Oil - 620 gal	\$4340.00
Control Oil - 640 gal	\$4480.00
Control Oil - 660 gal	\$4620.00
Control Oil - 680 gal	\$4760.00
Control Oil - 700 gal	\$4900.00
Control Oil - 720 gal	\$5040.00
Control Oil - 740 gal	\$5180.00
Control Oil - 760 gal	\$5320.00
Control Oil - 780 gal	\$5460.00
Control Oil - 800 gal	\$5600.00
Control Oil - 820 gal	\$5740.00
Control Oil - 840 gal	\$5880.00
Control Oil - 860 gal	\$6020.00
Control Oil - 880 gal	\$6160.00
Control Oil - 900 gal	\$6300.00
Control Oil - 920 gal	\$6440.00
Control Oil - 940 gal	\$6580.00
Control Oil - 960 gal	\$6720.00
Control Oil - 980 gal	\$6860.00
Control Oil - 1000 gal	\$7000.00

# Grayling

- IRHA will be providing AHFC weatherization services starting in the Spring of 2010
- 1 Major rehab
- 1 New construction





# Holy Cross



## Biggest Community in the area

- High Energy Prices
- Energy Efficiency
- Reduce Usage & dependability
- Install woodstoves in all homes in the village
- Educate & Involve youth
- Reduce Fuel Cost



# Holy Cross



## Tips To Reduce the Energy Load

- 1) Put entertainment centers with TVs, DVD players, computers, printers on power strips so that they can be turned off when not in use.
- 2) If using an electric coffee pot unplug after brew cycle is done and put coffee in a thermos or other insulated container.
- 3) If you aren't going to be home for a day or so turn off hot water heater.
- 4) Replace incandescent light bulbs with compact fluorescent light bulbs. Replace non energy saving ballasts with high efficiency ballasts and lamps.
- 5) Shut off heat trace when it isn't required. If the water seems sluggish turn the heat trace on but turn off once good flow is established.
- 6) Combine freezers if you have several freezers combine as much as possible so that the freezers are the fullest and the least amount of freezers running.
- 7) Try and not use electric heat. The cost for electricity is too expensive in the village to run electric heat.

# Kaltag



- The local population is about 188
- Kaltag experiences a cold, continental climate with extreme temperature differences. In the summer it's about 70 degrees, then in the winter it gets -40 to -50 below zero. Extreme temperatures have been measured from -55 to 90. Annual precipitation is 16 inches, with 74 inches of snowfall annually. The River is ice-free from mid-May through mid-October.
- Cost of Energy
  - \$4.75 per gallon for gas
  - \$5.50 per gallon for heating fuel
  - Average monthly electric bills are \$120-\$230 per month
  - .54 per kw with sur-charge
  - Water \$62.50 per month
  - Currently pay \$62.50 per month for water and may go up soon
- Vision
- Kaltag would like to invest in alternative energy for community buildings, with an emphasis on solar panels. Kaltag would like to strive to be a self sufficient community, supporting the local economic development and not dependant on out side resources.
- Goals
  - Switch fuel to Natural gas – once the natural gas pipeline comes up
  - Solar street lights (15 street lights)
  - Re-open the fish plant
  - Install wood fire boilers (do the research first)
  - The city is starting to talk about adopting street lights, so people will have to pay for their light outside on the street by their homes.
  - Solar on the well house and washeteria would cut the cost significantly
  - Possibly cut down the water delivery to each home
  - Energy audit completed on each residential home in the community
- Community Support: AVEC, IRHA, YKSD - School District, Tribe, City, Village Corporation – Gana-A' Yoo, LTd (with 4 other villages) AEA, Surrounding Communities
- Invite other organizations to Tribal Membership meeting or even for Tribal Council meetings, may be having bi-annual Tribal Membership meetings.



# Kaltag



- Kaltag will be receiving weatherization services from IRHA starting in the Spring of 2011.
- IRHA will be working with the Kaltag Tribe to perform energy audits on residential homes with the EECSBG grant that they will be receiving



# First Steps Project Overview



## Reduce Energy through Education

- Educational presentations
- Compile community data
- Awareness of energy usage and how to conserve on an individual and community level
- Work with residents to achieve energy savings

## Explore and research alternative sources of energy

- What's going to be the best option for that community and provide the data to the community
- Where can communities get funding to apply for alternative energy sources

## Develop long term energy goals for each community

- Develop a comprehensive plan
- Energy Conservation Training
- Energy Conservation Program specific to each community

