Grant Funding Received:
First Steps Toward Developing Renewable Energy and Energy Efficiency on Tribal Lands

Partnership:
U.S. Department of Energy
Karuk Tribe of California, Department of Natural Resources
Winzler and Kelly Consulting Engineers
Project Title:

Energy Analysis and Conservation on Karuk Trust Lands
Project Team:

Karuk Department of Natural Resources
• Sandi Tripp
• Ramona Driver
• Bill Tripp
• Tribal Intern (TBA)

Winzler and Kelly Engineers
• Bob Ulibarri – Senior Planner
• David Carter – Energy Engineer
• Rob Holmlund – Environmental Land Use Planner
• Stephen Kullman – Energy Planner
Project Objectives:

1. Estimate Tribal Energy Demands
2. Evaluate Opportunities for Reducing Energy Demands through Energy Conservation and Efficiency Measures
3. Assess the Potential to Meet Tribal Energy Demands with Renewable Energy Resources
4. Assess the Potential for the Tribe to Become a Renewable Energy Exporter
5. Build Human Capacity within Karuk Tribe and Tribal Communities
Target Sustainable Energy Use:

1. Energy Conservation

2. Energy Efficiency
Target Sustainable Energy Use:

1. Energy Conservation

1. Energy Efficiency

- ENERGY STAR-labelled heat pumps and air conditioners use 20% less energy than new standard models.
Assessing Renewable Energy

1. Solar
2. Micro-hydro
3. Woody Biomass
4. Wind
Renewable Energy:

1. Solar
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Understanding Sustainable Energy
The Energy Pyramid

- Renewable Energy
- Energy Efficiency
- Energy Conservation
Energy Efficiency

ENERGY STAR-labelled heat pumps and air conditioners use 20% less energy than new standard models.
Star Power

Thanks to the government’s ENERGY STAR program, businesses and consumers are saving billions of dollars on energy costs while protecting the environment.
Is one of America's coolest crooks robbing you blind?

Save money on energy with a state-of-the-art refrigerator that carries the Energy Star label.

It's a sad fact that your refrigerator could be costing you to pay more in energy costs than you know. That's why energy-efficient refrigerators are designated "energy star" appliances and save you money on the bill of your electric bill. So if you're thinking about a new refrigerator, especially a model with Energy Star Qualification, consider one that bears the "Energy Star" logo. It only has a small cost, but money saved is never made.
1 eco-bulb = 12 incandescents
Money Isn't All You're Saving
Woody Biomass
Micro-Hydro
HOW TO INSTALL AN HYDRO-ALTERNATOR

17- or 30-AMP HYDRO-ALTERNATOR WITH PROPORTIONAL REGULATOR

POWER TO CABIN

DEEP CYCLE BATTERIES

20 TO 24 IN. PULLEY

40 TO 60 IN. WATERWHEEL

18 TO 36 IN. X 8 IN. CHANNEL

STREAM

25 DEGREES MIN. SLOPE
Wind Power
Phases of Work:

1. Tribal Council Participation
2. Energy Demand Analysis
3. Energy Conservation & Efficiency
4. Assessment of Renewable Energy Availability
5. Energy Source Analysis
6. Energy Export Assessment
7. Human Capacity Building
Task 1: Tribal Council Participation

1. Discuss Tribe’s Energy Vision
2. Discuss *Energy* as a component of Tribal Strategic Plans (e.g. IRMP, Eco-Cultural Plan)
3. Discuss Human Capacity Building
4. Develop screening criteria to evaluate renewable energy options

*Deliverable:* Report of Screening Criteria and Goals for Renewable Energy Options
Task 2: Energy Demand Analysis

1. Analyze current energy consumption patterns of Tribe – residential and non-residential structures.
2. Up to 50 Residential; 10 non-residential
3. Project Future Energy Demands

Deliverable: Report on current and projected energy demands.
Task 3: Energy Conservation/Efficiency

1. Identify energy conservation opportunities
2. Recommend measures to reduce energy use
3. Up to 20 Residential structures; 5 non-residential

**Deliverable:** Report on potential energy conservation improvement opportunities, including cost estimates for new instituting measures.
Task 4: Renewable Energy Availability

1. Conduct assessment of availability for selected renewable energy options
   A. Solar
   B. Micro-Hydro
   C. Wind
   D. Biomass

Deliverable: Report on results of assessment of generation potential for selected renewable energy options.
Task 5: Preferred Energy Option

1. Using screening criteria developed by Tribal Council, identify the most promising energy option for typical structures
2. Analyze fixed costs and variable costs
3. Evaluate energy sales revenues and energy-cost off-sets.

**Deliverable:** “Cost of Energy Analysis” for the selected forms of renewable energy. Cost estimate for materials, installations, and maintenance.
Task 6: Energy Export Assessment

1. Estimate potential excess generation capacity from sources analyzed in Task 5.
2. Estimate potential revenue of energy export
3. Conceptual feasibility and marketability of energy sales “back to grid”
4. Conduct analysis of transmission capacity

Deliverable: Report on feasibility and marketability of energy sales from Tribal lands to “grid”.
Task 7: Human Capacity Building

1. Hire and train intern specific to this project
2. Three community meetings by DNR – presentation and discussion of energy conservation and renewable energy concepts (Yreka, Happy Camp, and Orleans)
3. Involve home owners/renters in assessment of energy demands and conservation opportunities
4. Research additional training programs

Deliverable: Summary of training opportunities
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What Will This Project Lead To?

1. Greater independence and sovereignty for the Karuk Tribe.

2. Tangible strategies for lowering Tribal utility costs, particularly for selected structures.

3. Useful baseline data regarding energy:
   A. An approximate understanding of the Tribe’s energy demands
   B. Energy conservation opportunities (ways to save $)
   C. Energy efficiency opportunities (ways to save $)
   D. A preliminary understanding of the Tribe’s renewable energy options

4. DOE Grant #2 - “Feasibility of Renewable Energy Projects on Tribal Lands”

5. Forest Service – “Woody Biomass Utilization Grant”

6. BIA Grant – “Energy and Mineral Development Program”

7. **Installation of Tribally-owned renewable energy projects!!!**
Thank You!