RENEWABLE ENERGY DEVELOPMENT ON TRIBAL LANDS

U.S. Department of Energy
Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Our Mission

To offer financial and technical assistance to Tribes through government-to-government partnerships that:

1) Allow Tribal leaders to make informed decisions
2) Bring renewable energy and energy efficiency options to Indian Country
3) Enhance human capacity through education and training
4) Improve local Tribal economies and the environment
5) Make a difference in the quality of life of Native Americans.

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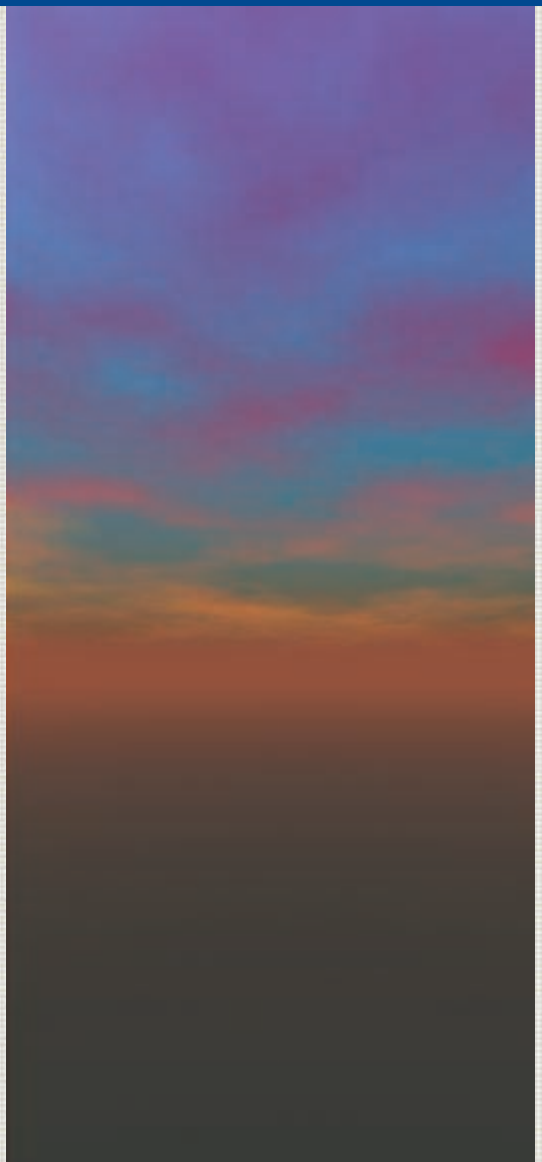
TRIBAL ENERGY PROGRAM

Purpose

The program promotes Tribal energy sufficiency, economic development, and employment on Tribal lands through the use of renewable energy and energy efficiency technologies.

The Tribal Energy Program, under the Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy, provides financial and technical assistance to Tribes for feasibility studies of renewable energy development on Tribal lands. The program also offers assistance to Tribes taking the initial steps toward development – including strategic planning, energy options analysis, human capacity building, and organizational development.



Policy

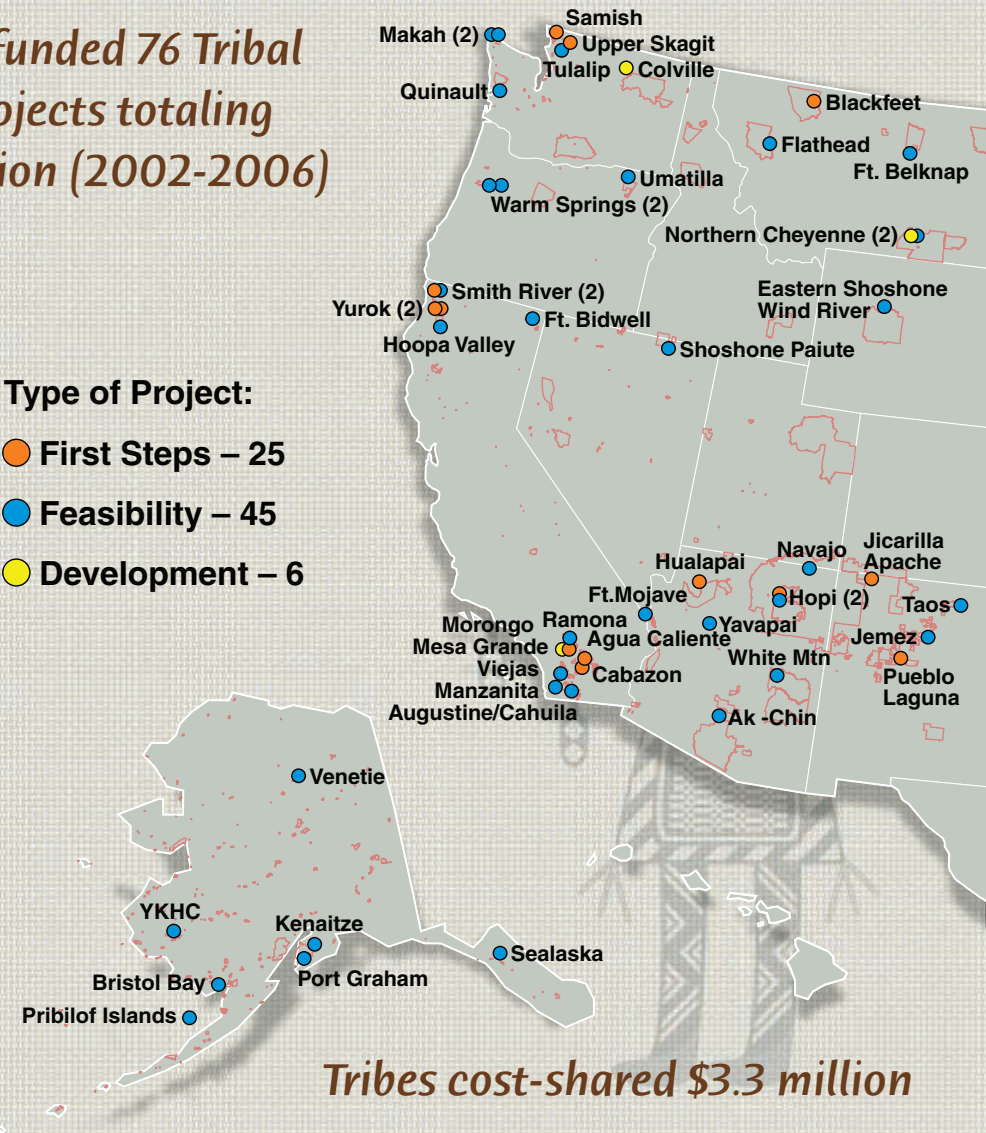
The U.S. Department of Energy's American Indian and Alaska Native Tribal Government Policy sets forth principles to be followed by DOE to ensure effective implementation of a government-to-government relationship with American Indians and Alaska Native Tribal governments. Through the authorities set forth in the Energy Policy Acts and Executive Orders, DOE is seeking to support energy sufficiency on Tribal lands and support the trust responsibility set forth in DOE's American Indian and Alaska Native Tribal Government Policy.

For DOE's policy, visit
www.ci.doe.gov/tapolicy.html

Turbine installed at Rosebud Sioux Reservation in South Dakota

Ute Mountain Indian Reservation solar water pumping

DOE has funded 76 Tribal energy projects totaling $12.4 million (2002-2006)



Type of Project:

- First Steps – 25
- Feasibility – 45
- Development – 6

Tribes cost-shared $3.3 million

www.eere.energy.gov/tribalenergy

TRIBAL ENERGY PROGRAM

Northern Cheyenne Nation wind resource assessment

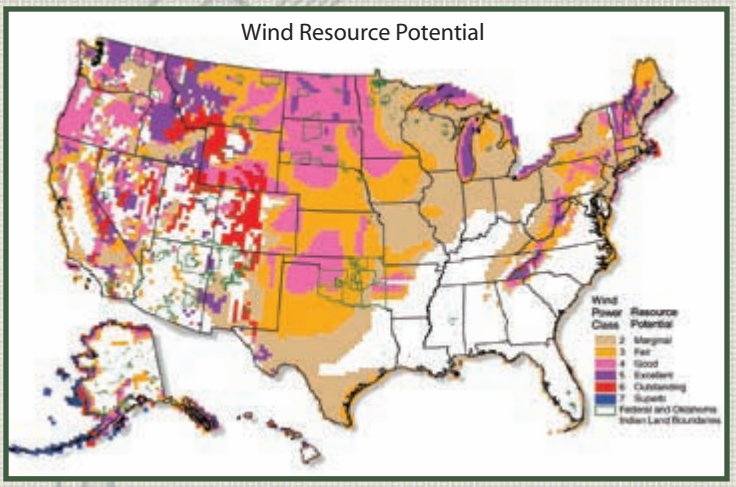
Solar electric array on Navajo home

Total of 88% of DOE funding directly to Tribes

Wind Energy

Wind energy uses the energy in the wind for generating electricity, charging batteries, pumping water, or grinding grain. Large, modern wind turbines operate together in wind farms to produce electricity for utilities. Small turbines are used by homeowners and remote villages to help meet energy needs.

Wind Resource Potential

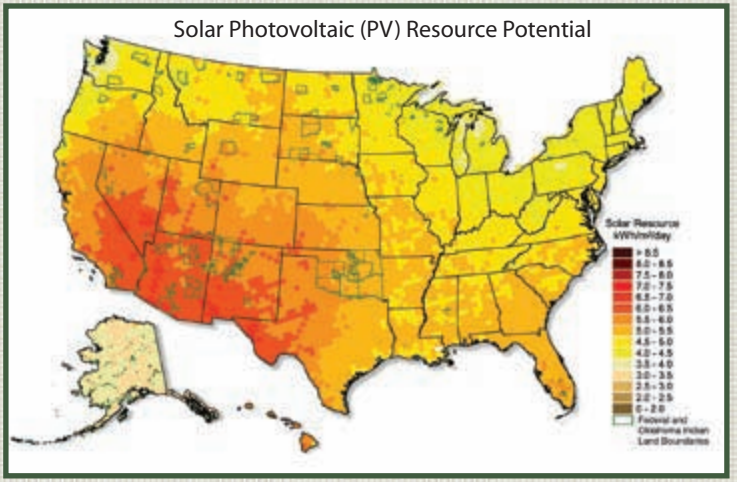


Areas designated class 4 or greater are suitable for most utility-scale wind turbine applications, whereas class 2 and 3 areas are marginal for utility-scale applications but may be suitable for remote applications.

Solar Energy

A plot of land in the Southwest 100 miles on a side could generate all the electricity used in the United States! Sunshine varies across the United States by about a factor of two, while utility rates vary by about a factor of 10. Solar opportunities may exist in places you would not initially expect based only on resource assumptions.

Solar Photovoltaic (PV) Resource Potential



A distance from the nearest utility line of only a quarter mile raises distribution costs sufficiently to make PV cost-effective for small loads even in the cloudiest parts of the country.

For resource information, visit DOE's Guide to Tribal Energy Development at

www.eere.energy.gov/tribalenergy/guide

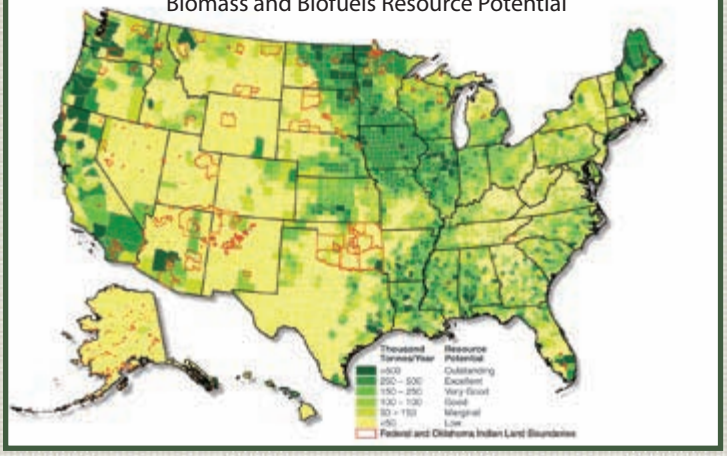
www.eere.energy.gov/tribalenergy

TRIBAL ENERGY PROGRAM

Biomass

Biomass offers the opportunity to produce fuel, electric power, chemicals, and other industrial materials from renewable resources including agricultural crops and residues, trees and forest residues, grasses, animal wastes, and organic municipal solid wastes. Fuel products include ethanol, which can be produced from wood chips, rice straw, switchgrass, sugar cane waste, and corn; and renewable biodiesel, which can be produced from grain and grain products.

Biomass and Biofuels Resource Potential



Today, various forms of biomass energy account for 45% of renewable energy used in the United States. Biomass resources must be assessed on a case-by-case basis. The most economic resources are often associated with residual materials from commercial or industrial processes.

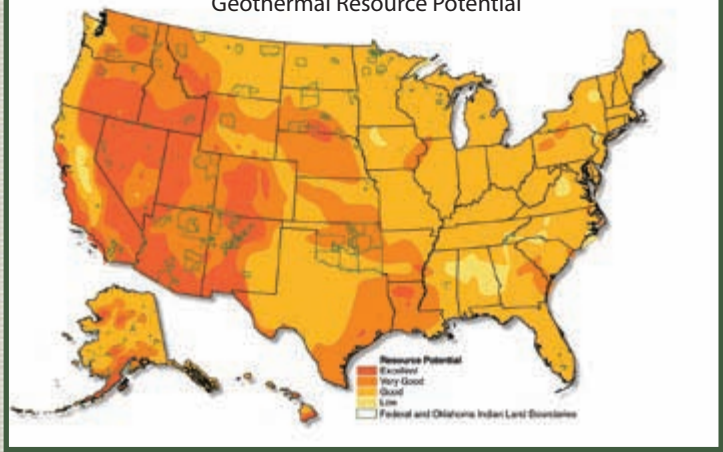
Hydropower

Hydropower plants capture the kinetic energy of falling water to generate electricity, using a turbine and a generator to convert the energy from the water to mechanical and then electrical energy. Hydropower currently contributes the greatest share of renewable electricity generation in the United States. For more information, see **http://hydropower.inel.gov/prospector/index.shtml**

Geothermal Energy

Geo- (Earth) thermal (heat) energy is an enormous, underused heat and power resource that is clean, reliable, and homegrown (making us less dependent on fossil fuel). Earth's energy can be converted into heat and electricity. The three technology categories are geothermal heat pumps, direct-use applications, and electricity production.

Geothermal Resource Potential

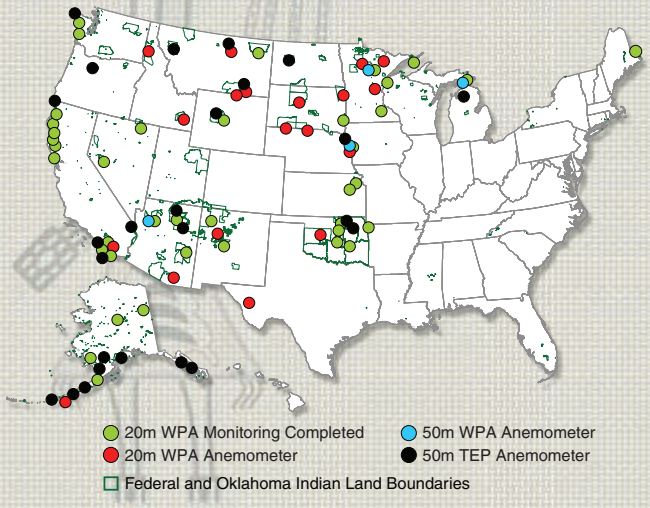


Geothermal (or ground source) heat pumps use temperatures found a few feet below the surface to transfer heat from the ground to the building in winter and from the building to the ground in summer. The rate of installation of ground-source heat pumps is thought to be between 10,000 and 40,000 per year. Direct-use geothermal resources can be used to heat buildings, melt snow, grow plants in greenhouses, dehydrate onions and garlic, heat water for fish farming, and pasteurize milk. Utility-scale electric power can be produced using deep wells, drilled into underground reservoirs to tap steam and very hot water to drive turbines and generators.

Funding Opportunities

- **First steps**
  - Strategic planning
  - Energy options analysis
  - Capacity building
  - Organizational development
- **Renewable energy feasibility studies**
  - Resource assessment
  - Project and business planning

Tribal Wind Monitoring Sites



Energy Efficiency Initiative

- **Northern Plains Pilot Program**
- **Training for energy auditors and weatherization implementation**

Education and Training

- **Student internships**
  See the Web site for an application form
- **Regional workshops**
- **Conferences**
- **Renewable energy short courses**
  The Tribal Energy Program conducts periodic workshops for Tribes to learn about renewable energy and energy efficiency. Short courses have been conducted on biomass, solar, wind, renewable energy analysis and economics, and Renewable Energy for Tribal Community Development.

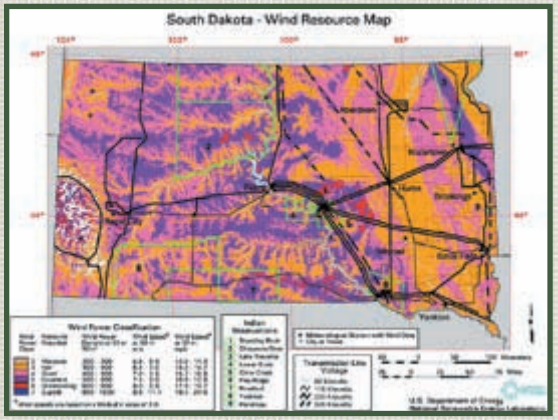
Southwestern Indian Polytechnic Institute offers renewable energy classes at their New Mexico campus.

Anemometer Loans

- **20-meter and 50-meter anemometer towers available to Tribes for wind resource monitoring**
- **To apply, see "Native Americans" at:**
  www.eere.energy.gov/windandhydro/windpoweringamerica

www.eere.energy.gov/tribalenergy

TRIBAL ENERGY PROGRAM



High-resolution wind prospecting maps are available for most Tribal regions.

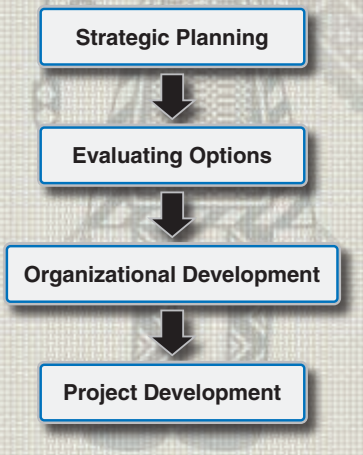
National Laboratory Technical Assistance

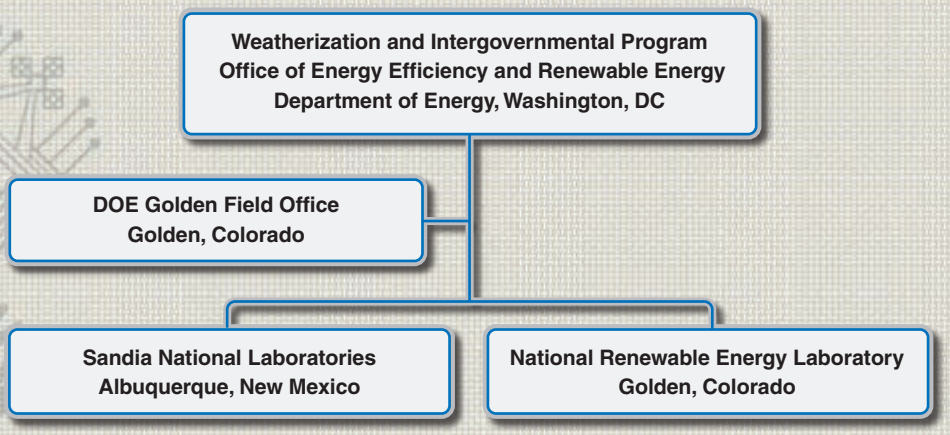
- Renewable energy technology information
- Renewable resource information
- Siting support
- Industry connections
- System performance models
- Policy information
- Design review
- Special studies

Information

- **Tribal energy Web site**
  www.eere.energy.gov/tribalenergy
  - Features
  - Program information
  - Funding opportunities
  - Project summaries
  - Project contacts and reports
  - Information resources
  - Training opportunities
  - Program contacts

- **Guide to Tribal energy development**
  www.eere.energy.gov/tribalenergy/guide
  - Development process
    - Strategic planning
    - Options analysis
    - Organizational development
    - Project development
  - Resource library
    - Energy resources
    - Technologies
    - Cost
    - Risk factors
    - Legal issues
    - Financing options
    - Contacts
  - Case studies





The Tribal Energy Program consists of program management through DOE headquarters, and program implementation through DOE's Golden Field Office. Technical support is provided through the DOE laboratories.

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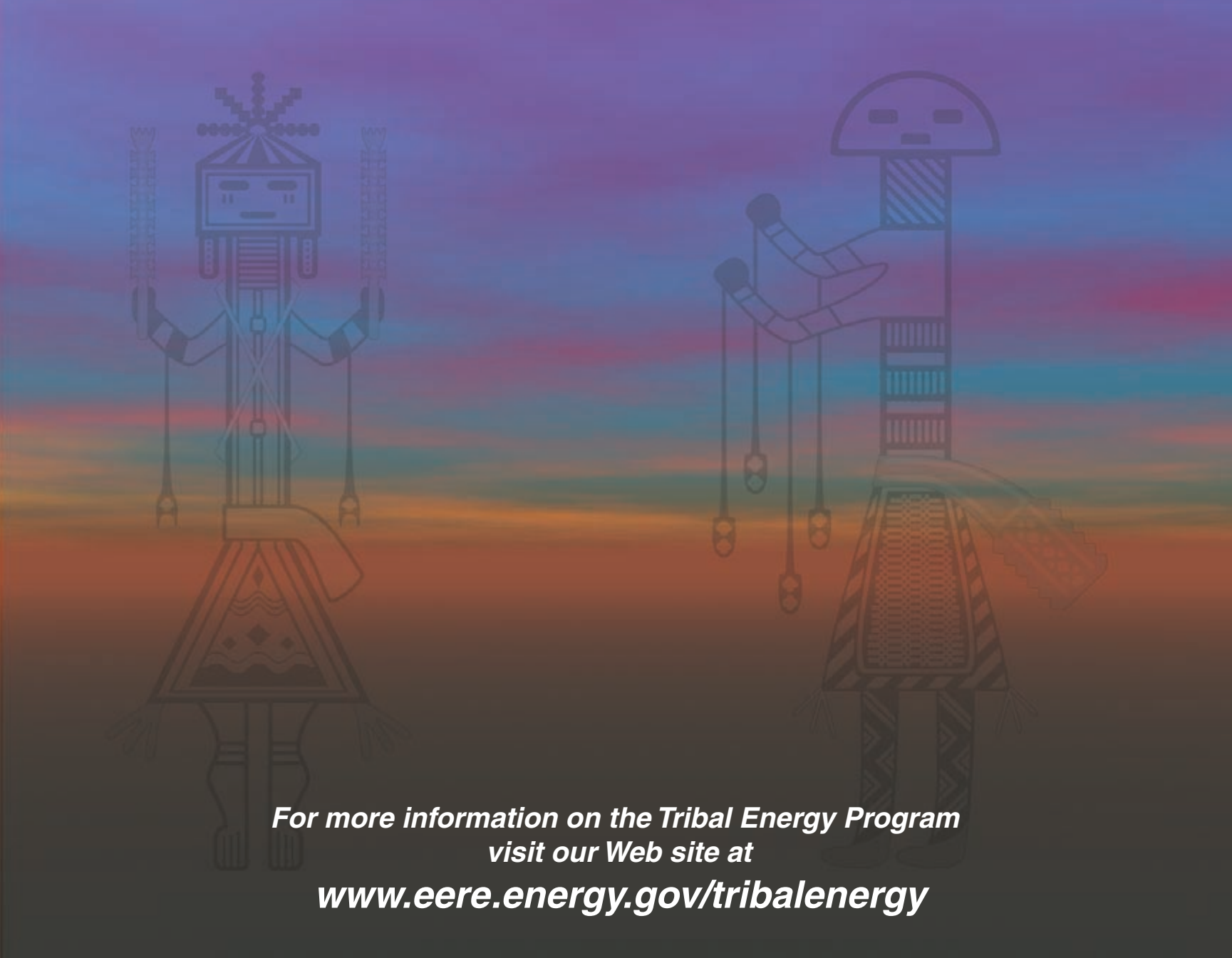

For more information on the Tribal Energy Program visit our Web site at

www.eere.energy.gov/tribalenergy

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

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Energy Efficiency and Renewable Energy

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