



**U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY**

DOE's Tribal Energy Program



Tribal Energy Program Review

October 23, 2006

Lizana K. Pierce, Project Manager

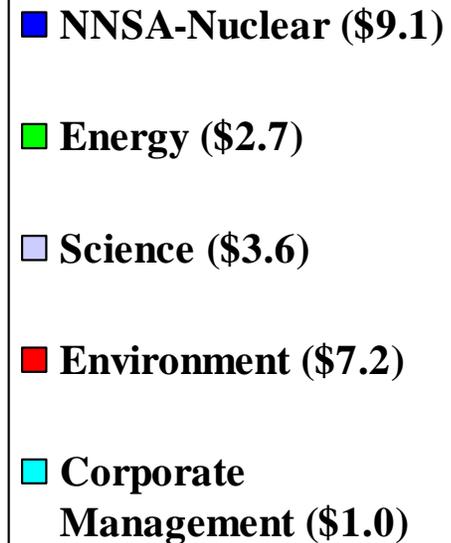
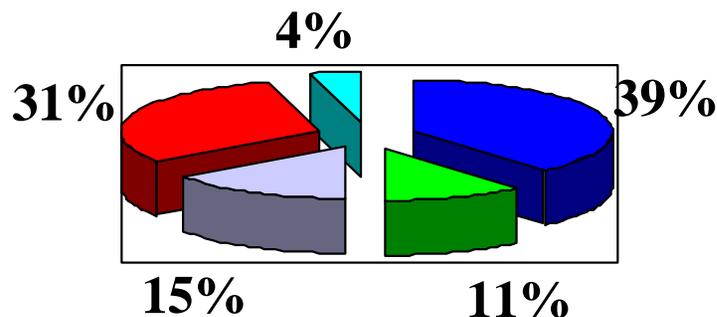
U.S. DOE, Golden Field Office



Department of Energy

Advancing Energy and National Security through
Science, Technology and Environmental Stewardship

DOE FY 2006 Budget \$23.6 Billion



Energy (\$2.7 Billion) includes:

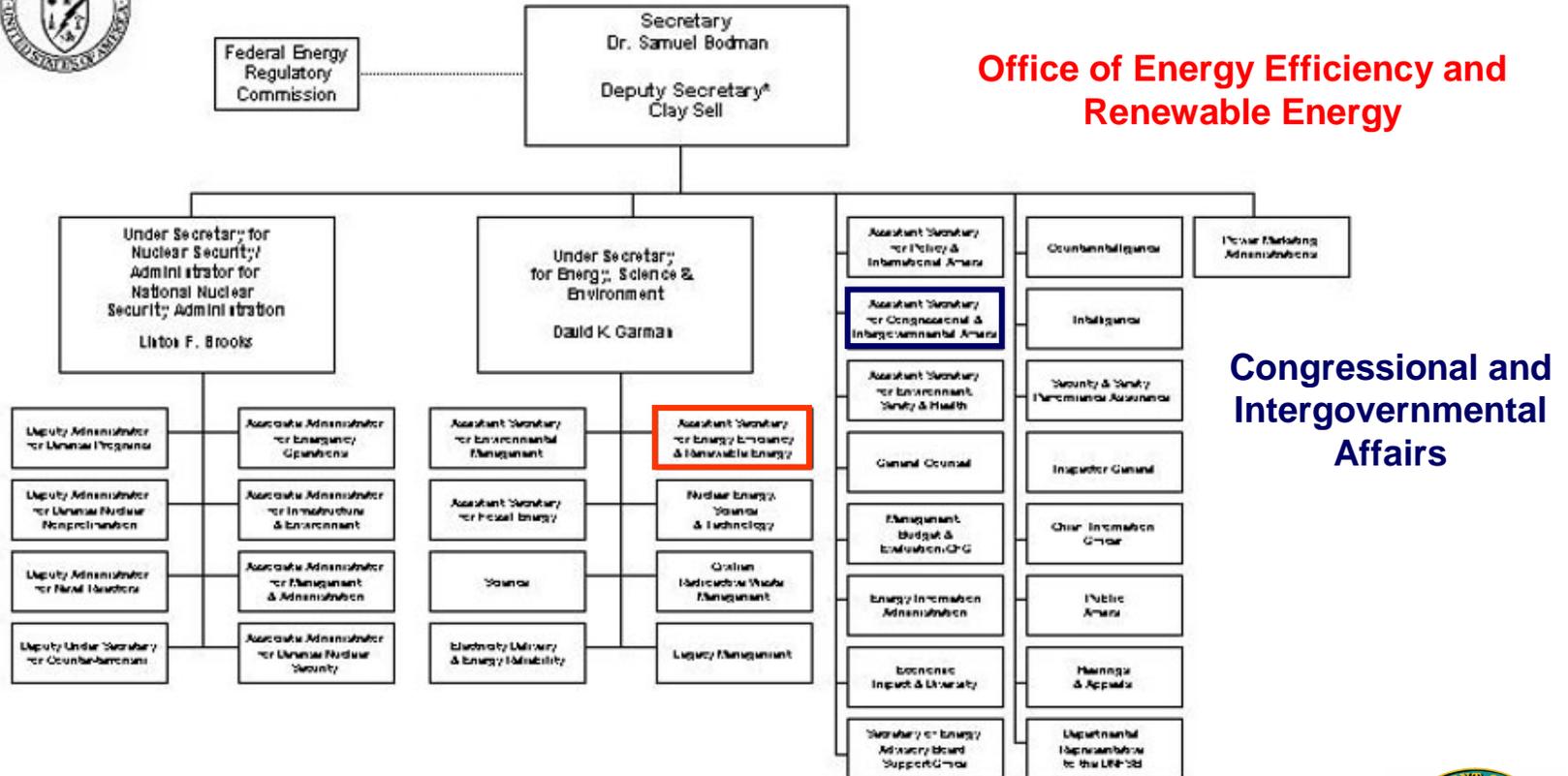
- Energy Efficiency and Renewable Energy (\$1.2)
- Electricity Delivery & Energy Reliability (\$0.16)
- Fossil Energy (\$0.84)
- Nuclear Energy, Science and Technology (\$0.54)



Department of Energy Organization



DEPARTMENT OF ENERGY

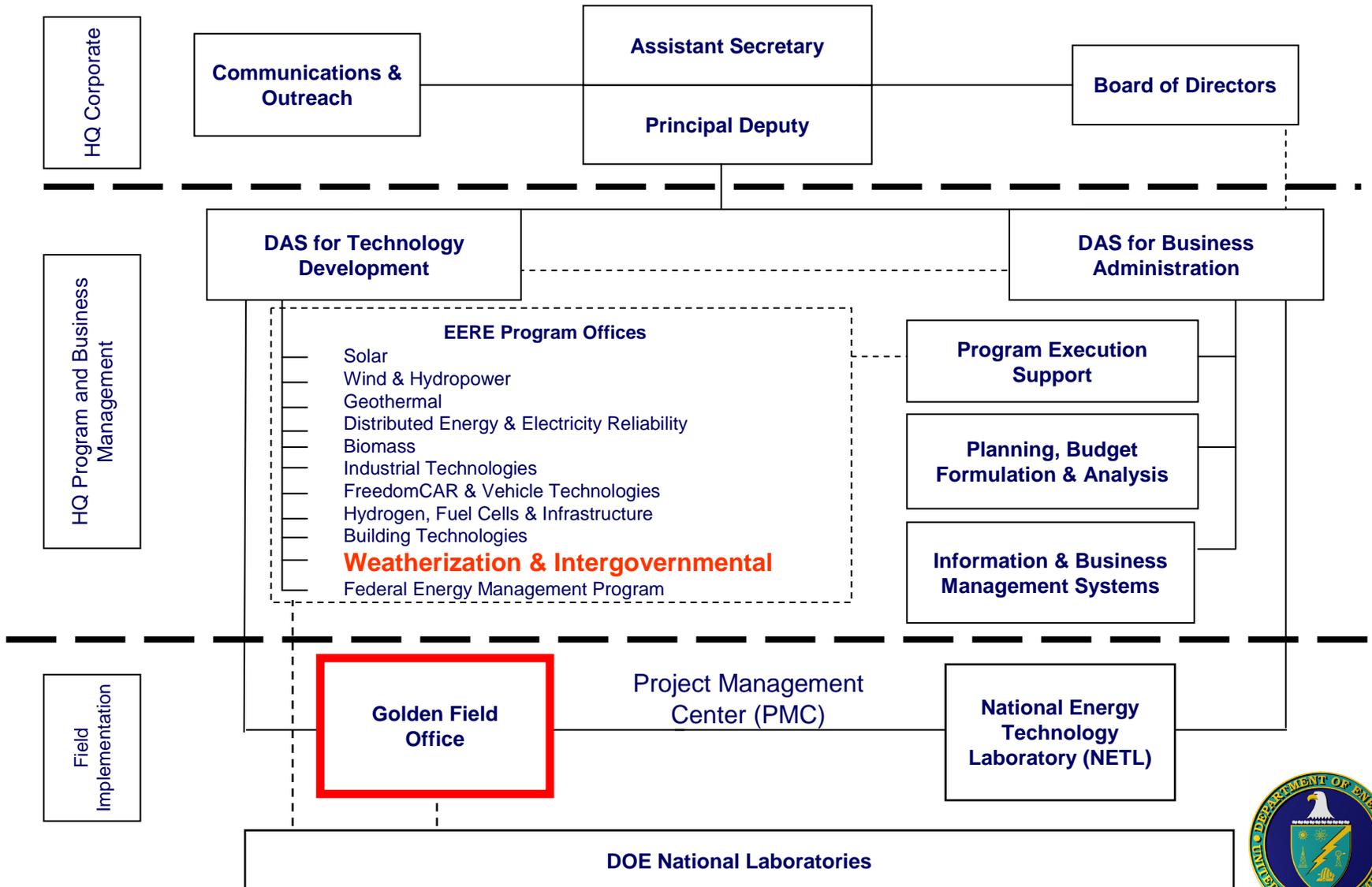


EPAct 2005 Directs the Establishment of an “Office of Indian Energy Policy and Programs”

*The Deputy Secretary also serves as the Chief Operating Officer.



Office of Energy Efficiency and Renewable Energy



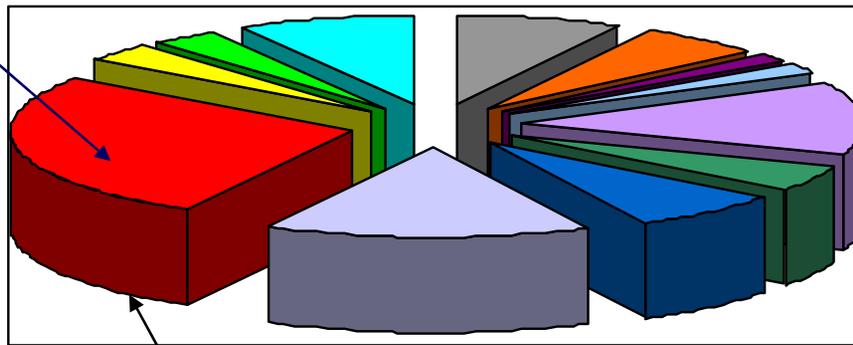


DOE's Office of Energy Efficiency and Renewable Energy (EERE)

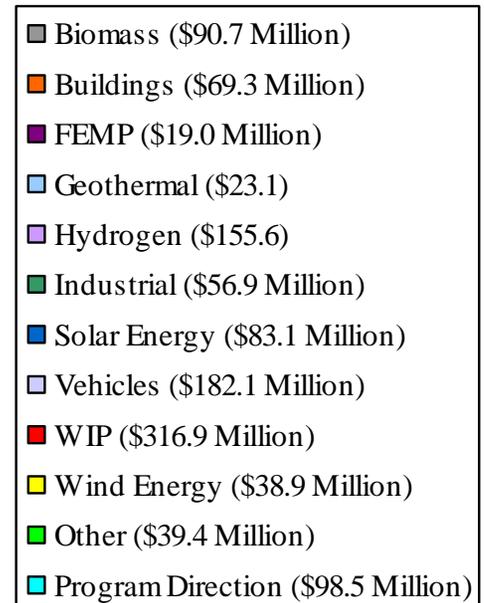
\$1.17 Billion EERE Budget (FY2006)

Tribal Energy Budget (FY2006)

Appropriated: \$4 Million



Weatherization Grants (\$291.2 Million)



Per EPCA 2005, Tribes eligible for REPI





Renewable Energy Resources

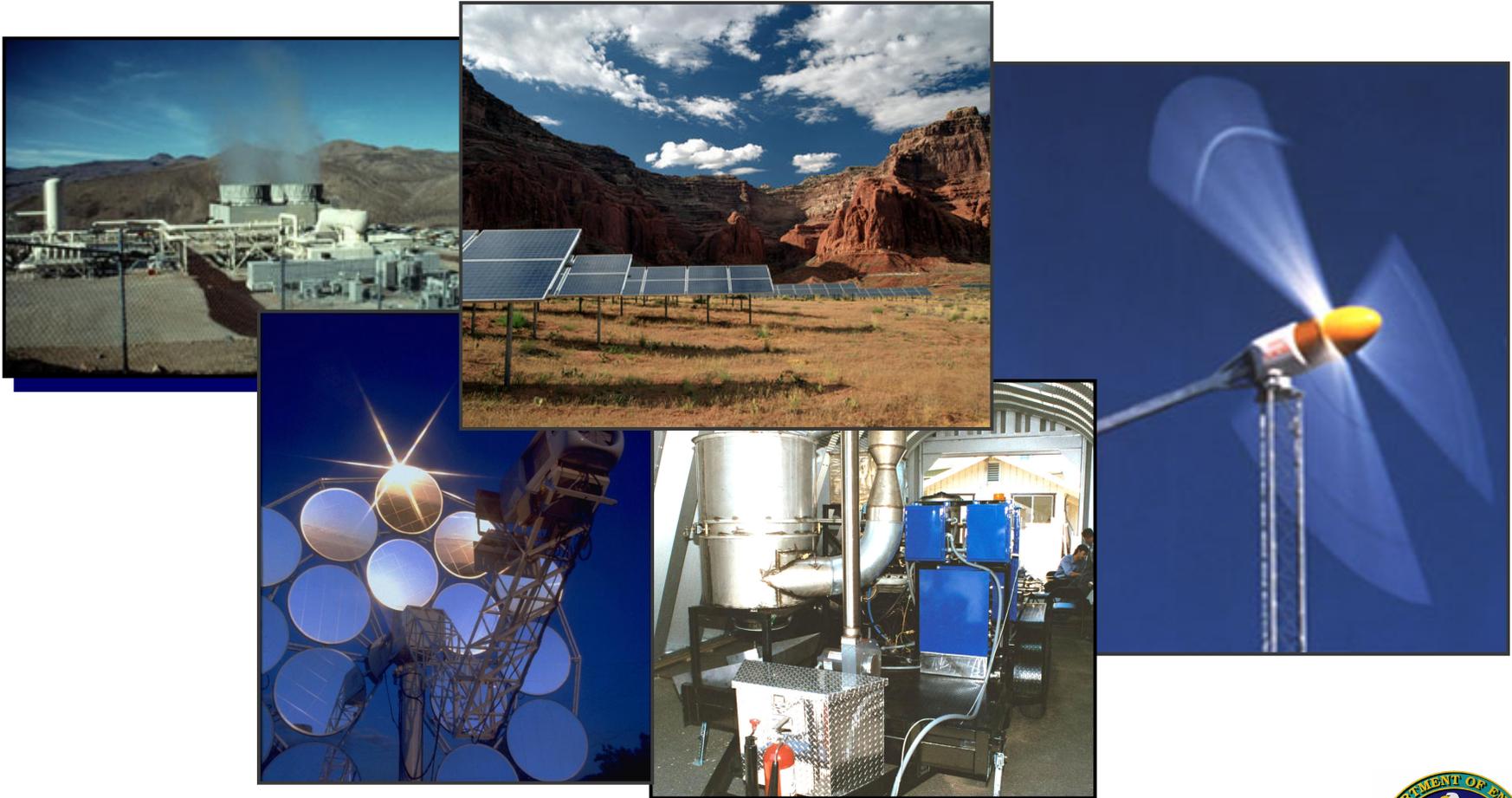


**Using the Sun, Wind, Water,
and Earth**





Renewable Energy Technologies



Prime Focus is Research and Development

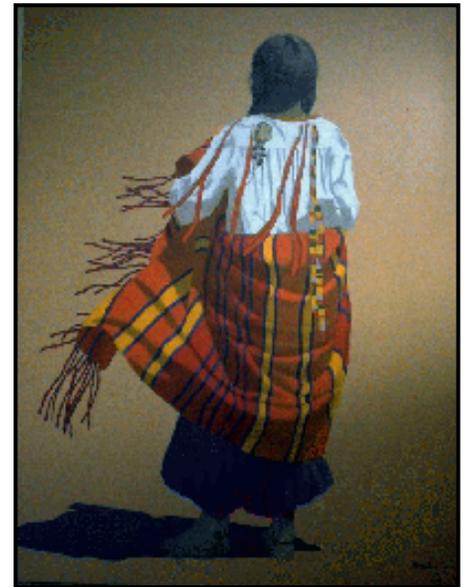




DOE's Tribal Energy Program

More than 2.4 million Native Americans live on or near tribal land

- The unemployment rate is more than double the national average and more than one-third live in poverty. (Enterprise Foundation)
- Over 40 percent live in overcrowded or dilapidated housing. Basic infrastructure, including water, sewer and roads, are often severely inadequate. (Enterprise Foundation)



Low-income Tribal members may be eligible for DOE Weatherization (Wx) Assistance





DOE's Tribal Energy Program

“Indian households on reservations are disproportionately without electricity. A total of 14.2% of Indian households have no access to electricity, as compared to only 1.4% of all U.S. households.” Navajo accounts for 75% of the households without electricity. (2000 EIA Report)



DOE funded the Navajo Nation Electrification Demonstration Program (P.L. 106-511) resulting in 769 homes electrified (FY 2002-2003)

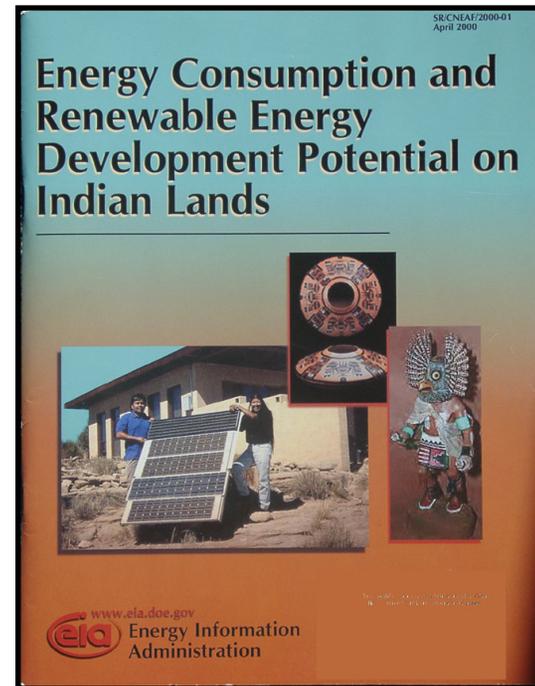




DOE's Tribal Energy Program

The most-burdened 10 percent of Indian households on reservations spend 20 percent or more of their income on electricity.

Over twice the percentage of U.S. households at the same income level. (2000 EIA Report)



**Weatherization returns \$3.71 in benefits
for every \$1 invested** (DOE Wx Program)





DOE's Tribal Energy Program

“Indian land comprises 5% of the land area of the United States, but contains an estimated 10% of all energy resources in the United States”

“Wind resources in the Great Plains could meet 75% of the electricity demand in the contiguous 48 states.” (Native American Energy Development and Self-Determination Act of 2003)

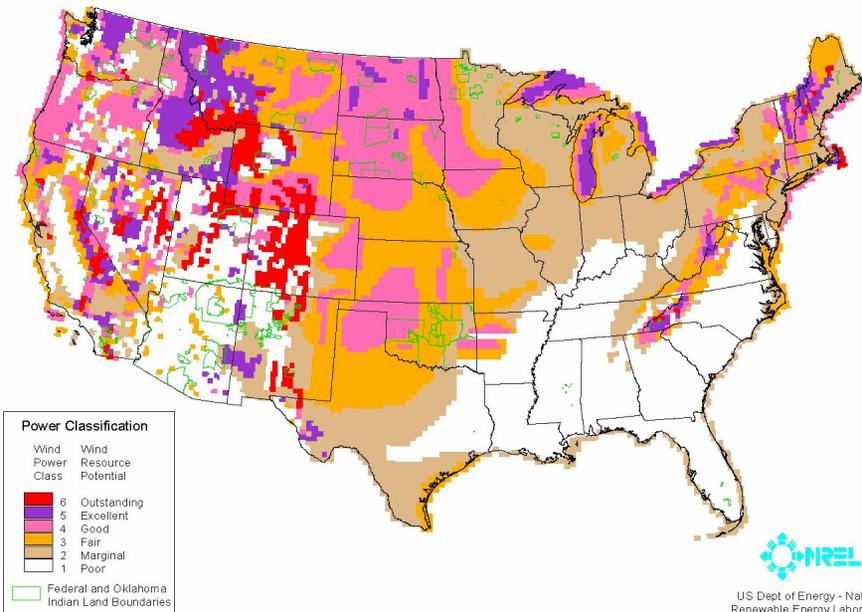
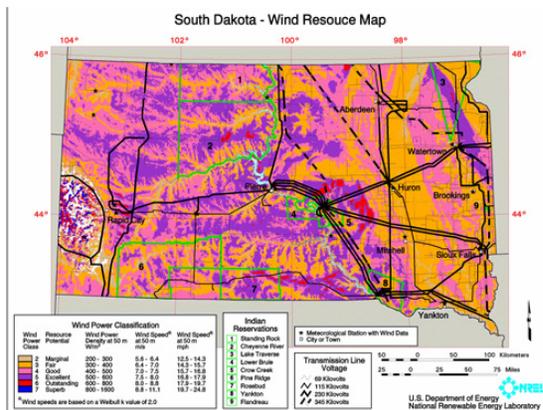


Tribal energy resource development can support local economies and Tribal sovereignty



DOE's Tribal Energy Program

Wind Potential on Tribal Lands about 14% of U.S. Annual Electric Generation (~ 3,853 Billion kWh/year)

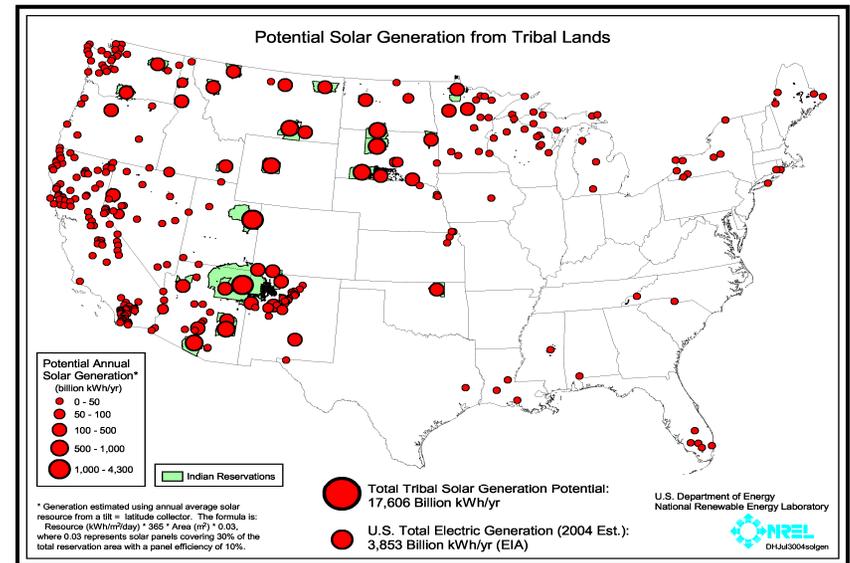
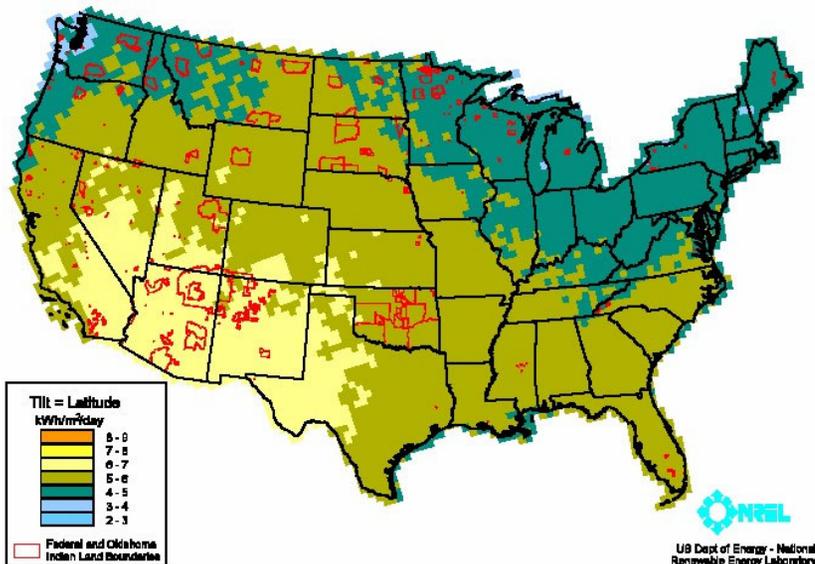


Wind potential of about 535 Billion kWh/yr on Indian Lands in Lower 48 States



DOE's Tribal Energy Program

Solar Electric Potential on Tribal Lands ~4.5
times the Total U.S. Electric Generation in 2004



Solar Electric Potential of 17,600 Billion kWh/yr
on Indian Lands



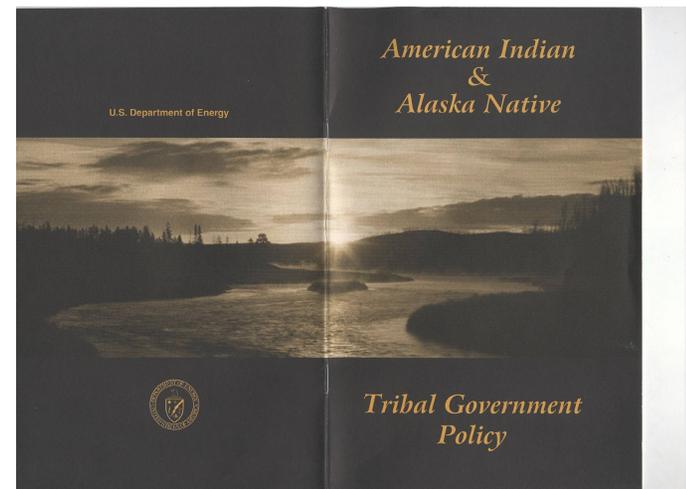


DOE's Tribal Energy Program

Supporting Government-to-Government Relationships

Through the authorities set forth in the Energy Policy Act (EPAct) and Executive Orders (DOE Order 1230.2)

DOE is seeking to support energy sufficiency on tribal lands and support the trust responsibility set forth in DOE's American Indian & Alaska Native Tribal Government Policy





DOE's Tribal Energy Program

Promote tribal energy sufficiency, economic development and employment on tribal lands through the use of renewable energy and energy efficiency technologies



Authority

Title V of the Energy Policy Act (EPAct 2005)





DOE's Tribal Energy Program



Mission

Offering 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; and***
- 5) Make a difference in the quality of life of Native Americans.***





DOE's Tribal Energy Program

Assisting Tribes to Meet Their Energy Goals

- Developing in Cooperation with Tribes
- Providing Funding Opportunities
- Supporting Government-to-Government Relations
- Offering Technical Assistance
- Providing Information and Education
- Facilitating Government Collaboration and Leveraging Resources



Oneida Tribe of Indians of Wisconsin Solar Project

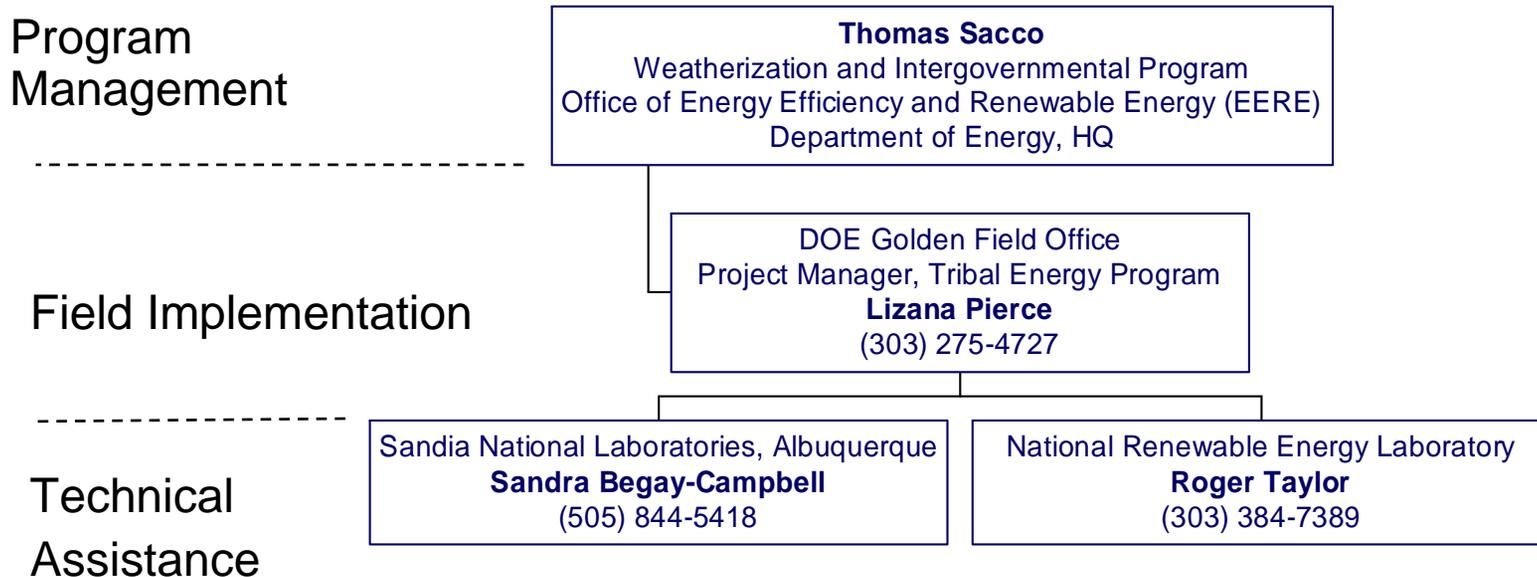




DOE's Tribal Energy Program

Organization

Program Management through DOE Headquarters, implementation through the DOE Golden Field Office, and technical support through the DOE's Laboratories





DOE's Tribal Energy Program Funding

	FY2002	FY2003	FY2004	FY2005	FY2006
Requested	\$2,100	\$8,307	\$6,000	\$5,500	\$4,000
Enacted	\$3,000	\$6,000	\$5,000	\$5,500	\$4,000
Earmarks	\$0	\$1,000*	\$3,300**	\$2,000***	\$1,000*
Discretionary	\$3,000	\$5,000	\$1,700	\$3,500	\$3,000
Competitive Awards	14	24	7	20	11

* Council of Energy Resource Tribes (CERT)

** CERT, ICOUP, and Pyramid Lake Paiute

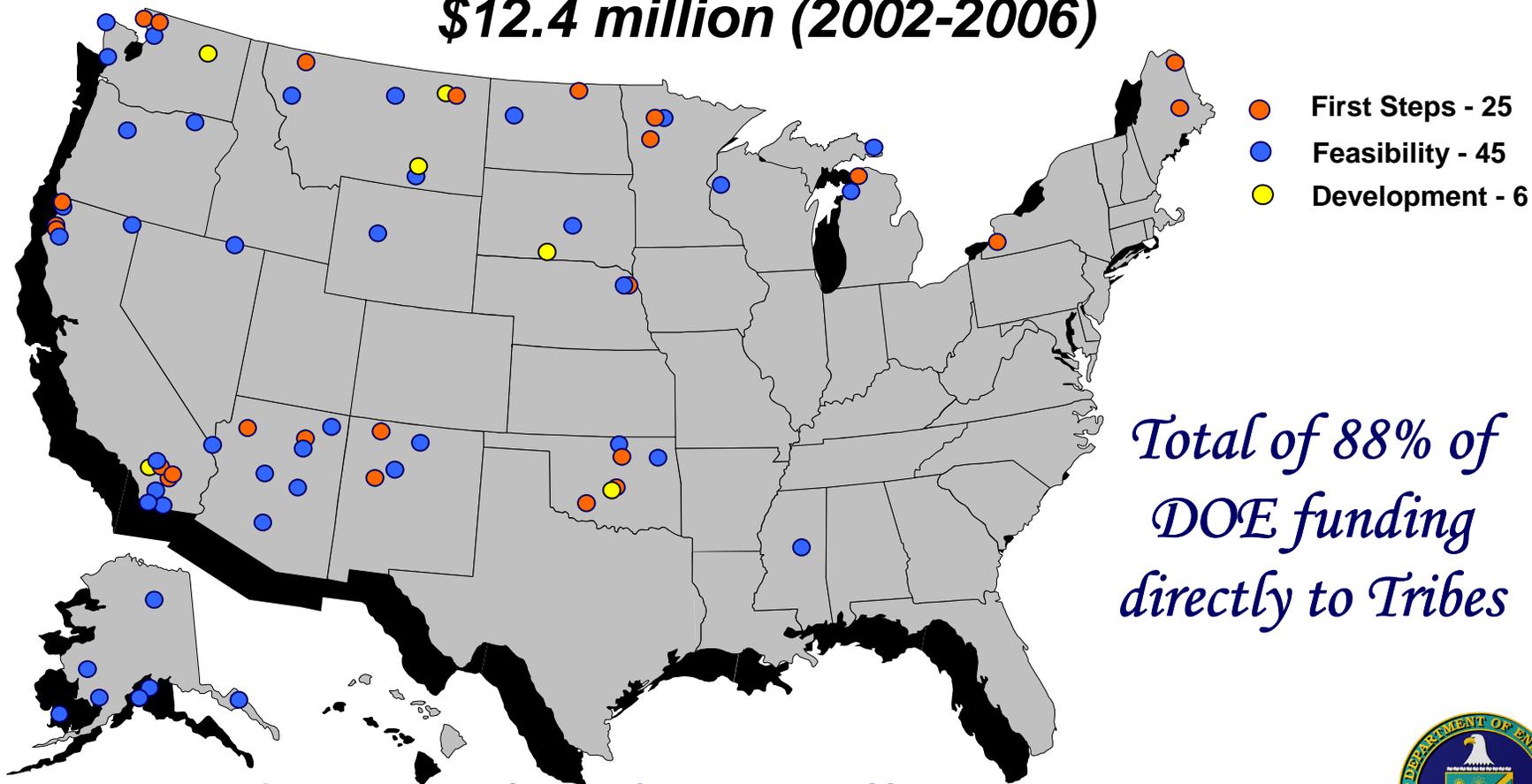
*** CERT and Pyramid Lake Paiute





DOE's Tribal Energy Program

**DOE has funded 76 tribal energy projects totaling
\$12.4 million (2002-2006)**



*Total of 88% of
DOE funding
directly to Tribes*

Tribes cost-shared \$3.3 million





DOE's Tribal Energy Program

Tribal Energy Projects

Development Projects (6)

Assiniboine & Sioux Tribes (MT) 2003
Citizen Potawatomi Nation (OK) 2005
Colville Confederate Tribes (WA) 2002
Northern Cheyenne Tribe (MT) 2003
Ramona Band of Cahuilla Mission Indians (CA) 2002
Rosebud Sioux Tribe (SD) 2003

"First Steps" Projects (25)

Agua Caliente Band of Cahuilla Indians (CA) 2005
Aroostook Band of Micmacs (ME) 2005
Assiniboine and Sioux Tribes (MT) 2005
Augustine Band of Cahuilla Indians (CA) 2006
Blackfeet Tribe (MT) 2006
Cabazon Band of Mission Indians (CA) 2003
Citizen Potawatomi Nation (OK) 2003
Fort Sill Apache Tribe of Oklahoma (OK) 2003

"First Steps" Projects (Continued)

Hopi Tribe (AZ) 2003
Hualapai Tribe (AZ) 2005
Jicarilla Apache Utility Authority (NM) 2005
Little Traverse Bay Bands of Odawa Indians (MI) 2005
Pawnee Nation of Oklahoma (OK) 2006
Penobscot Indian Nation (ME) 2005
Red Lake Band of Chippewa Indians (MN) 2005
Samish Indian Nation (WA) 2003
Seneca Nation of Indians (NY) 2003
Smith River Rancheria (CA) 2003
Smith River Rancheria (CA) 2006
Turtle Mountain Band of Chippewa Indians (ND) 2006
Upper Skagit Indian Tribe (WA) 2005
White Earth Reservation (MN) 2003
Yurok Tribe (CA) 2003
Yurok Tribe (CA) 2005
Winnebago Tribe of Nebraska (NE) 2005

Project Summaries and Reports Posted





DOE's Tribal Energy Program

Tribal Energy Feasibility Projects (45)

Ak-Chin Indian Community (AZ) 2004
Aleutian Pribilof Islands Association (AK) 2005
Bristol Bay Native Corporation (AK) 2003
Cherokee Nation (OK) 2003
Confederate Tribes of Warm Springs (OR) 2002
Confederated Tribes of Warm Springs (OR) 2005
Eastern Shoshone Tribe of Wind River (WY) 2006
Flathead Reservation (MT) 2004
Fort Belknap Indian Reservation (MT) 2006
Fort Bidwell Tribe (CA) 2005
Fort Mojave Tribe (AZ) 2003
Grand Traverse Band of Ottawa and Chippewa
Indians (MI) 2005
Hoopa Valley Tribe (CA) 2006
Hopi Tribe (AZ) 2005
Kaw Nation of Oklahoma (OK) 2002
Kenaitze Indian Tribe (AK) 2002
Lower Brule Sioux Tribe (SD) 2003
Makah Tribe (WA) 2002
Makah Tribe (WA) 2003
Manzanita Band of Mission Indians (CA) 2002
Mesa Grande Band of Mission Indians (CA) 2004
Mississippi Band of Choctaw Indians (MI) 2002

Morongo Band of Mission Indians (CA) 2006
Native Village of Venetie (AK) 2003
Navajo Tribal Utility Authority (AZ) 2005
Northern Cheyenne Nation (MT) 2002
Port Graham Village Council (AK) 2006
Pueblo of Jemez (NM) 2002
Pueblo of Laguna Utility Authority (NM) 2005
Quinault Indian Nation (WA) 2004
Red Lake Band of Chippewa Indians (MN) 2003
St. Croix Tribal Government (WI) 2002
Sault Ste. Marie Tribe (MI) 2002
Sealaska Native Corporation (AK) 2002
Shoshone Paiute Tribes (NV) 2003
Smith River Rancheria (CA) 2005
Taos Pueblo (NM) 2003
Three Affiliated Tribes of the Fort Berthold
Reservation (ND) 2004
Tulalip Tribe (WA) 2002
Umatilla Indian Reservation (OR) 2002
Viejas Tribal Government (CA) 2003
White Mountain Apache Tribe (AZ) 2002
Winnebago Tribe of Nebraska (NE) 2006
Yavapai-Apache Nation (AZ) 2004
Yukon-Kuskokwim Health Corporation (AK) 2002





DOE's Tribal Energy Program

Congressionally Directed Awards

Council of Energy Resource Tribes (CERT)



Native American technical assistance and training for renewable energy resource development and electrical generation facilities management (Annual funding FY2003-2006)

DOE Funding: \$3.923 Million

Period of Performance: Jul 2003 – Dec 2007

Pyramid Lake Paiute Tribe (PLPT)

Characterize the geothermal resource and determine the potential for geothermal electrical production of at least one medium sized geothermal facility on tribal lands (FY2004 and FY2005 funding)

DOE Funding: \$1.97 Million

Period of Performance: Jun 2004 – May 2007



PYRAMID LAKE PAIUTE TRIBE



DOE's Tribal Energy Program

Congressionally Directed Awards



Intertribal Council on Utility Policy (Intertribal COUP)

Development of significant wind energy generation on Indian Reservations in the northern Great Plains as a viable strategy for community revitalization and capacity building through the development of sustainable homeland tribal economies (FY2004 funding)

DOE Funding: \$1.27 Million

Period of Performance: Jun 2004 – Nov 2006





DOE's Tribal Energy Program **Three Pronged Approach**

**Financial
Assistance**

*Success through
Government-to-
Government
Partnerships*

**Technical
Assistance**

*Leveraged through
Intergovernmental
Coordination*

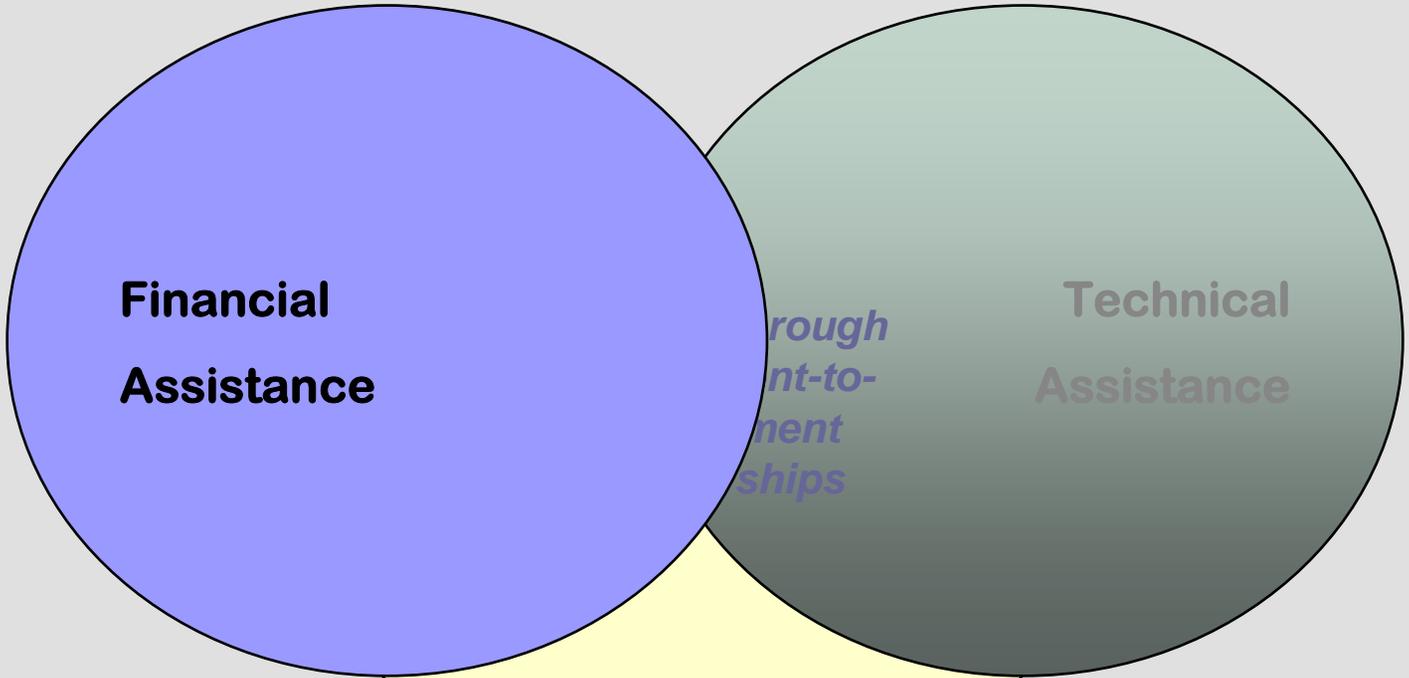
Information & Education

*Leveraged with Intra-
governmental
Coordination*





DOE's Tribal Energy Program **Three Pronged Approach**



Financial Assistance

Technical Assistance

*rough
nt-to-
nent
ships*

Information & Education

*Leveraged through
Intergovernmental
Coordination*

*Leveraged with Intra-
governmental
Coordination*





DOE's Tribal Energy Program

Providing Financial Assistance

Providing financial and technical assistance to Tribes for energy planning and feasibility studies of renewable energy projects on Tribal Lands

**Only Federally-recognized Tribes
eligible to apply**



Tribal Lands include Indian reservations; Public domain Indian allotments; Former Indian reservations in Oklahoma; Land held by under the provisions of the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.); and Lands held in fee simple or under a Federal land lease.

Funds Awarded through a Competitive Process





DOE's Tribal Energy Program **Providing Financial Assistance**

First Steps Toward Developing Renewable Energy and Energy Efficiency

- Strategic planning
- Energy options analysis
- Capacity building
- Organizational development

Feasibility of Renewable Energy Projects on Tribal Lands

- Feasibility studies



Solar Installations at Pueblo of Laguna's Majors Ranch



Ute Mountain Indian Reservation
PV Water Pumping



DOE's Tribal Energy Program Funding Opportunities

Applications must be submitted electronically through **Grants.gov**

- To apply, you must be registered in Grants.gov
- Registration may take at least 21 days to complete
- For more, see <http://www/grants.gov/GetStarted>
- Verify you are registered by contacting the Grants.gov Helpdesk
- For assistance help, contact Grants.gov Helpdesk at 1-800-518-4726 or support@grants.gov



First 750 kW Turbine on Tribal Lands in the Contiguous U.S.

Issued September 2006
Applications Due January/February 2007





DOE's Tribal Energy Program

Assisting Tribes Meet Their Energy Goals

Past Accomplishments

- **Mandan, Hidatsa & Arikara Tribes in North Dakota install a 66 kW wind turbine to power Three Bears Casino (2005)**
- **Pueblo of Laguna installed wind and solar systems to power Major's Ranch**



Solar Installations at Pueblo of Laguna's Majors Ranch



Turbine (67 kW)
Installed at Fort Berthold
September 2005





DOE's Tribal Energy Program

Assisting Tribes Meet Their Energy Goals

Past Accomplishments

- Installation of the first utility-scale turbine (750 kW) on Tribal lands in the contiguous U.S. (Rosebud Sioux)
- Jicarilla Apache installed 2.4 kW solar electric system on Dulce High School
- Solar arrays installed on 18 homes in the Dilkon and Teesto Chapters of the Navajo Nation (21.6 kW)



Turbine Installed on the Rosebud Sioux Reservation in South Dakota



Solar arrays on Navajo home

Jicarilla Apache Reservation PV array on Dulce High School





DOE's Tribal Energy Program **Three Pronged Approach**

**Financial
Assistance**

*Success
Gov
Gov
Part*

**Technical
Assistance**

*Leveraged through
Intergovernmental
Coordination*

Information & Education

*Leveraged with Intra-
governmental
Coordination*



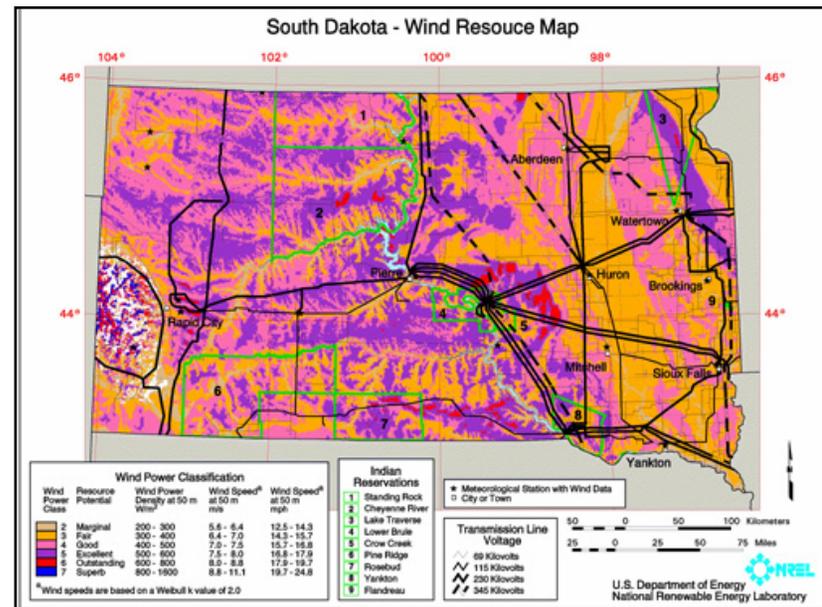


DOE's Tribal Energy Program

Providing Technical Assistance

Technical Assistance

- Technology Advice
- Models and Tools
- Resource Maps
- Strategic Planning
- Project Management Support

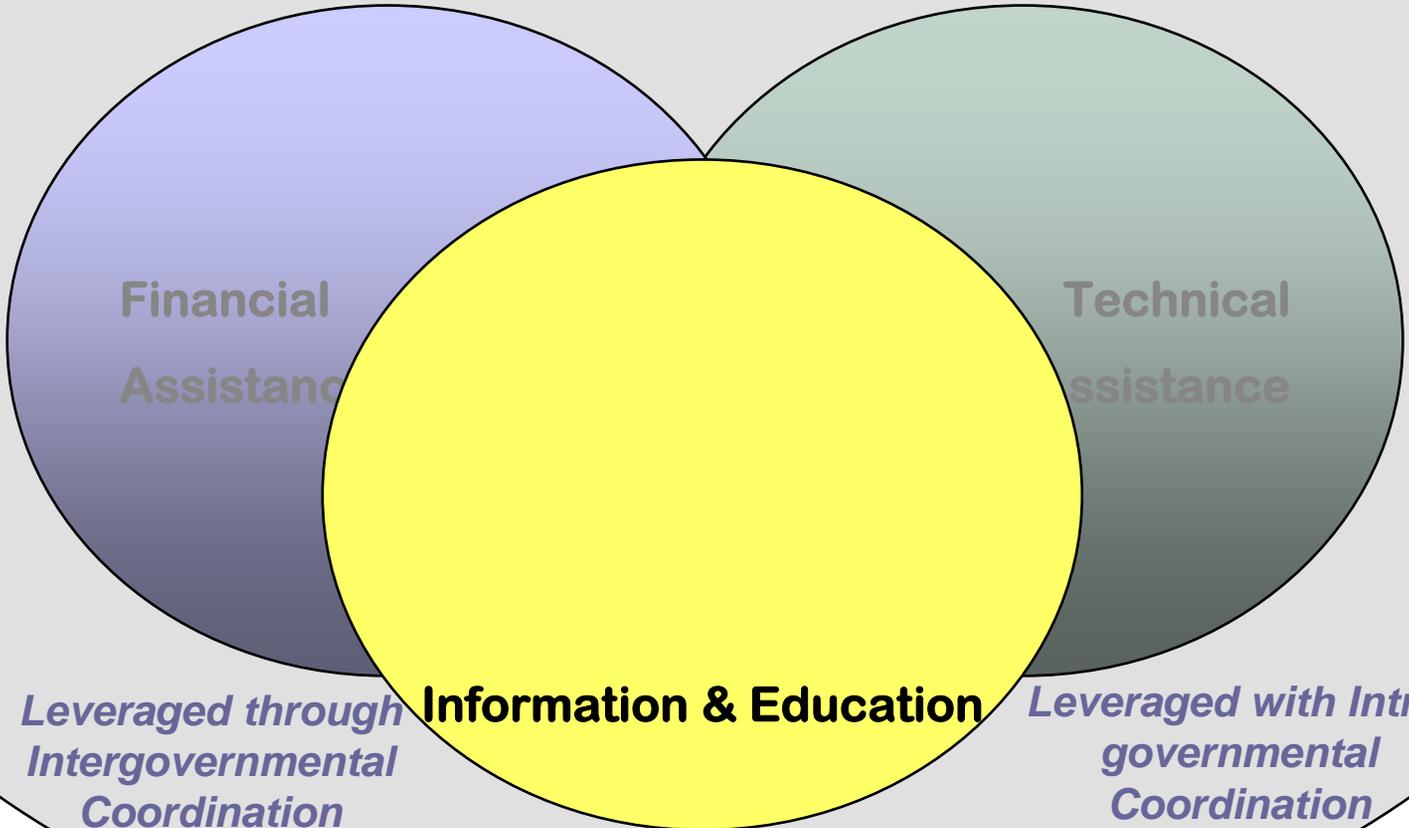


Assisting Tribes with technical expertise through
DOE's National Laboratories





DOE's Tribal Energy Program **Three Pronged Approach**



Leveraged through Intergovernmental Coordination

Leveraged with Intra-governmental Coordination





DOE's Tribal Energy Program

Providing Information and Education

Student Internships

- Three (3) summer interns sponsored in 2003 and 2004 each
- Year-round intern sponsored (2002-2004)
- One (1) summer intern and two (2) year-round interns (2005)
- Three (3) summer interns and one (1) year-round intern sponsored (2006)



Summer Interns on the Navajo Reservation (2003)

Workshops

- Co-sponsored Native American Energy and Mineral Institute (NAEMI) workshops (5 workshops held summer 2006)
- Renewable Energy for Community Development (Aug 2005)
- TC&U Teach the Teachers workshop (Jul 2004)
- Biomass Opportunities and Challenges in Indian Country DOE/BIA/NREL sponsored workshop (Sep 2004)
- Four (4) regional workshops held 2004
- Co-sponsor Wind Energy Applications Training Symposium (WEATS)

Summer Interns on a windy day (2004)



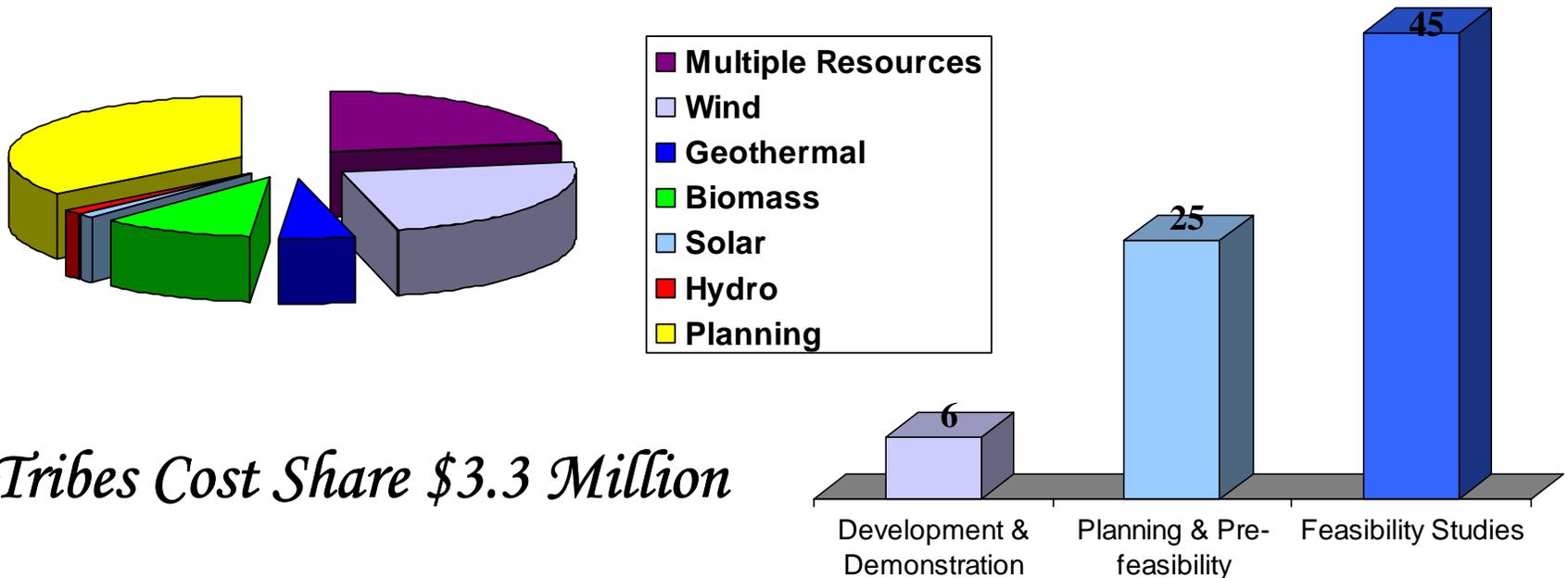
**Student Paper and Workshop Materials
Posted on TEP Website**



DOE's Tribal Energy Program

Tribal Projects

DOE Investment of \$12.4 Million



Tribes Cost Share \$3.3 Million

Seventy-six (76) Tribes funded for energy planning, feasibility studies and demonstration (2002-2006)





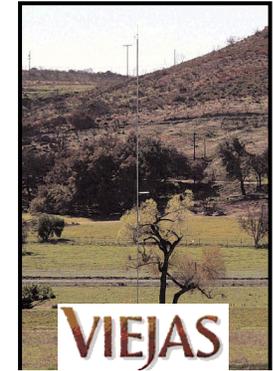
DOE's Tribal Energy Program

Tribal Accomplishments

- Two demonstrations completed and two demonstrations underway
- Twenty-one tribal feasibility studies completed and reports posted
- Six feasibility projects proceeding toward development
- Six tribes developed strategic energy plans and three proceeded to feasibility studies
- Installation of 50 anemometers measuring tribal wind resources in Indian Country



Cabazon Band of
Mission Indians



Viejias Tribal Government
Tribal Utility and Wind
Study



Pueblo of Jemez
Geothermal Feasibility Study



Samish Indian Nation
of Washington





DOE's Tribal Energy Program

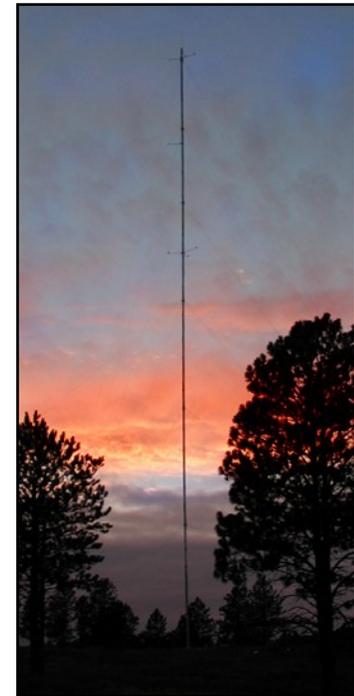
Tribal Accomplishments

Six (6) "development" projects

- **Biomass demonstration project completed**
 - Colville Indian Tribe installed substation to reduce line losses
- **Two wind turbines (100 kW) installed**
 - Assiniboine and Sioux Tribes installed two 50 kW wind turbines on the Fort Peck Reservation
- **Potential for 60 MW of wind energy installations**
 - Northern Cheyenne nearing PPA for 30 MW wind farm installation
 - Rosebud Sioux nearing PPA for 30 MW wind farm installation
- **Demonstrations underway**
 - Citizen Potawatomi Nation installing geothermal heat pumps and spurring greenhouse business using waste heat
 - Ramona Band ecotourism project underway

Northern
Cheyenne
Completed Wind
Feasibility Study

Currently
pursuing a 30
MW Wind Farm



Colville Indian Power and
Vener Energy Substation





DOE's Tribal Energy Program

Accomplishments and Project Pipeline

Forty-five (45) feasibility studies

- **Twenty-one (21) studies completed**
- **Six (6) proceeding toward development**
 - Kaw Nation pursuing wind development
 - Tulalip Tribe pursuing biogas development Snohomish County, Washington
 - St. Croix pursuing biomass facility for peaking power (1-3MW)
 - Northern Cheyenne Tribe conducted feasibility and continued with pre-development for large-scale wind farm (30 MW)
 - Three Affiliated Tribes (Mandan, Hidatsa & Arikara) exploring wind development
 - Lower Brule Sioux pursuing wind development



St. Croix
Chippewa
Biomass
Study



Tulalip Tribes Biogas
Feasibility Study



Three Affiliated
Tribes Wind
Feasibility
Study



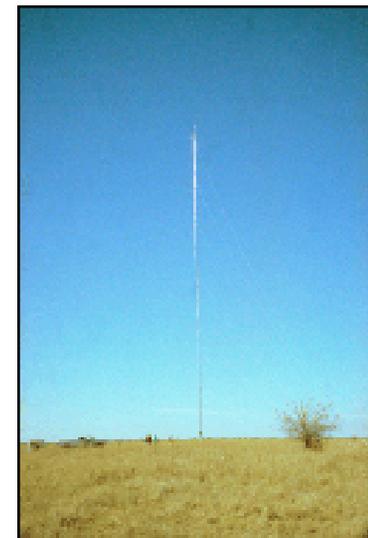
DOE's Tribal Energy Program

Tribal Accomplishment

Twenty-one (21) feasibility studies completed

- Ak-Chin Indian Community
- Cherokee Nation
- Confederated Tribes of the Umatilla Indian Reservation
- Flathead Nation
- Kaw Nation of Oklahoma
- Kenaitze Indian Tribe
- Makah Indian Nation (2)
- Manzanita Band of Mission Indians
- Mississippi Band of Choctaw Indians
- Northern Cheyenne Tribe
- Pueblo of Jemez
- Red Lake Band of Chippewa Indians
- Sealaska Tribe
- Shoshone-Paiute Tribes of the Duck Valley Reservation
- St. Croix Chippewa Indians of Wisconsin
- Three Affiliated Tribes (Mandan, Arikara & Hidatsa)
- Tulalip Tribes of Washington
- Viejas Tribal Government
- White Mountain Apache Tribe
- Yukon-Kuskokwim Health Corporation

Makah Indian Nation
Wind Feasibility Study



Kaw Nation Wind
Resource Assessment



Shoshone-Paiute
Tribes of Duck Valley

***Final reports posted on
TEP website***



DOE's Tribal Energy Program

Accomplishments and Project Pipeline

Twenty-five (25) "First Steps" projects

- Six (6) strategic energy plans complete
- Two (2) tribes pursuing feasibility studies
 - Smith River Rancheria Conducted wind and biomass feasibility study after energy options analysis
 - Hopi Wind feasibility study ongoing as a result of strategic energy planning
- Citizen Potawatomi Nation proceeding directly to geothermal heat pump demonstration following energy options analysis



First Tribal Nation to Join EPA's Green Power Partnership by

Committing to obtain at least 10% of their electricity from renewable energy sources within the next year.

**Samish Indian Nation of
Washington**



DOE's Tribal Energy Program

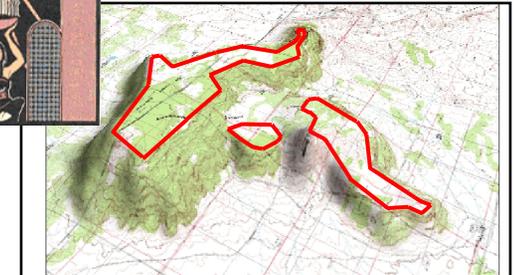
Tribal Accomplishment

Six (6) tribes developed strategic energy plans

- Cabazon Band of Mission Indians
- Citizen Potawatomi Nation
- Hopi Tribe
- Samish Indian Nation
- Seneca Nation
- Smith River Rancheria



Smith River Rancheria



The Hopi Tribe

Cabazon Band of
Mission Indians



Citizen Potawatomi
Nation of Oklahoma



Seneca Nation of
New York





DOE's Tribal Energy Program

Project Pipeline

First Steps Feasibility Demonstrations Pre-Development Development

Single Turbine Demos

- Rosebud Sioux
- Three Affiliated Tribes



30 MW Development



Wind Feasibility

Dakota's Wind Development

Dakota's 80 MW Wind Development

St. Croix Biomass Facility

Biomass Feasibility

DOI Economic Development

Colville Biomass Development

Substation

DOI Economic Development

Citizen Potawatomi

Planning

GHP Installation

Makah Nation

Wind Feasibility

Wind Pre-development

Winnebago

Planning

Wind Feasibility

Northern Cheyenne

Wind Feasibility

30 MW Development

The Hopi Tribe

Planning

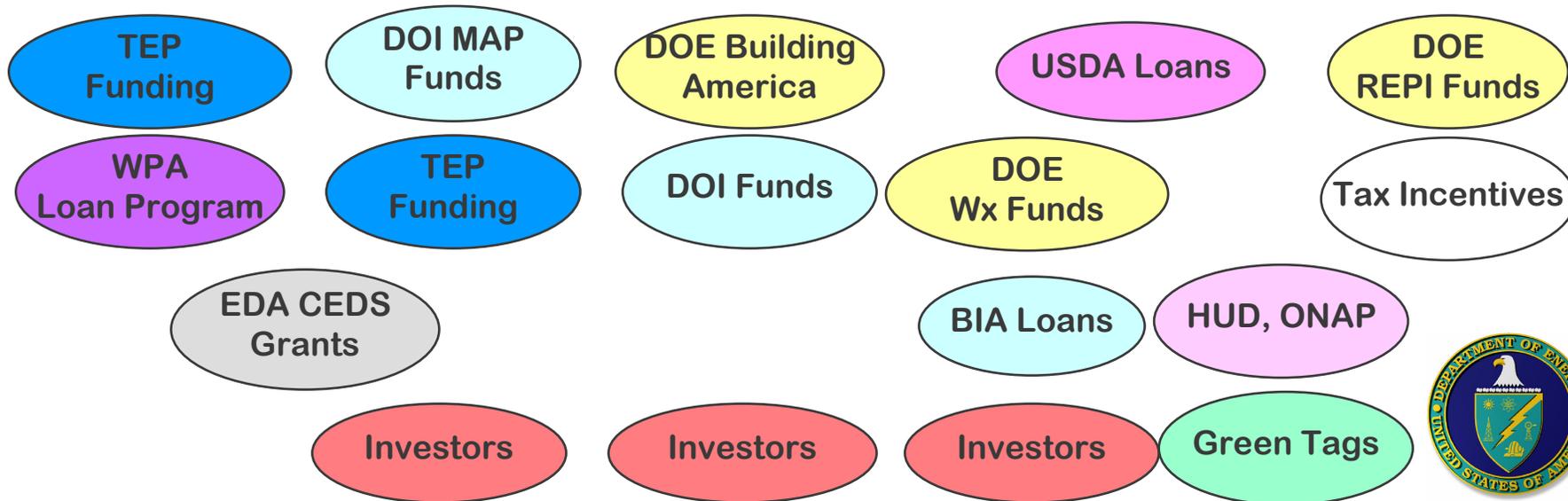
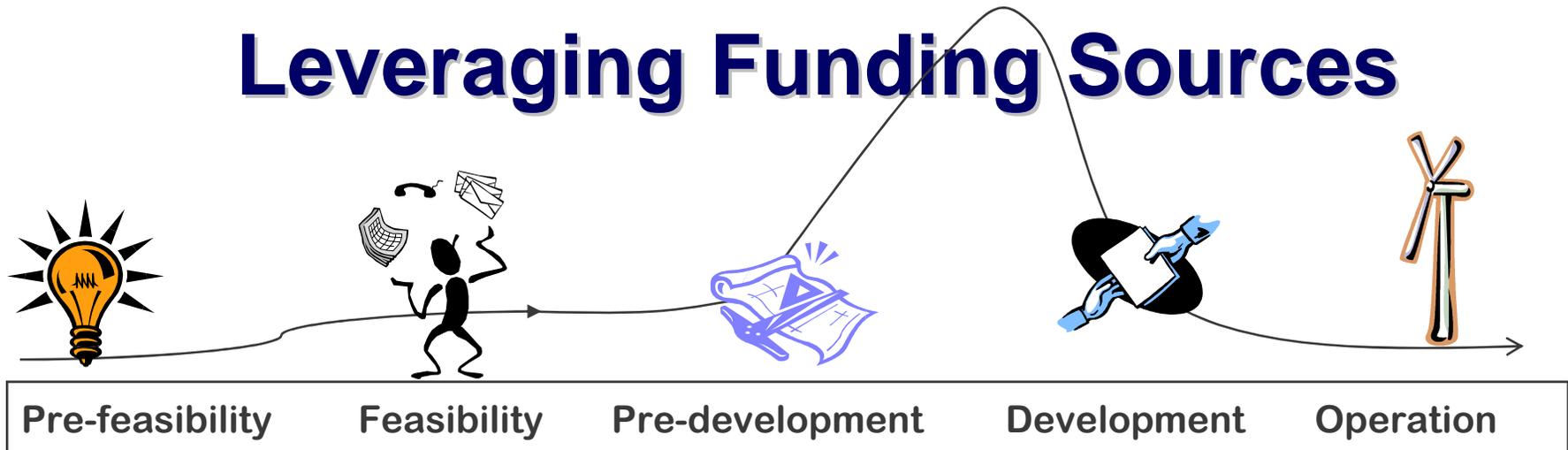
Wind Feasibility

*Protecting Investment (Project Pipeline) through
leveraging other funding and financing sources*



DOE's Tribal Energy Program

Leveraging Funding Sources





DOE's Tribal Energy Program

Title V of EPAct 2005, Indian Provisions

Authorizes the creation of an “Office of Indian Energy Policy and Programs” within the Department of Energy

Department of Energy Program

- **DOE Indian Energy Education Planning and Management Assistance Program (Authorization for \$20 Million for each fiscal year 2006-2016)**
- **DOE Loan Guarantee Program (Aggregate amount guaranteed not to exceed \$2 Billion)**

Department of Interior Program

- **Indian Tribal Energy Resource Development Program (Authorized such sums as are necessary in fiscal years 2006 through 2016)**
- **Indian Tribal Energy Resource Regulation (Grants for energy inventories and feasibility studies)**

No Funds Appropriated for EPAct 2005



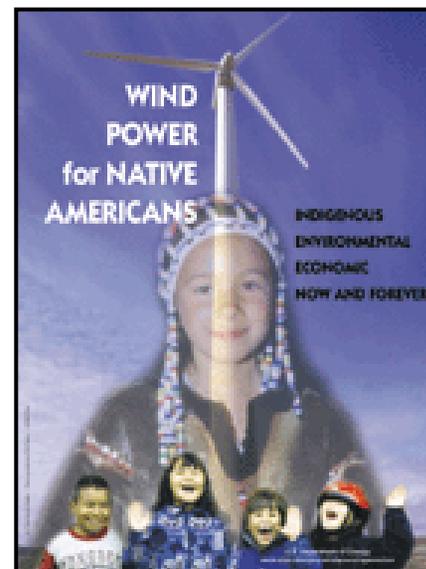


Wind Powering America's (WPA) Native American Program

WPA recognizes the vast wind resources on tribal lands and provides technical assistance to:

- Evaluate the resource; and
- Pursue development options that best match Native interests

Wind Powering Native America Video
Anemometer Loan Program
Native American Wind Interest Group
(NAWIG) Quarterly Newsletter



Native American
Anemometer Loan Program
has supported over 70 tribes



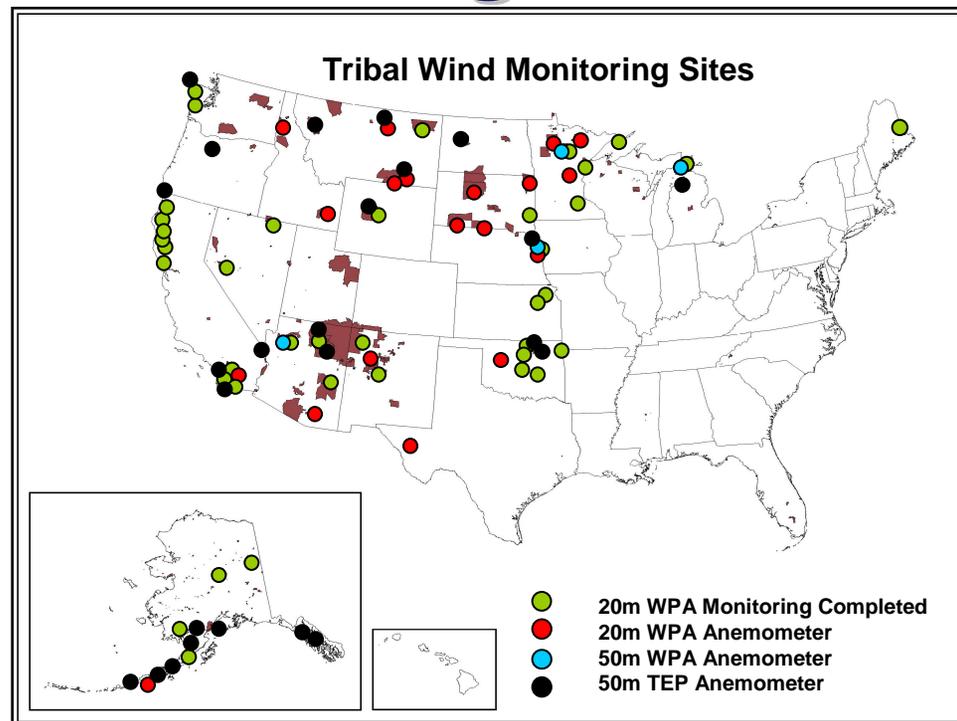


DOE's Tribal Energy Program

Anemometer Loan Program

- Fifty anemometers purchased under TEP grants
- Transferring equipment to NREL for re-use under the Native American Anemometer Loan Program

Tribes agreed to re-use by other tribes who wish to measure their wind resources



For more or to apply, see "Native American" at www.eere.energy.gov/windandhydro/windpoweringamerica





DOE's GeoPowering the West

GeoPowering the West is a commitment to dramatically increase the use of geothermal energy in the western United States



Jemez Pueblo received DOE support to study its geothermal resource

- Provides information and technical assistance to tribes
 - Partners with tribes to expand the use of geothermal energy
- Site visits completed at Pyramid Lake Paiute, Walker River Paiute and Wind River Tribe
 - Geothermal greenhouse tours provided to several New Mexico pueblo officials



**GEOPOWERING
THE WEST**

www.eere.energy.gov/geothermal





DOE's Geothermal Program



Geothermal Resource
Exploration and Definitions
Program (GRED III)

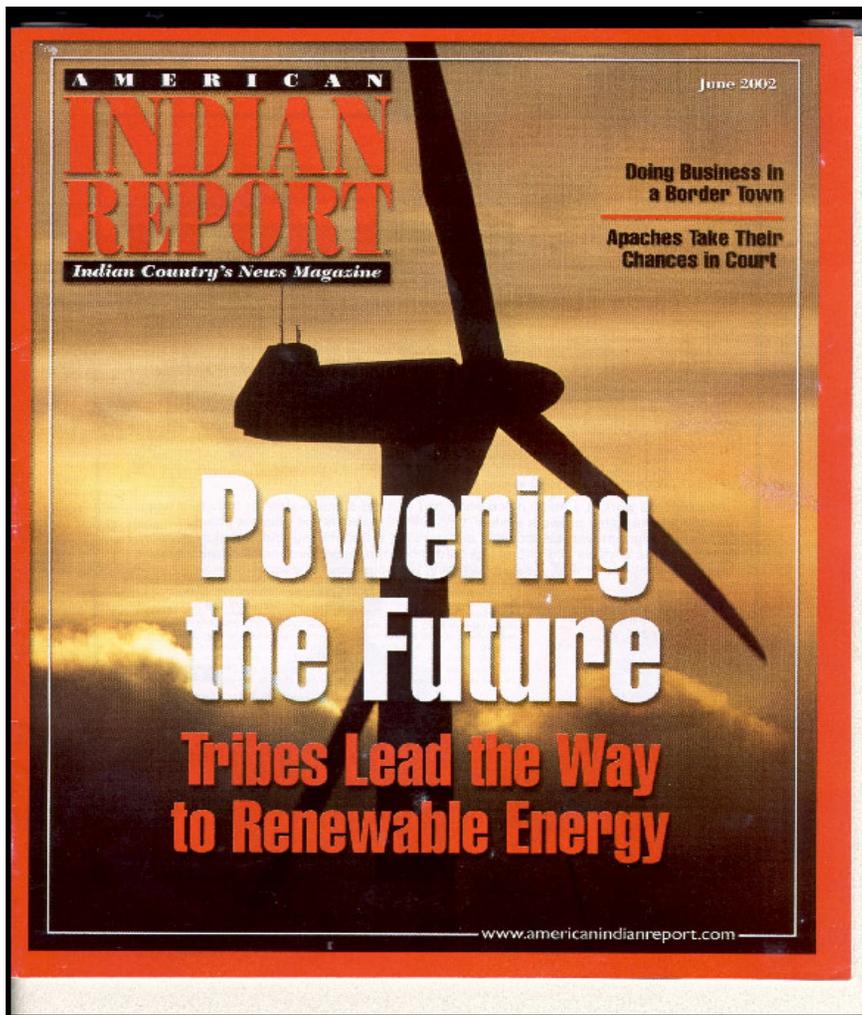
Financial assistance for geothermal
resource assessments

**Fort Bidwell Indian Community competitively
selected for funding**

Program Mission

*To work in partnership with U.S. industry to establish geothermal energy
as an economically competitive contributor to the U.S. energy supply*





QUESTIONS

“Tribes Leading the Way to Renewable Energy”

**American Indian Report
June 2002**

