Tribal Climate Change Efforts in Arizona and New Mexico

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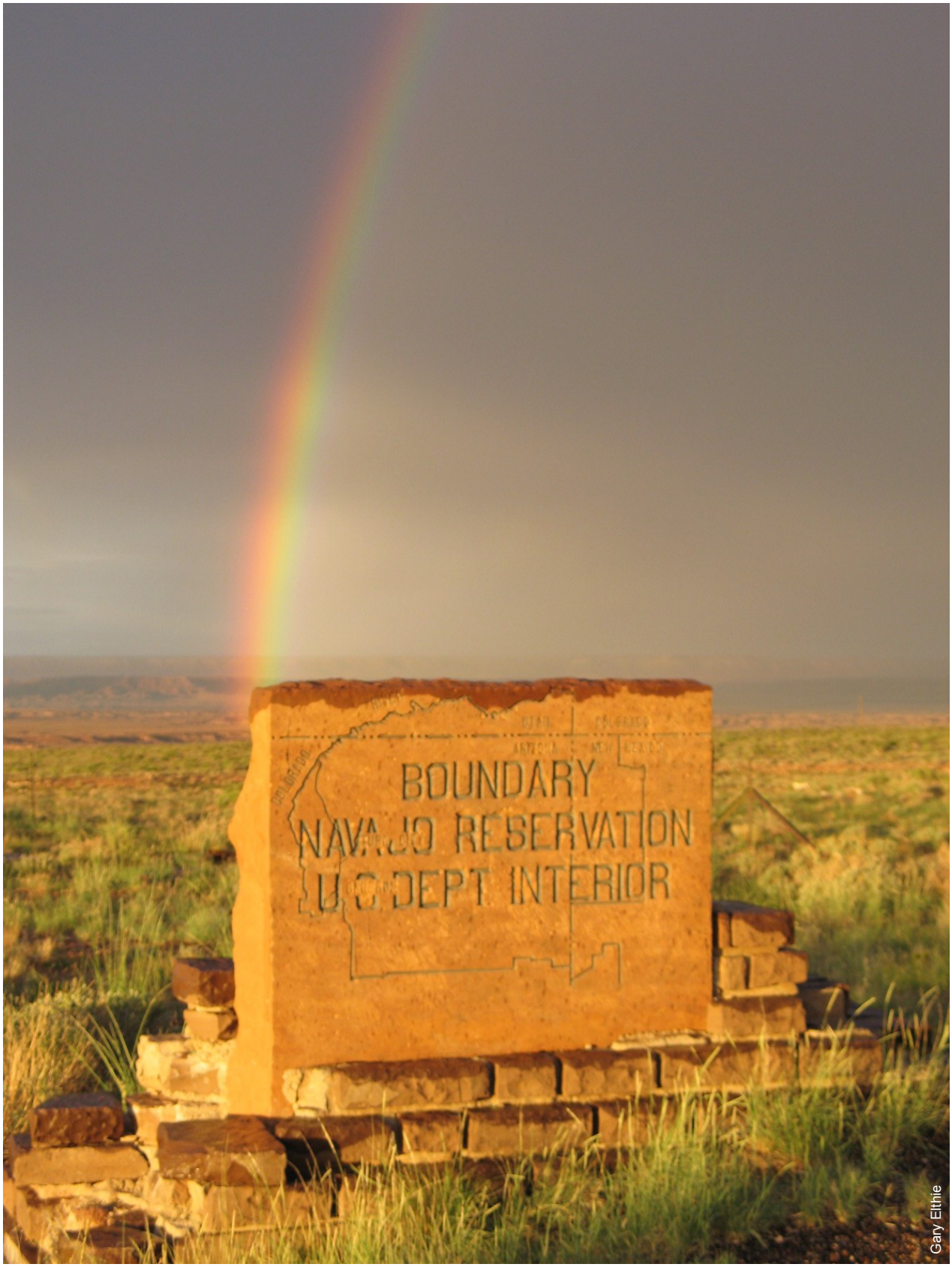
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Introduction

The climate is changing and causing a host of serious consequences for people around the world. In the United States, Native Americans and Alaska Natives will likely be disproportionately impacted compared to their non-Native counterparts. Native Alaskan villages, for example, are already experiencing acute and rapid changes, such as warmer temperatures, rising sea levels, and more frequent and extreme weather events. Some villages, such as Newtok, are leaving the villages that have been their traditional homes and re-establishing their communities on higher ground. These are some of the first human populations to experience direct consequences of climate change.

Global climate change will likely impact the cultural, spiritual, and often economic ties that inextricably link Native Americans to the Earth. The traditions of many Native cultures, such as indigenous foodways, hunting practices, and plant gathering, are threatened. In regions where the impacts of climate change are already pronounced, traditional knowledge systems can no longer predict the cycles of the planet that have provided harmony and balance between nature and the needs of tribal communities for eons.

The Southwest is projected to become warmer and drier. Warming is already occurring faster in the Southwest than in most other parts of the country, and the region faces many challenges including an increasing probability of drought, changes in snowpack, earlier spring snowmelt, and decreases in river flows. Water supplies are projected to become increasingly scarce. Impacts on the landscape are likely to be substantial, caused by factors such as changes in temperature and precipitation, wildfire, invasive species, and pests. Increased frequency and changes to timing of flooding will increase risks to people, ecosystems and infrastructure.[1]

Impacts that have already been documented by tribes in the Southwest include erratic weather patterns, including extreme wind events; drought and decreases in water supply; loss of biodiversity and impacts on culturally important native plants and animals; increases in invasive species; bark beetle damage to forests and increased risk of forest fires; impacts on cattle ranching; and higher utility costs with increased use of air conditioning. [2]

Several tribes have been impacted by severe weather events that have caused states of emergency to be declared. In August, 2008, the Havasupai Tribe experienced severe flooding that caused damage and destruction of trails, campgrounds and recreation areas in Havasu Canyon. This had a large impact on the tribe, as the tribal government and members depend primarily on tourism revenue. The tribe received funding for its recovery efforts from the San Manuel Band of Mission Indians ($1,000,000), and federal and state agencies; additional donations and technical assistance came from numerous organizations and tribes. The tribe has experienced severe flooding several times since then, most recently in October, 2010, and Havasu Canyon is closed to visitors until rehabilitation work is completed and flood mitigation measures are in place.[3] In January, 2010, the Navajo Nation and Hopi Tribe were impacted by a storm producing four feet of snowfall; food and supplies were flown in to people who were stranded in remote areas.[4]

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[1] *Global Climate Change Impacts in the United States*, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009, www.globalchange.gov/publications/reports/scientific-assessments/us-impacts

[2] *The Impact of Climate Change on Tribes in the United States*, National Tribal Air Association, 2009, www.ntaatribalair.org/images/stories/Documents/Climate_Change/2009_12-11_Impacts_CChange_Tribes_NTAA.pdf

[3] 2008 Flash Flood Update, Havasupai Tribe, www.havasupai-nsn.gov/08172008flood.html; *Feds Declare Disaster for Remote Ariz. Reservation,* Arizona Daily Sun (12/22/10), http://azdailysun.com/news/state-and-regional/article_f6c1513c-3a48-5d02-bc50-a6c017d33446.html

[4] *Blizzards in Indian Country: Navajo Nation*, Indian Country Today (2/8/10), www.indiancountrytoday.com/national/83647832.html; Navajo Nation Operation 2010 Snowfall, www.osf2010.navajo.org/

In July, 2010, the Hopi Tribe declared a state of emergency due to flooding that closed roads and damaged water, sewer, and telephone lines, homes, and gravesites.[5]

Tribes in the Southwest and across the nation are taking action on climate change, despite challenges such as limited tribal staff and financial resources. They are trying to find ways to reduce greenhouse gas emissions by implementing renewable energy, energy efficiency, and weatherization measures. They are also trying to maintain the fundamental elements of their cultures in a world that no longer resembles the home of their ancestors. They are undertaking projects that directly or indirectly help their communities and tribal lands adapt and become more resilient to climate change.

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[5] *Flooding in Polacca Prompts Emergency Declaration*, Navajo-Hopi Observer (8/3/10), http://nhonews.com/Main.asp?SectionID=1&SubSectionID=1&ArticleID=12727; *Hopi Tribe Continues to Recover From Flooding*, Navajo-Hopi Observer (8/18/10), www.navajohopiobserver.com/main.asp?SectionID=74&SubSectionID=114&ArticleID=12776

View from Acoma Pueblo near Sky City in New Mexico. Source: ITEP

About the Report

To gain a better understanding of the needs of tribes in the Southwest regarding climate change issues, the Institute for Tribal Environmental Professionals (ITEP) at Northern Arizona University, in collaboration with the USDA Forest Service Rocky Mountain Research Station, is working on a project focused on tribes in Arizona and New Mexico. One of the goals of the project is to identify climate change efforts being undertaken by tribes, tribal organizations, tribal colleges and Native American academics. Identifying existing climate change efforts will serve as a beginning point in an ongoing dialogue related to research, extension, and policy needs for sustainable resource management by tribes as it relates to climate change. With input and guidance from a tribal steering committee, ITEP and the US Forest Service will assess tribal information needs regarding climate change and determine strategies for meeting those needs, with an emphasis on developing a climate change workshop for Arizona and New Mexico tribal natural resources managers and other interested tribal staff in the late summer of 2011.

This report provides a summary of the information gathered about tribal climate change efforts in Arizona and New Mexico. ITEP was responsible for scoping the work being done by tribes and tribal organizations, and the US Forest Service for the work by academic institutions. Information was gathered by e-mail communication, phone calls, and Internet research. Those that we were unable to reach by e-mail or telephone are noted with "Could not be reached for comment." We were interested in learning if any tribes had developed climate change programs and about projects related to climate change adaptation and mitigation, for example, preparing for drought impacts, monitoring ecosystems and making them more resilient to climate change, renewable energy, carbon sequestration, and climate change education and outreach. This report should not be viewed as a comprehensive documentation of every tribal climate change-related effort that is happening in Arizona and New Mexico, as we were not successful in reaching every tribe and organization. However, the report does provide insight into much of the work that is happening.

Summary of Findings

Several tribes in Arizona and New Mexico have programs specifically focused on climate change. However, many of those who do not have climate change programs have been doing projects related to climate change mitigation or adaptation within their existing departmental programs, although these projects typically are not identified as "climate change." A notable exception is the Gila River Indian Community, which received a US EPA Climate Showcase Community grant that is funding the tribe's climate change mitigation efforts: Reduction of Greenhouse Gas Emissions by Development of an Innovative Climate Projects Coordination Structure. The tribe hired a Climate Projects Specialist and is coordinating new and existing project teams, including the Gila River Indian Community Renewable Energy Team that was formally established to implement energy conservation projects. The tribe plans to receive training on LEED certification and promote the program through presentations and articles in local media outlets, complete a community wide greenhouse gas (GHG) inventory, implement a curb-side recycling program, implement a compact fluorescent lighting and Green Building program, and develop options for reducing industrial facilities' GHG emissions.

Some tribes in Arizona and New Mexico have been exploring the opportunities for developing the renewable resources available on their lands. Renewable energy projects include a number of feasibility studies for large-scale wind or solar projects. The Navajo Nation is getting closer to developing its wind energy resources with wind farms, and the Pueblo of Jemez is moving forward with its utility-scale solar project and is also exploring the potential for developing its geothermal energy resources. Other tribes are still in the process of determining the feasibility of renewable energy, have faced challenges to developing the resources, or have determined that the

energy resource is inadequate for development. Some tribes are focusing on smaller scale renewable energy projects, such as installing solar panels on tribal buildings as the Hopi Tribe and Fort McDowell Yavapai Nation have done.

Many tribes recently received funding from the US Department of Energy's Energy Efficiency and Conservation Block Grant Program for energy efficiency and weatherization projects. These include projects such as conducting energy audits, installing solar-powered street lights, upgrading water heaters or installing solar water heaters, retrofitting windows, providing energy-efficient wood stoves, insulating buildings, and developing energy plans.

Not all tribes are embracing renewable energy projects. The Quechan Tribe has been vocal in its opposition to a solar power plant in the Sonoran Desert. The tribe filed a lawsuit against the United States alleging that the Department of Interior skipped steps in the permitting process to expedite the project. The 709-MW solar power plant, planned for 6000 acres of public land, has the potential to threaten the habitat of the flat-tailed lizard, an animal that is culturally important to the tribe, and it could also damage numerous ancient cultural sites. On December 16, 2010, a US District judge imposed a preliminary injunction blocking the project, ruling that the government had not consulted enough with the tribe before approving the project.

Tribes in Arizona and New Mexico are also engaged in a variety of projects related to climate change adaptation although climate change is often not the impetus for doing the project. Although some of these projects may have been undertaken for other purposes, they provide a co-benefit in that they serve to increase the tribe's resilience to climate change.

Having adequate water resources is integral to living in the Southwest. Some tribes are focusing on monitoring and managing water resources and planning for and mitigating drought impacts. For example, the Hopi Tribe is currently updating its drought mitigation plan and also participates in AZ DroughtWatch by reporting impacts of drought on Hopi lands.[6] The Hualapai Tribe is reducing its vulnerability to drought by increasing its collection and storage of water and engaging in many related activities. In addition to decreasing availability of water resources related to climate change, some tribes have also had concerns regarding their water rights. The Claims Resolution Act of 2010, signed into law by President Obama on December 8, 2010, included water settlements with the White Mountain Apache Tribe in Arizona, and the Taos Pueblo and four other pueblos in New Mexico (the Pojoaque, Tesuque, San Ildefonso, and Nambe Pueblos) and ended decades of water allocation controversy among neighboring communities.[7]

Other projects by tribes that serve to increase their resiliency to climate change include monitoring of ecosystems, restoration of riparian habitats, removal of invasive species, agricultural initiatives, thinning of forests, and outreach and education. The Pueblo of Zia undertook a project to restore a scared spring that had dried up; the tribe had been concerned that erosion, climate change and the region's growing demand for water would keep the spring from recovering. The Mescalero Apache Tribe has undertaken various fuels treatment projects that move towards thinning forests and utilizing biomass as well as helping support biodiversity within the tribe's forests, and the Santa Clara Pueblo initiated a hazardous fuels reduction project which will reduce its vulnerability to forest fires. The Pueblo of Tesuque has been supporting the Tesuque Farms Agricultural Initiative that has turned 40 acres of land into a productive farm that serves the pueblo and local surrounding communities. The goal of the farm is to help the community become more sustainable, preserve traditional seeds and foods, and maintain a healthier lifestyle, and it is a great source of research and education for the Pueblo. A project being led by the US Geological Survey (USGS) is addressing the mobilization of sand dunes, which has become a problem

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[6] AZ DroughtWatch is a tool designed to collect qualitative reports of drought impacts across Arizona. This impact information is used in conjunction with meteorological and hydrological data to characterize drought conditions. http://azdroughtwatch.org/

[7] *Salazar: Settlement Agreements with First Americans Mark Historic Progress in Reconciliation, Empowerment*, US Dept. of Interior Press Release, 12/8/10,

Migrating sand dunes on the Navajo Reservation. Source: Dr. Margaret Hiza Redsteer, USGS

on the Navajo Nation as the climate has become drier. The USGS has been conducting ongoing studies on the dunes and is implementing a pilot dune stabilization project.

A number of tribal organizations and academic institutions have also been undertaking projects related to tribes and climate change. For example, the Intertribal Council of Arizona (ITCA) is planning to provide climate change technical assistance to Arizona tribes. As a first step, ITCA intends to help one tribe develop a climate change mitigation or adaptation plan and then will use this as a model for working with other tribes. The Forest Guild, although not a tribal organization, provided a climate change workshop for foresters and natural resource professionals, including tribes, about the projected impacts of climate change on New Mexico forests.

Diné College and Tohono O'odham Community College offer courses on climate change, and Navajo Technical College offers courses on wind and solar power. The Institute of American Indian Arts signed on as a participant in the American College and University Presidents' Climate Commitment, and it also has a required freshman seminar course that addresses climate change literacy by teaching students about greenhouse gases and sustainability practices. The Southwestern Indian Polytechnic Institute has ongoing plant production, a greenhouse nursery, and native plant restoration projects.

The large state universities in Arizona and New Mexico have signed on as participants in the American College and University Presidents' Climate Commitment, and most of them have developed climate action plans that aim to make their campuses carbon neutral. They all have various climate change-related programs and projects, courses, and faculty and staff that are conducting climate change research. Northern Arizona University's Institute for Tribal Environmental Professionals (ITEP) has a Tribal Climate Change Program, which provides a variety of services and resources to tribes, including climate change training courses for tribal environmental and natural professionals, the *Tribes & Climate Change* website, and the monthly *Tribal Climate Change Newsletter*. ITEP conducts outreach with tribes, other organizations, and agencies, and is developing collaborations to provide additional training, assistance and resources to tribes on climate change issues.

Northern Arizona University recently embarked on an inter-departmental project aimed at increasing public understanding of climate change and helping to prepare the next generation of scientists and educators. This outreach effort will focus on Native American and rural communities on the Colorado Plateau, targeting students who are historically underrepresented in science and math education. An NAU research project being led by the School of Forestry is developing fire histories of forests on the Hualapai Reservation. These fire histories will not only help fill a large gap in the network of fire reconstructions in the Southwest, but will also be of great value to the tribe for resource management. NAU's new professional Master's degree program, the MS in Climate Science and Solutions, is encouraging Native American students to apply and has financial support available for students.

As tribes in Arizona and New Mexico become more focused on climate change issues, they may want to avail themselves of the climate-change related programs and resources that are being developed and provided by organizations and academic institutions in those states.

Acknowledgements

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The Grand Canyon . Source: Gary Elthie

Arizona - New Mexico Tribal Lands

The remainder of this report provides a summary of climate change-related work being done by tribes in Arizona, tribes in New Mexico, and organizations and academic institutions in Arizona and New Mexico. It is not meant to be a comprehensive documentation of every tribal climate change-related effort that's happening in Arizona and New Mexico, as we were not successful in reaching every tribe and organization. However, the report does provide insight into much of the work that is happening

Arizona Tribes

Ak-Chin Indian Community

Location: Maricopa, AZ
Website: www.ak-chin.nsn.us/
Climate Change Program: No

Project: Energy Audit
Description: The tribe is planning to conduct energy audits of residential homes and one commercial building in order to reduce energy consumption.
Tribal Program: Awarded to the Ak-Chin Indian Community on 12/29/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $35,200)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=74761&AwardType=Grants

Cocopah Indian Tribe

Location: Somerton, AZ
Website: www.cocopah.com/
Climate Change Program: No

Project: Cocopah Community Center Energy Efficiency Improvements
Description: The main objectives of this grant are to reduce fossil fuel emissions, reduce total energy use, and improve energy efficiency.
Tribal Program: Awarded to the Cocopah Indian Tribe on 12/22/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $30,600)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=75165&AwardType=Grants
- Energy Efficiency and Conservation Block Grant Program, www.federalgrantswire.com/energy-efficiency-and-conservation-block-grant-program-eecbg.html

Colorado River Indian Tribes

Location: Parker, AZ
Website: www.crit-nsn.gov/
Climate Change Program: Could not be reached for comment.

Project: Riparian Habitat Restoration
Description: Ahakhav Preserve was established in 1995 as a response to changes in the Colorado River Indian Tribes community. Native cottonwood (*Populus fremontii*), Goodding and Coyote willow (*Salix gooddingii* and *S. exigua*), and Honey and Screwbean mesquite (*Prosopsis glandulosa* and *P. pubescens*) trees were disappearing, only to be replaced by a nonnative invasive plant, Saltcedar (*Tamarix*, spp.). Other changes include fewer bird and mammal species, and an undocumented change in the river and land temperatures.
Source of funding: Started with interns and small tribal budget. The Preserve was expanded with grants and partnerships with Federal and State agencies: BIA Woodlands Program, US Bureau of Reclamation, US Fish and Wildlife, AZ Dept. of Water Resources, AZ Game and Fish.
Website/source:

- *Ahakhav Tribal Preserve: Restoring Tribal Lands* presentation (December 2006), www.tribalclimate.org/Powerpoints.htm

Project: Tribal Residence Weatherization Project
Description: The tribe is conducting weatherization improvements to elder residents' homes in order to maximize energy efficiency.
Tribal Program: Awarded to the Colorado River Indian Tribe on 2/5/10.
Leader of effort: Rick Ench
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $88,000)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=90031&AwardType=Grants

Fort McDowell Yavapai Nation

Location: Fountain Hills, AZ
Website: www.ftmcdowell.org/
Climate Change Program: The tribe does not currently have a program specifically oriented towards climate change. The only things related to climate change are the solar project and weatherization project (see below). A number of other solar projects have been proposed to the tribal council involving six facilities spread throughout the community; however those are still being considered.

Project: **Renewable Energy—Solar**
Description: A 12 kW demonstration photovoltaic (PV) solar project was completed in March of 2010. The system is composed of 54 fixed solar panels installed on the roof of HQ2, a tribal government building. The system includes an online monitoring and diagnostic program which calculates energy usage and trouble shoots problems, ensuring that the system is virtually maintenance-free. The project cost approximately $54,000 and took 15-18 months to complete, with the bulk of the time spent on getting siting and system specification approvals.
Leader of effort: Dan Catlin, Air Quality Specialist
Source of funding: US EPA Clean Air Act section 103 tribal grant funds and a rebate from the Salt River Project, the local utility.
Website /source:

- US EPA Region 9 website: http://epa.gov/region9/climatechange/tribes.html

Project: Energy Efficiency and Renewable Energy
Description: The tribe is conducting energy audits and retrofits on thirteen tribal buildings in order to maximize energy efficiency.
Tribal Program: Awarded to the Fort McDowell Yavapai Nation on 2/8/10.

Leader of effort: Carol Kochlin
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $40,500)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=96802&AwardType=Grants

Fort Mohave Indian Tribe

Location: Needles, CA (tribal lands in AZ, CA, NV)
Website: www.fortmojave.com/
Climate Change Program: Could not be reached for comment.

Project: Renewable Energy—Wind
Description: Tribe conducted a renewable energy development feasibility study several years ago, and had wind monitoring equipment erected at that time. The study concluded that the wind resource was marginal.
Website/source:

- *Arizona Wind Development Status Report* (Sept. 2009), http://ses.cefns.nau.edu/wind/Arizona%20Wind%20Development%20Status%20Report/Arizona%20Wind%20Development%20Status%20Report.pdf

Project: Renewable Energy—Solar
Description: Tribe is pursuing solar power development.
Website/source:

- *Arizona Wind Development Status Report* (Sept. 2009), http://ses.cefns.nau.edu/wind/Arizona%20Wind%20Development%20Status%20Report/Arizona%20Wind%20Development%20Status%20Report.pdf

Project: Aha Macav Power Service Energy Efficiency
Description: In 2006, Aha Macav Power Service (the tribally owned power utility that supplies electricity to the Fort Mojave Indian Reservation) conducted energy audits on the tribal administration building, two single family homes and the Avi Resort and Casino in order to assess energy efficiency. Recommendations were made; however, there is no information as to whether those improvements were completed.
Website/source:

- *Energy Efficiency in Tribal Communities, Maximizing Our Potential*, conference presentation in Denver, CO (May 2006), Bill Cyr, General Manager of Aha Macav Power Service, www.certredearth.com/pdfs/Presentations/2006/EnergyAudits-FortMojave.pdf

Project: Aha Macav Power Service Solar Test Facility
Description: The Aha Macav Power Service, in cooperation with Renewvia Energy Corporation and Clean Energy Capital, began operations of a 4kW solar test facility on the Fort Mojave Indian Reservation. This facility is testing the latest thin-film solar modules from Sharp Solar.
Website/source:

- Press Release: *Renewvia Energy Corporation and Aha Macav Power Service Complete Solar Test Facility in Partnership with Fort Mojave Indian* (July 2010), www.24-7pressrelease.com/press-release/renewvia-energy-corporation-and-aha-macav-power-service-complete-solar-test-facility-in-partnership-with-fort-mojave-indian-reservation-161465.php

Gila River Indian Community

Location: Sacaton, AZ
Website: www.gilariver.org/
Climate Change Program: The Gila River Indian Community has a Climate Showcase Program focused on recycling that has the potential to measure greenhouse gas (GHG) emissions (see below).

Project: Reduction of Greenhouse Gas Emissions by Development of an Innovative Climate Projects Coordination Structure—Implementing Recycling, Renewable Energy, and Green Building Programs to Fight Climate Change
Description: The tribe hired a Climate Projects Specialist in the community's Department of Environmental Quality and plans to coordinate new and existing project teams, including the Gila River Indian Community Renewable Energy Team that was formally established to implement energy conservation projects. Furthermore, the tribe plans to receive training on LEED certification and promote the program through presentations and articles in local media outlets, complete a community wide GHG inventory, implement a curb-side recycling program, implement a compact fluorescent (CFL) lighting and Green Building program, and develop options for reducing industrial facilities' GHG emissions. The tribe continues to install new lights, new air conditioning and low flow toilets; the Department of Environmental Quality is measuring GHG emissions before and after the installation of these new technologies.
Tribal Program: Dept. of Environmental Quality
Leader of effort: Sky Dawn Reed, Climate Projects Specialist
Source of funding: US EPA Climate Showcase Community grant, 2009: Reduction of Greenhouse Gas Emissions by Development of an Innovative Climate Projects Coordination Structure.
Website/source:

- US EPA State and Local Climate and Energy Program website, www.epa.gov/statelocalclimate/local/showcase/innovative-climate-projects.html
- Margaret Cook, Director of the Dept. of Environmental Quality, phone conversation (November 22, 2010)

Project: Gila River Indian Community Energy Efficiency and Conservation Block Grant
Description: The tribe was awarded an energy efficiency grant from the US Dept. of Energy. The main objectives of this grant are to reduce fossil fuel emissions, reduce total energy use, and improve energy efficiency.
Tribal Program: Awarded to the Gila River Indian Community on 8/28/09.
Leader of effort: Janet Bollman, Department of Environmental Quality
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $616,200)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=59087&AwardType=Grants
- Energy Efficiency and Conservation Block Grant Program, www.federalgrantswire.com/energy-efficiency-and-conservation-block-grant-program-eecbg.html

Havasupai Tribe

Location: Supai, AZ
Website: www.havasupai-nsn.gov/index.html
Climate Change Program: Could not be reached for comment.

Project: Insulation of Tribal Homes
Description: The tribe is insulating thirteen tribal homes in order to increase energy efficiency and conservation. The ultimate goal is to reduce fossil fuel consumption in order to further lower the tribe's carbon footprint.
Tribal Program: Awarded to the Havasupai Tribe on 8/26/10.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $28,300)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=122855&AwardType=Grants

Hopi Tribe

Location: Kykotsmovi, AZ
Website: www.itcaonline.com/tribes_hopi.html
Climate Change Program: No

Project: Natural Resource Assessment and Drought Monitoring
Description: The Office of Range Management uses the following tools to help assess the natural resources on the Hopi reservation: Range Utilization Studies, Range Inventories to set the stocking rates, and NRCS conservation plans. They also work with the outside entity AZ Drought Watch to help monitor conditions of drought.
Tribal Program: Office of Range Management/Land Operations
Leader of effort: Priscilla Pavatea, Director of Office of Range Management/Land Operations; Clayton Honyumptewa, Director of Natural Resources
Source of funding: Pl 93-638 contracts and NRCS contracts
Website/source:

- Priscilla Pavatea, Director, Office of Range Management/Land Operations, written communication (10/19/10)
- AZ DroughtWatch, http://azdroughtwatch.org/

Project: Drought Mitigation Plan
Description: The Hopi Tribe is updating their drought mitigation plan. Their goals are to obtain a better understanding of major drought vulnerabilities, an awareness of major adaptation strategies that are available and to develop a plan that is more responsive and useful for responding to drought. CLIMAS at the university of Arizona is working with the tribe to develop better drought monitoring tools.
Tribal Program: Natural Resources Dept., Water Resources Program
Leader of effort: Clayton Honyumptewa, Acting Manager
Source of funding: NOAA
Website/source:

- Hopi Tribe Dept. of Natural Resources, Water Resources, www.hopitribe.org/index.htm
- CLIMAS, www.climas.arizona.edu/projects/drought-monitoring-planning-four-corners

Project: **Renewable Energy—Wind**
Description of Project: The Tribe is involved in a number of wind energy projects. The Sunshine Wind project on Hopi land was developed in partnership with Foresight Wind. The Sunshine Wind Park, 35 miles east of Flagstaff, was developed with a goal of providing 60 MW, which could have supplied 14,000 homes; however, local residents did not approve the development of the park and it is no longer a viable wind project. Nevertheless, a Phoenix area company has expressed interest in purchasing the rights to this for a solar utility scale facility. Another wind feasibility project is on Third Mesa where Arizona State University (ASU) is collecting wind data from an installed met tower. At Sunset Mountains (E of Mormon Lake; Hart Ranch, Clear Creek Ranch) a US Dept. of Energy-supported feasibility study for a 100 MW project is in progress, although there is opposition from traditional, religious and cultural practitioners regarding this area. Additionally, the tribe purchased the Clear Creek Ranch south of Winslow and has erected two 50-meter met towers to monitor wind speed. Data have been collected for one year and the Hopi Tribe is working with Northern Arizona University (NAU) on the final report. The preliminary data suggest that the towers may be a low Class 2. The two towers will be kept up for another year to gather more data. The Hopi are revaluating a decommissioned meteorological-tower project, a 50-meter tower eight miles west of Hotevilla village on the main Hopi Reservation, because the data collected for one year suggests this is a Class 1 area. Other 30-meter towers near Moenkopi and Tuba City did not show a good wind power class and consequently were taken down in 2003 and 2004.
Tribal program: Hopi Renewable Energy Office
Leader of effort : Roger Tungovia, Project Manager, Hopi Clean Air Project; and Ken Lomayestewa, Utility Specialist, Hopi Renewable Energy Office
Website/source:

- *Tribes Can Provide Key to Clean Energy*, Arizona Republic (April 30,2010), www.azcentral.com/arizonarepublic/viewpoints/articles/2010/05/30/20100530energy30.html#ixzz10wH8uOx0
- Presentation at National Wildlife Federation conference (March 2008), *Renewable Energy Projects on the Hopi Reservation*
- *Hopi Wind Project,* presentations, http://apps1.eere.energy.gov/tribalenergy/pdfs/0610review_27james.pdf http://apps1.eere.energy.gov/tribalenergy/pdfs/0711review_lomayestewa.pdf
- Sunshine Wind, www.sunshinewind.com/
- *Arizona Wind Development Status Report* (September 2009), http://ses.cefns.nau.edu/wind/Arizona%20Wind%20Development%20Status%20Report/Arizona%20Wind%20Development%20Status%20Report.pdf

Project: Renewable Energy—Solar
Description: The Hopi Tribe is involved with a Tribal Rural Electrification Program in partnership with the AZ Dept. of Commerce and the ASU Photovoltaic testing lab.
Tribal Program: Hopi Renewable Energy Office
Leader of effort: Ken Lomayestewa, Utility Specialist, Hopi Renewable Energy Office
Source of funding: The Tribe allocated funds for this through the Western Area Power Administration.
Website/source:

- Presentation at National Wildlife Federation conference (March 2008), *Renewable Energy Projects on the Hopi Reservation*

Project: Hopi Tribal Housing Authority Clean Air Partnership Programs
Description: The Hopi are involved with home weatherization activities to further energy efficiency. They have created an Energy Efficiency and Conservation Strategy and are completing energy audits on 200 residential and commercial buildings. The Tribe received 200 photovoltaic modules for un-electrified homes. Currently eight homes have been completed; compatibility issues with the other candidates' homes are hindering progress.
Tribal Program: Hopi Renewable Energy Office
Leader of effort: Awarded to the Hopi Tribal Housing Authority on 2/8/10.
Source of Funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grants $244,400)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=95443&AwardType=Grants
- www1.eere.energy.gov/wip/project_map/project_details_new.aspx?pid=163
- Roger Tungovia, Hopi Clean Air Project, phone conversation (November 16, 2010)

Hualapai Tribe

Location: Peach Springs, AZ
Website: http://hualapai-nsn.gov/
Climate Change Program: Yes

Project: Drought and Climate Change Activities
Description: The tribe is taking a proactive approach to climate change through drought planning and increased water storage and pipeline installation. They are providing new sources of water for cattle and wildlife, identifying baseline conditions of ecosystems, offering climate change outreach and education, engaging in interactions with federal agencies emphasizing the importance of tribal lands and the need for people to be engaged and involved in climate change policies and funding in the beginning of the process, constructing apron catchment to harvest monsoonal rainfall and providing water sources for wildlife and cattle and advocating a change to Arizona's aquifer protection permit laws related to mining. Furthermore, the tribe built two photovoltaic arrays and pump houses to power its 13-mile water pipeline with solar energy. Additionally, the tribe has put up 60 sky lights, installed 20-30 dry urinals and 20 on-demand hot water heaters. The tribe is also planning to build a 2 MW solar hybrid utility and 50 miles of transmission lines.
Tribal Department: Department of Natural Resources
Leader of effort: All department staff, integrated resource management approach

Source of funding: US EPA, US Bureau of Reclamation, US Dept. of Agriculture, Natural Resources Conservation Service, US Dept. of Energy
Website/source:

- Hualapai Natural Resources Dept., www.hualapai.org/
- *Global Warming/Climate Change,* poster presentation, www4.nau.edu/tribalclimatechange/resources/docs/res_Hualapai_Poster.pdf
- *Hualapai Tribe Drought Contingency Plans and Implementation*, presentation www4.nau.edu/tribalclimatechange/resources/adaptation.asp#southwgb
- *Tribes Can Provide Key to Clean Energy,* Arizona Republic (April 30, 2010) www.azcentral.com/arizonarepublic/viewpoints/articles/2010/05/30/20100530energy30.html#ixzz10wH8uOx0
- US Dept. of Energy Weatherization and Intergovernmental Program, www1.eere.energy.gov/wip/project_map/project_details_new.aspx?pid=164
- *The New Energy Future in Indian Country: Confronting Climate Change, Creating Jobs, and Conserving Nature*, National Wildlife Federation (2010), www.nwf.org/News-and-Magazines/Media-Center/News-by-Topic/Global-Warming/2010/~/media/PDFs/Global%20Warming/Reports/03-23-10_NWF_TribalLands_LoRes.ashx
- Jack Erkhardt, Utility & Planning Director, phone conversation (November 17, 2010)
- Alex Cabillo, Water resources Manager, written communication (October 26, 2010)

Project: Renewable Energy—Wind
Description: The Tribe is in the process of developing its own Utility Authority and has completed a feasibility study for it. They worked in collaboration with Northern Arizona University to monitor the wind resource at four met towers in Nelson and Grand Canyon West. The tribe is preparing to erect two more towers at Clay Springs and should have them up in December of 2010.
Tribal Program: Planning Department
Leader of effort: Jack Erkhardt, Utility & Planning Director
Source of funding: US Dept. of Energy (Western Area Power Administration donated the towers)
Website/source:

- *Arizona Wind Development Status Report* (Sept. 2009), http://ses.cefns.nau.edu/wind/Arizona%20Wind%20Development%20Status%20Report/Arizona%20Wind%20Development%20Status%20Report.pdf
- Jack Erkhardt, Utility & Planning Director, phone conversation (November 17, 2010)

Project: Hualapai Solar and Energy Efficiency Project
Description: The tribe plans to install a photovoltaic solar power system on the Juvenile Detention Center and install energy efficiency improvements on the Tribe's Planning Facility.
Tribal Program: Awarded to the Hualapai Tribal Council on 2/8/10.
Source of Funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grants $59,300)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=98214&AwardType=Grants

Kaibab-Paiute Tribe

Location: Fredonia, AZ
Website: www.kaibabpaiute-nsn.gov/
Climate Change Program: No.

Project: Renewable Energy—Wind and Solar
Description: Tribal administrators have been discussing possible feasibility studies and/or projects that monitor wind resources with wind power developers. In addition, the tribe's economic development authorities are very much interested in establishing a wind power component manufacturing facility on or near tribal land and have developed business plans for this purpose. The tribe is also looking into developing solar energy.
Leader of effort: John Keysor, Tribal Administrator

Website/source:

- *Arizona Wind Development Status Report* (Sept. 2009), http://ses.cefns.nau.edu/wind/Arizona%20Wind%20Development%20Status%20Report/Arizona%20Wind%20Development%20Status%20Report.pdf

Project: Kaibab Paiute Tribe EECBG Program
Description: The tribe conducted energy audits on homes and identified houses that will receive weatherization improvements to further energy conservation. The Kaibab Paiute tribe was one of 52 Arizona communities to receive federal funding to develop, promote, implement and manage localized energy efficiency programs with an overarching goal of reducing fossil fuel emissions in a manner that is environmentally sustainable.
Tribal Program: Awarded to the Kaibab Paiute Tribal Council on 11/02/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $25,000)
Website/source:

- US Dept. of Energy Recovery Act, http://energy.gov/recovery/documents/Recovery_Act_Memo_Arizona.pdf
- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=75163&AwardType=Grants

Navajo Nation

Location: Window Rock, AZ (tribal lands in AZ, NM, UT)
Website: www.navajo.org/
Climate Change Program: Yes

Project: Water Resources Monitoring
Description: The Navajo Department of Water Resources includes the Water Monitoring and Inventory (WMI) Program. The WMI program is responsible for operating the climate network on the Navajo Nation, and addressing drought response and mitigation projects.
Tribal Program: Navajo Dept. of Water Resources, Water Management Branch, Water Monitoring and Inventory Program
Leader of effort: Jason John, Principal Hydrologist
Source of funding: Primarily BIA PL 638 contract
Website/source:

- Navajo Dept. of Water Resources, Water Management Branch, www.frontiernet.net/~nndwr_wmb/
- John Leeper, Branch Manager, Water Management Branch, Dept. of Water Resources, written communication (October 19, 2010)

Project: Water Resources Drought Mitigation and Response Plans
Description: The Navajo Department of Water Resources (NDWR), Water Management Branch (WMB) has prepared a Drought Contingency Plan which is available on the Navajo Nation and WMB web sites. The WMB has administered numerous drought mitigation and response projects. The Program has prepared numerous unsuccessful proposals to address the impacts of climate change on the Navajo Nation.
Tribal Program: Navajo Dept. of Water Resources, Water Management Branch
Website/source:

- Navajo Dept. of Water Resources, Water Management Branch, www.frontiernet.net/~nndwr_wmb/
- John Leeper, Branch Manager, Water Management Branch, Dept. of Water Resources, written communication (October 19, 2010)

Project: Sand Dune Stabilization
Description: Sand dunes on the Navajo Nation have mobilized as the climate has become drier. The US Geological Survey has been conducting studies on the sand dunes and is implementing a pilot project to stabilize the dunes.
Leader of effort: Margaret Hiza Redsteer, Project Chief, Navajo Land Use Planning Project, US Geological Survey
Source of funding: US Geological Survey
Website/source:

- US Geological Survey Navajo Nations Studies, http://geomaps.wr.usgs.gov/navajo/

- *Shifting Sands in Navajo Land*, High Country News, www.hcn.org/issues/373/17770
- *Dune Studies on Navajo Nation Offer Clues to Climate Change Impacts,* Tribes & Climate Change website: www4.nau.edu/tribalclimatechange/tribes/southwest.asp

Project: Renewable Energy—Big Boquillas Wind Project
Description: The Navajo Nation is developing the Big Boquillas Wind Project near Seligman, approximately eighty miles west of Flagstaff, with construction of 48 turbines capable of generating 85 MW through a partnership with Edison Mission Energy and Foresight Wind Energy. The Navajo Nation will have 51% ownership of this project. Construction is expected to commence in 2011/2012.
Tribal Program: Navajo Tribal Utility Authority
Website/source:

- *Tribes Can Provide Key to Clean Energy,* Arizona Republic (April 30, 2010), www.azcentral.com/arizonarepublic/viewpoints/articles/2010/05/30/20100530energy30.html#ixzz10wH8uOx0
- *Big Boquillas Wind Development Project,* presentation (January 2009)**,** http://azcia.gov/Documents/PPT_ArvinTrujillo.ppt
- *Big Boquillas Wind Project Moves Forward ,* Navajo-Hopi Observer (January 20, 2010)**,** http://navajohopiobserver.com/main.asp?SectionID=74&SubSectionID=393&ArticleID=12188

Project: Energy Efficiency and Weatherization
Description: The tribe was awarded various energy efficiency grants from the US Dept. of Energy. The main objectives of these grants are to reduce fossil fuel emissions, reduce total energy use, and improve energy efficiency.
Tribal Program: Awarded to the Navajo Tribal Utility Authority Company, Navajo County and the Navajo Nation Tribal Government
Source of Funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grants)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/pages/TextViewProjSummary.aspx?data=recipientAwardsList&State=AZ&Agency=89&AwardType=CGL&RecipName=navajo
- Energy Efficiency and Conservation Block Grant Program, www.federalgrantswire.com/energy-efficiency-and-conservation-block-grant-program-eecbg.html

Project: Green Economy Legislation
Description: The Navajo Nation is taking great strides in pushing renewable energy projects and was the first tribal nation to pass green economy legislation in 2009 when the Navajo Green Economy Commission was signed into law. The commission consists of five commissioners that seek to appropriate funding from Federal, State and private entities. Furthermore, the commission is tasked in networking with local, state, national and international groups to advocate and build Navajo Nation green economy strategies as well as coordinate efforts to help bring green funding to different programs. The commission will focus on small-scale community development projects to further empower local communities.
Leader of effort: Navajo Green Economy Coalition
Source of funding: Various sources
Website/source:

- *IGR Committee Confirms Navajo Green Economy Commissioners,* Indian Country Today (February 9, 2010), www.indiancountrytoday.com/living/health/83888162.html
- *Navajo Nation Commits to Green Economy,* Indian Country Today (May 9, 2010), www.indiancountrytoday.com/national/93071524.html
- *Navajo Nation Pledges to Go Green,* Los Angeles Times (July 22, 2009), http://latimesblogs.latimes.com/greenspace/2009/07/navajo-indians-green-jobs-.html
- *Navajos Hope to Shift from Coal to Wind and Sun*, New York Times article (October 25, 2010) , www.nytimes.com/2010/10/26/science/earth/26navajo.html?pagewanted=all

Project: Nitrous Oxide Emissions Reduction
Description: A proposal has been made by the US EPA to reduce nitrous oxide emissions from the Four Corners Power Plant by 36,000 tons per year through installing stringent pollution control technology.
Leader of effort: US EPA

Website/source:

- *Navajo Health May Improve with Ozone Curbs,* Indian Country Today (November 6, 2010), www.indiancountrytoday.com/national/Navajo-health-may-improve-with-ozone-curbs-106773998.html
- *Coal Plant Compromise Only First Step,* Arizona Daily Sun (November 28, 2010), www.azdailysun.com/news/opinion/editorial/article_e50bbe8b-4f45-55c1-8f28-2aac1180de36.html

Pascua Yaqui Tribe

Location: Tucson, AZ
Website: www.pascuayaqui-nsn.gov/
Climate Change Program: Could not be reached for comment.

Project: Energy Efficiency Retrofitting
Description: The tribe was awarded a US Dept. of Energy grant to install energy efficient retrofits including a lighting upgrade component, HVAC replacement and solar water heating installation. Currently the tribe has installed higher efficiency systems at three tribal facilities. Further plans for implementing various energy efficient systems are in progress.
Tribal Program: Awarded to the Pascua Yaqui Tribe on 2/8/10.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $181,300)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=95660&AwardType=Grants

Quechan Tribe of the Fort Yuma Indian Reservation

Location: Yuma, AZ (tribal lands in AZ and CA)
Website: www.itcaonline.com/tribes_quechan.html
Climate Change Program: Could not be reached for comment.

Project: Quechan Energy Efficient Project
Description: The main objectives of this project are to reduce fossil fuel emissions, reduce total energy use, and improve energy efficiency.
Tribal Program: Awarded to the Quechan Indian Tribe on 2/5/10.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $56,400)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=100897&AwardType=Grants
- Energy Efficiency and Conservation Block Grant Program, www.federalgrantswire.com/energy-efficiency-and-conservation-block-grant-program-eecbg.html

Opposition to a Nearby Renewable Energy Project (Solar Power Plant)
Description: The Quechan Tribe filed a lawsuit in October, 2010, against the United States in an attempt to block construction of Tessera Solar's Imperial Valley solar power plant in the Sonoran Desert. The tribe alleged that the Department of Interior skipped steps in the permitting process in order to expedite the project, thereby violating federal law. The solar power plant would utilize 6,000 acres of public land for a 709-MW solar farm that has the potential to threaten habitat for, among other species, the flat-tailed horned lizard, an animal that is culturally important to the Quechan Tribe. The project could also damage numerous ancient cultural sites. On December 16, a US District judge imposed a preliminary injunction blocking the project, ruling that the government had not consulted enough with the tribe before approving the project.
Website/source:

- *Native Americans Sue US Over Solar Power Plant in Desert,* Los Angeles Times (November 4, 2010), http://articles.latimes.com/2010/nov/04/business/la-fi-solar-tribe-20101105

- *California Puts Tessera Solar Plant On Temp Hold,* Planet Ark (November 23, 2010), http://planetark.org/wen/60313
- *Judge Blocks Imperial Valley Solar Project*, San Diego Union Tribune (December 17, 2010), www.signonsandiego.com/news/2010/dec/17/judge-blocks-imperial-valley-solar-project/

Salt River Pima-Maricopa Indian Community

Location: Scottsdale, AZ
Website: www.srpmic-nsn.gov/
Climate Change Program: Could not be reached for comment.

Project: Energy Efficiency and Conservation Block Grant Program
Description: The tribe plans to implement energy efficiency measures throughout the community in order to reduce its environmental footprint.
Tribal Program: Awarded to the Salt River Pima-Maricopa Indian Community Social Service on 12/22/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $137,600)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=75162&AwardType=Grants

San Carlos Apache Nation

Location: San Carlos, AZ
Website: www.sancarlosapache.com/home.htm
Climate Change Program: Could not be reached for comment.

Project: Renewable Energy—Wind
Description: Tribal officials are interested in pursuing wind power development and are seeking funding to do a feasibility study.
Leader of effort: Charles Russell, Planning Dept.
Source of funding:
Website/source:

- *Arizona Wind Development Status Report* (Sept. 2009), http://ses.cefns.nau.edu/wind/Arizona%20Wind%20Development%20Status%20Report/Arizona%20Wind%20Development%20Status%20Report.pdf

Project: San Carlos Apache Tribe Energy Efficiency and Conservation
Description: The tribe is developing an Energy Efficiency and Conservation Strategy, performing energy audits on commercial buildings and residential homes and retrofitting systems based on the results.
Tribal Program: Awarded to the San Carlos Apache Tribal Council on 1/29/10.
Leader of effort: Gail Haozous
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $317,200)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=89641&AwardType=Grants

San Juan Southern Paiute Tribe

Location: Administrative office is in Tuba City, AZ (Currently the tribe is in litigation to restore its land base.)
Website: www.itcaonline.com/tribes_sanjuan.html
Climate Change Program and Projects: Could not be reached for comment.

Tohono O'odham Nation

Location: Sells, AZ
Website: www.tonation-nsn.gov/
Climate Change Program: Could not be reached for comment.

Project: Ecosystem Monitoring
Description: The tribe has begun identifying baseline conditions in ecosystems in and around the Tohono O'odham Nation. The goal is to raise awareness of the relationships between all living organisms and the interconnectedness to their surroundings on a landscape scale among different land users (this includes natural resource harvesters and agriculturalists).
Leader of effort: Cornelius Antone, Environmental Specialist
Website/source:

- Cornelius Antone, phone conversation (November 18, 2010)

Project: Energy Efficiency and Conservation
Description: The tribe is looking into energy efficiency and conservation measures that can be taken to lessen their carbon footprint, including a "tribal transit activity."
Tribal Program: Awarded to the Tohono O'odham Nation on 9/23/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $437,800)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=43582&AwardType=Grants

Tonto Apache Tribe

Location: Payson, AZ
Website: www.itcaonline.com/tribes_tonto.html
Climate Change Program: No

Project: Solar Energy
Description: The tribe hopes to explore the use of solar energy for their tribal office and elder housing units; these efforts are still premature.
Tribal Program: Environmental Department
Project Leader: Calvin Johnson
Source/website:

- Calvin Johnson, phone conversation (November 22, 2010)

White Mountain Apache Tribe

Location: Whiteriver, AZ
Website: www.wmat.nsn.us/
Climate Change Program: Could not be reached for comment.

Project: Recovery Act Energy Efficiency Conservation Block Grant
Description: The tribe completed a lighting assessment audit on residential homes and commercial buildings, an electrical motor assessment, an Energy Plan for the Tribe and is in the process of working on a BioMass Feasibility Study.
Tribal Program: Awarded to the White Mountain Apache Tribe on 9/29/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $414,500)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=58813&AwardType=Grants

Yavapai-Apache Nation

Location: Camp Verde, AZ
Website: www.yavapai-apache.org/
Climate Change Program: Could not be reached for comment.

Project: Upgrade Street Lights
Description: The tribe is upgrading street lights to solar power energy.
Tribal Program: Awarded to the Yavapai Apache Nation on 2/25/10.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $35,700)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=89612&AwardType=Grants

Yavapai-Prescott Indian Tribe

Location: Prescott, AZ
Website: www.ypit.com
Climate Change Program: No

Project: Energy Efficiency and Conservation Block Grant Program
Description: The tribe is retrofitting windows at the main tribal administration building in order to maximize energy efficiency.
Tribal Program: Awarded to the Yavapai Prescott Tribe on 4/13/10.
Leader of effort: Chris Moss, Planning
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $25,000)
Website/source:

- Arizona Stimulus Projects, http://azdatapages.com/datacenter/business/az-energy-projects.html
- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=110108&AwardType=Grants

The Sandia Mountains in New Mexico. Source: Mehrdad Khatibi

New Mexico Tribes

Acoma Pueblo

Location: Acoma, NM
Website: www.puebloofacoma.org/
Climate Change Program: No

Project: Energy Efficiency and Weatherization
Description: The Pueblo of Acoma is planning on procuring and installing solar powered street lights at the Acoma community park. The Pueblo of Acoma Strategic Energy Plan and an energy audit on governmental buildings will also be completed.
Tribal Program: Awarded to the Pueblo of Acoma (INC) on 10/29/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $110,700)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=76809&AwardType=Grants

Cochiti Pueblo

Location: Cochita, NM
Website: www.pueblodecochiti.org/
Climate Change Program: Could not be reached for comment.

Project: Environmental Protection Program
Description: The tribe is planning to develop the capacity to establish a core program for environmental protection, including providing an environmental office, solid waste cleanup, community outreach and oversight of drinking water systems.
Tribal Program: Awarded to the Pueblo of Cochiti in September of 2010.
Source of funding: US EPA ($110,000)
Website/source:

- *EPA Awards $110,000 to the Pueblo of Cochiti,* US EPA News Release, http://yosemite.epa.gov/opa/admpress.nsf/0/1F3FD21D64AF19CF852577AD00619F3F

Isleta Pueblo

Location: Isleta, NM
Website: www.isletapueblo.com/
Climate Change Program: Could not be reached for comment.

Project: Isleta Energy Conservation Program
Description: The Pueblo of Isleta is establishing an energy efficiency and energy conservation program to assure energy efficiency within the Pueblo of Isleta.
Tribal Program: Awarded to the Pueblo of Isleta on March 5, 2010.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $112,000)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=97138&AwardType=Grants

Jemez Pueblo

Location: Jemez Pueblo, NM
Website: www.jemezpueblo.org/
Climate Change Program: Could not be reached for comment.

Project: Renewable Energy—Solar, Utility-scale Solar Plant
Description: The 30-acre site where 14,850 solar panels will be set up has been selected, and a contract to sell the electricity produced by the 4-MW operation is at hand. The plant would be capable of producing enough electricity to power about 600 homes. The project, which will cost about $22 million, could bring in around $25 million over the next 25 years.
Source of funding: Government grants, loans and tax credits; state and federal grants have covered many of the tribe's planning costs, while engineers and legal firms have donated their expertise.
Website/source:

- *Indian Tribe sees Bright Future in Solar Power*, Christian Science Monitor (1/13/10), www.csmonitor.com/Environment/2010/0114/Indian-tribe-sees-bright-future-in-solar-power

Project: Innovative Techniques in Geothermal Exploration on the Pueblo of Jemez
Description: The Pueblo of Jemez, in collaboration with Los Alamos National Lab and several universities, is compiling a detailed report of two potential underground geothermal water resources on the Pueblo of Jemez in the Indian Springs area. Once the resource is characterized, the Pueblo will be able to determine a use for the resource ranging from power generation to greenhouse agricultural operations.
Tribal Program: Awarded to the Pueblo of Jemez on 1/29/10.
Leader of effort: Greg Kaufman, Director, Dept. of Resource Protection
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $4,995,844)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=97487&AwardType=Grants
- US Dept. of Energy, New Mexico Recover Act State Memos (June 1, 2010), energy.gov/recovery/documents/Recovery_Act_Memo_New_Mexico.pdf

Project: Pueblo of Jemez Biomass Heat Project and Energy Plan
Description: The Pueblo of Jemez is designing and installing a biomass boiler in the Walatowa Visitor's Center. The boiler will be fueled by cord wood harvested as a waste material during forest thinning operations undertaken by the Pueblo under contract with the BIA. An Energy Plan is also being developed for the Pueblo of Jemez tribal buildings. These are non-residential buildings operated and maintained by the Tribe. The Energy Plan will identify current energy use estimates, make recommendations on how energy costs can be reduced in those structures, and set out a plan and funding sources for taking the next steps toward achieving energy reductions in those buildings across the Pueblo.
Tribal Program: Awarded to the Pueblo of Jemez on 1/28/10.

Leader of effort: Greg Kaufman, Dept. of Resource Protection
Source of funding: Partially funded by grant from the US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $84,000)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=19639&AwardType=Grants

Project: Renewable Energy – Integration into School Curriculum
Description: The Pueblo of Jemez is planning for the long-term capacity of its tribal renewable energy workforce by integrating renewable energy into the school curriculum. Examples include elementary students learning about robotics and solar-powered cars through a partnership with Los Alamos National Laboratory, and staff from the Pueblo's Dept. of Resource Protection taking part in teaching high-school students about the geothermal, solar, wind and biomass energy potential of the region through lectures and field trips.
Leader of effort: Kevin Shendo, Education Director, Jemez Pueblo
Website/source:

- *Tribes Working to Buck Unemployment with Green Jobs*, Solve Climate News (November 7, 2010), http://solveclimatenews.com/news/20101107/tribes-working-buck-unemployment-green-jobs?page=show

Project: Green Stars
Description: A group of teenagers initiated a recycling effort introducing recycle bins at their local high school as well as local events in Jemez. The group would like to further their efforts, envisioning every home and tribal office having recycle bins and the Pueblo of Jemez having a full-scale recycling program.
Leader of effort: Jemez Valley High School Program
Source of funding: Volunteer effort
Website/source:

- *Green Stars On the Move: REduce, REuse, Recycle*, Red Rocks Reporter (September 2010), www.jemezpueblo.org/uploads/FileLinks/727f7992ede44e4a8e0903633cbb9388/September%2010%20Red%20Rocks%20Reporter.pdf

Jicarilla Apache Nation

Location: Dulce, NM
Website: www.jicarillaonline.com/
Climate Change Program: Could not be reached for comment.

Project: Jicarilla Apache Nation Project to Develop an Energy Strategy and Conduct Energy Audits
Description: The tribe is planning to develop an energy strategy and also conduct an energy audit.
Tribal Program: Awarded to the Jicarilla Apache Tribe on 09/22/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $104,000)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=19656&AwardType=Grants

Kewa (formerly Santo Domingo) Pueblo

Location: Santo Domingo Pueblo, NM
Website: www.indianpueblo.org/19pueblos/santodomingo.html
Climate Change Program: No, the Tribe does not have a tribal climate change program at this time. However, selected council members recently took part in a trip to the Northwest to examine tribal alternative energy projects.

Laguna Pueblo

Location: Laguna , NM
Website: www.lagunapueblo.org/
Climate Change Program: No, the Tribe does not have a climate change program at this time, but they are working on the air quality program.

Project: Weatherization
Description: Laguna Utility Authority's energy customer assistance community meetings, newsletter articles and multiple customer brochures helped members become aware of home weatherization opportunities. Laguna UA energy personnel coordinated access to Low Income Home Energy Assistance Program (LIHEAP) funding and have plans to directly pursue US Dept. of Energy weatherization program funding and coordination.
Tribal Program: Pueblo of Laguna Utility Authority
Website/source:

- *Sustainable Building, Energy Efficiency, and Weatherization,* presentation (March 10, 2008), www.tribalclimate.org/PDFsNewMexico/Pres-SustainableBuildingAndEnergyEfficiencyStewartAndAntonio.pdf

Project: Tribal Energy Efficiency
Description: The Pueblo of Laguna will use the funds for energy conservation and energy efficiency practices.
Tribal Program: Awarded to the Pueblo of Laguna on 4/30/10.
Leader of effort: Leonard Ortero, General Manager
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $143,500)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=105665&AwardType=Grants

Project: Sacred Power Corporation
Description: Sacred Power is a Native American-owned and operated small business that provides renewable and distributive energy and telecommunications solutions since 2001. This includes photovoltaics, wind turbines, solar hot water systems, solar hot air systems as well as other distributive energy systems. Sacred Power has designed, developed and tested solar products for tribes as well as other government agencies (US Dept. of Interior, US Dept. of Energy, Sandia National Laboratories, etc.).
Website/source:

- Sacred Power Corporation, www.sacredpowercorp.com/

Mescalero Apache Tribe

Location: Mescalero , NM
Website: www.mescaleroapache.com/
Climate Change Program: No, the tribe does not have a specific climate change program or have a specific policy in place relating to climate change. The tribe does, however, adapt their projects to current climate change-caused conditions (see Fuels Treatment Project below).

Project: Fuels Treatment Project
Description: Various forest fuels treatment projects have been undertaken that move towards thinning forests and utilizing biomass as well as helping support biodiversity within the Mescalero Apache Tribe's forests. The tribe adapts its treatments to current conditions (including climate change-induced conditions), but the tribe is not doing this because of climate change. The Mescalero Apache does not have a specific policy in place relating to climate change.
Tribal Program: Division of Resource Management and Protection
Leader of effort: Sharon Paul, coordinator
Source of funding: US Forest Service grants, and annually through National Fire Plan dollars.
Website/source:

- Sharon Paul, phone conversation (December 1, 2010)

Project: Mescalero Apache Tribe: Energy Efficient Woodstoves for Elderly and Low Income Families
Description: The tribe will provide energy efficient woodstoves for elderly and low income families.
Tribal Program: Awarded to Mescalero Apache Housing Authority on 12/30/09.
Leader of effort: Thora Padilla, Program manager, Dept. of Natural Resources
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $120,900)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=75381&AwardType=Grants

Nambe Pueblo

Location: Nambe Pueblo, NM
Website: www.indianpueblo.org/19pueblos/nambe.html
Climate Change Program and Projects: Could not be reached for comment.

Ohkay Owingeh (formerly Pueblo of San Juan)

Location: San Juan Pueblo , NM
Website: www.indianpueblo.org/19pueblos/ohkayowingeh.html
Climate Change Program: Could not be reached for comment.

Project: Green Remodeling
Description: Ohkay Owingeh is preserving historic homes and installing more energy efficient technologies in the homes.
Website/source:

- *Green Remodeling at Ohkay Owingeh*, Green Fire Times (July 2010), http://greenfiretimes.com/2010/08/green-remodeling-at-ohkay-owingeh/

Project: Energy Efficiency
Description: The tribe was awarded a US Dept. of Energy grant to begin working towards residential energy efficiency.
Tribal Program: Awarded to the San Juan Pueblo Tribal Council on 9/29/2009.
Leader of effort: Robert M. Lieb
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $81,200)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=43579&AwardType=Grants

Picuris Pueblo

Location: Penasco , NM
Website: www.indianpueblo.org/19pueblos/picuris.html
Climate Change Program and Projects: Could not be reached for comment.

Pojoaque Pueblo

Location: Poaque Pueblo, NM
Website: www.indianpueblo.org/19pueblos/pojoaque.html
Climate Change Program: Could not be reached for comment.

Project: Pojoaque Pueblo Services – Energy Conservation and Management
Description: Numerous energy conservation and management projects have been completed by the Pojoaque Pueblo Service Corporation including energy efficiency upgrades to public lighting, HVAC systems, Smart Grid Systems, facility management systems and advanced meter infrastructure instillations. The corporation works with the federal government to manage and save energy at locations around the world and is equipped to address requirements for energy efficient HVAC, thermal energy storage, lighting, renewable energy and building control systems.
Source of funding: Tribally-owned small business
Website/source:

- Pojoaque Pueblo Services, www.pojoaque-services.com/services-energy.htm

Project: Rehabilitation of Homes
Description: The Pueblo of Pojoaque is installing energy efficient windows in seven single family homes.
Tribal Program: Awarded to the Pueblo of Pojoaque Housing Corporation on 5/31/10.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $25,000)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=107222&AwardType=Grants

San Felipe Pueblo

Location: San Felipe Pueblo, NM
Website: www.indianpueblo.org/19pueblos/sanfelipe.html
Climate Change Program: Could not be reached for comment.

Project: Energy Efficiency and Weatherization
Description: The Pueblo of San Felipe is creating an Energy Efficiency and Conservation Strategy. The tribe has completed an evaluation of energy consumption patterns and quantities for residential and commercial buildings and is now beginning to develop greenhouse gas calculations.
Tribal Program: Awarded to the Pueblo of San Felipe on 12/4/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $102,200)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=76822&AwardType=Grants

San Ildefonso Pueblo

Location: San Ildefonso Pueblo, NM
Website: www.indianpueblo.org/19pueblos/sanildefonso.html
Climate Change Program: No

Sandia Pueblo

Location: Bernalillo, NM
Website: www.sandiapueblo.nsn.us/
Climate Change Program: Could not be reached for comment.

Project: Energy Audit
Description: The Pueblo of Sandia is conducting energy audits on tribal buildings.
Tribal Program: Awarded to the Pueblo of Sandia on 11/24/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $33,600)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=75363&AwardType=Grants

Santa Ana Pueblo

Location: Santa Ana Pueblo, NM
Website: www.santaana.org/
Climate Change Program: No, the Pueblo does not have a climate change program or any projects that specifically address climate change mitigation or adaptation. However, there are projects in place that help reduce greenhouse gas (GHG) emissions including their transit program that helps decrease the number of single passenger cars, etc.

Project: Department of Natural Resources
Description: Santa Ana Pueblo's Department of Natural Resources has developed and implemented a variety of natural resource management programs that aim to protect, preserve and enhance natural resources for current and future tribal members since its creation in 1996. The five divisions under the department include Water Resources, Bosque Restoration, Range/Wildlife, Environmental Education & Community Outreach, and GIS & IT Management. These divisions carry out a number of projects including solar energy, forest and watershed restoration, habitat conservation projects, water quality projects and environmental education outreach.
Tribal Program: Department of Natural Resources
Leader of effort: Alan Hatch, Director
Source of funding: Funding for various projects also come from government entities such as the US EPA, US Army Corp of Engineers, US Bureau of Indian Affairs, US Bureau of Reclamation, US Fish and Wildlife Service, New Mexico Dept. of Game and Fish, and organizations such as Ducks Unlimited, National Fish and Wildlife Foundation, University of New Mexico Museum of Southwestern Biology, National Wild Turkey Federation, and the Hyatt Regency Tamaya Resort.
Website/source:

- Santa Ana Department of Natural Resources website: www.santaanadnr.org/

Project: Feasibility/Consulting Services for the Development of an Overall Strategic Renewable Energy Strategy
Description: The Pueblo of Santa Ana is developing an overall Strategic Renewable Energy Strategy.
Tribal Program: Awarded to the Pueblo of Santa Ana on 12/14/2009.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $32,600)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=75399&AwardType=Grants

Santa Clara Pueblo

Location: Espanola, NM
Website: www.indianpueblo.org/19pueblos/santaclara.html
Climate Change Program: Could not be reached for comment.

Project: Santa Clara Pueblo Hazardous Fuels Reduction/Ecosystem Restoration
Description: The Santa Clara Pueblo is initiating a hazardous fuels reduction project (treatment and thinning operations) in order to try to avoid catastrophic wildfires at the Santa Clara Creek headwaters, the Santa Clara Canyon and the Rio Grande River Bosque within Tribal boundaries. These activities will be carried out within the next four years.
Tribal Program: Awarded to the Pueblo of Santa Clara on 2/18/10.
Source of funding: American Recovery Reinvestment Act (USFS) $6,513,000
Website/source:

- www.recovery.state.nm.us/docs/Briefs/EMNRD/EMNRD%20Forestry%20Santa%20Clara%20brief.pdf

Taos Pueblo

Location: Taos, NM
Website: www.taospueblo.com/
Climate Change Program: Could not be reached for comment.

Project: Renewable Energy
Description: The tribe conducted a renewable energy feasibility study in 2004-2006. The scope of the study included solar, wind, biomass, hydroelectric, geothermal, concept development based on resources, Tribal Council review, and business plan development. Key aspects of the study were: 1) determine how to supply as much the electricity and heat used at Taos Pueblo as possible with zero emission or low emission sources; 2) create a safety net of power to maintain critical services such as water, food, and fire protection; 3) build energy-based economic development and sovereignty.
Source of funding: US Dept. of Energy Tribal Energy Program
Website/source:

- Presentation at Tribal Lands Climate Conference (2006): *Taos Pueblo Renewable Energy Feasibility Study*
- *Taos Renewable Energy Feasibility Study,* presentation (2003), Robert Gomez: http://apps1.eere.energy.gov/tribalenergy/pdfs/taos_pueblo_tep_nov03.pdf

Project: Energy Efficiency and Conservation Block Grant Program
Description: The Pueblo of Taos is increasing energy efficiency and decreasing energy costs by upgrading water heating equipment in several tribal public facilities.
Tribal Program: Awarded to the Pueblo of Taos on 12/4/2009.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $61,400)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=76729&AwardType=Grants

Project: Sustainable Agriculture Initiative
Description: The Sustainable Agriculture Initiative is working to revitalize the community-based agriculture of the Pueblo by developing agricultural and renewable energy infrastructure on 3.3 acres of prime farming land as part of a model teaching, production, and demonstration site. Funds will be used to complete two renewable energy projects and complementary energy efficiency improvements to heat 5,000 square feet of greenhouses.
Tribal program: Taos Pueblo's Education & Training Division
Website/source:

- *Pueblo Starts Sustainable Agriculture Initiative,* Santa Fe New Mexican (September 30, 2008), www.santafenewmexican.com/food/pueblo-starts-sustainable-agriculture-initiative

- *Native Communities Program's Spring 2009 Building Resilience Grantees*, Honor the Earth www.honorearth.org/grantmaking/building-resilience/spring-2009-grantees

Tesuque Pueblo

Location: Tesuque Pueblo, NM
Website: http://www.indianpueblo.org/19pueblos/tesuque.html
Climate Change Program: No

Project: Water Data Collection
Description: The Pueblo of Tesuque has been collecting water quality (chemical) and water quantity data. The basic water quality parameters include temperature, pH, dissolved oxygen, conductivity, specific conductance, turbidity and total dissolved solids; the monitoring is done weekly. The Pueblo has been monitoring five sites on the Rio Tesuque for about 8 years and two sites on the Rio Chupadero and one site on the Rio en Medio for the past 2 years. They annually collect grab samples for laboratory analysis of other stringent water quality parameters such as E. coli, total coliform, nitrates, nitrites and metals dependent upon funding. In 2011, the Pueblo began collecting biological data for macrobenthic invertebrates. They compare the well depth to water data with BIA data; BIA has monitoring equipment in a few wells on the reservation.
Tribal Program: Environmental Department
Source of funding: US EPA (stream flow water data), Tribe (ground water data)
Website/source:

- Ryan Swazo-Hinds, Environmental Dept., personal communication (December 8, 2010; updated on November 8, 2011)

Project: Weather Data Collection
Description: The Pueblo of Tesuque has been monitoring three weather stations; one in a mixed conifer forest, one in a riparian area, and one in a pinyon-juniper area. Weather station data has been collected from 2004 - present.
Tribal Program: Environmental Department
Source of funding: Tribe (monitoring efforts), US Forest Service (weather stations)
Website/source:

- Ryan Swazo-Hinds, Environmental Dept., personal communication (December 8, 2010; updated on November 8, 2011)

Project: Collaborative Forest Restoration Program (CFRP)
Description: The Pueblo of Tesuque has collaborated with the US Forest Service in a riparian restoration project removing invasive species. Riparian restoration has been ongoing for about 8 years, and the Pueblo has treated about 134 acres. They are removing Russian Olive, Salt Cedar and Siberian elm. They have revisited sites to cut and spray regrowth and have used manual removal (chainsaws/handcrews) and mechanical removal.
Tribal Program: Environmental Department

Source of funding: two US Forest Service Collaborative Forest Restoration Program (CFRP) grants
Website/source:

- Ryan Swazo-Hinds, Environmental Dept., personal communication (December 8, 2010; updated on November 8, 2011)

Project: Grassland Savannah Restoration
Description: The Pueblo of Tesuque has thinned about 62 acres of pinon/juniper woodlands to encourage growth of grasses.
Tribal Program: Environmental Department
Source of funding: US Forest Service Collaborative Forest Restoration Program (CFRP) grant and US Fish and Wildlife Tribal Wildlife Grant
Website/source:

- Ryan Swazo-Hinds, Environmental Dept., personal communication (November 8, 2011)

Project: Hazardous Fuels Reduction and Wildland Urban Interface (WUI) Projects
Description: With funding from BIA, the Pueblo has been doing some hazardous fuels reduction and wildland urban interface (WUI) projects. They have thinned a few acres in their mixed conifer. The WUI funds have helped support their latest riparian restoration efforts.
Tribal Program: Environmental Department
Source of funding: Bureau of Indian Affairs
Website/source:

- Ryan Swazo-Hinds, Environmental Dept., personal communication (November 8, 2011)

Project: Pueblo of Tesuque Head Start Energy Efficiency Retrofits
Description: The Pueblo of Tesuque is improving energy efficiency in its Head Start building. This project includes retrofitting windows, replacing the water heater to conserve energy and water, replacing appliances, lowering the ceiling, replacing toilets and faucets with improved water-saving models, replacing light fixtures and bulbs and upgrading thermostats. The energy and water consumption of this building will be analyzed before and after the improvements are complete in order to serve as an energy-efficient model for other Pueblo of Tesuque buildings.
Tribal Program: Awarded to the Tesuque Pueblo Administration on 12/23/2009.
Leader of effort: J. Luiz
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $28,500)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=75407&AwardType=Grants

Project: Tesuque Farms Agricultural Initiative
Description: This project that has turned 40 acres of land into a productive farm that serves the Tesuque Pueblo and surrounding communities. The goal of the farm is to help the community become more sustainable, preserve traditional seeds and foods, and maintain a healthier lifestyle. Increasing the varieties and volumes of crops each year, improving water conservation and irrigation, and reducing soil erosion are helping accomplish this mission. The farm produces traditional crops, herbal medicines and many varieties of fruit, grains and several non-traditional crops. The farm also houses ten beehives that provide pollination as well as honey and beeswax for the community.
Leader of effort: Emigdio Ballon (plant geneticist), Quechua of Bolivia and Frederick Vigil (Governor)
Website/source:

- *Tesuque Farms Reviving Agricultural Traditions*, Green Fire Times (August, 2010), http://greenfiretimes.com/2010/08/tesuque-farms-reviving-agricultural-traditions/#more-471

Ute Mountain Ute Indian Tribe

Location: Towaoc, Colorado (located in CO, NM, UT)
Website: www.utemountainute.com/
Climate Change Program: No. However, the tribe has programs that are assuming work because of climate change.

Project: Renewable Energy
Description: The tribe is looking into hydro and solar power and is in communication with different solar developing companies. In addition, a commercial-scale solar energy feasibility study is near completion. The tribe also has a renewable energy committee that meets on a monthly basis.
Website/source:

- Scott Clow, Director, Environmental Programs Dept., phone conversation (December 8, 2010)

Project: Ute Mountain Ute Tribe Environmental Programs Department
Description: The department partakes in a number of projects that work with communities to conserve resources and minimize waste in order to protect the environment and increase the quality of life for tribal members and future generations. Branches of this department include water, solid waste, recycling, pollution, health, hazardous materials, emergency response, education and air quality. The department employs a botanist who is currently examining different native plant species that are of cultural significance to the tribe and how habitat modification from climate change might impact those species. Furthermore, the tribe started a program propagating native plants, in part for more successful remediation of disturbed ecosystems, but also in the hopes of creating a seed bank – possibly for plants that have the potential to not be adversely affected by climate change.
Tribal Program: Environmental Programs Department
Leader of effort: Scott Clow, Director
Source of funding: The department is 99% grant funded through a variety of different grants.
Website/source:

- Ute Mountain Ute Tribe Environmental Programs Department, www.utemountainuteenvironmental.org/
- Scott Clow, Director, Environmental Programs Dept., phone conversation (December 8, 2010), sclow@utemountain.org

Zia Pueblo

Location: Zia Pueblo, NM
Website: www.zia.com/home/zia_info.html ; www.indianpueblo.org/19pueblos/zia.html
Climate Change Program: Could not be reached for comment.

Project: Sacred Spring Restoration
Description: After years of drought and livestock grazing, a spring sacred to the tribe dried up. The tribe was concerned that erosion, climate change and the region's growing demand for water would keep the spring from recovering. In 2009, the tribe, a restoration ecologist, and volunteers built several rock dams above the spring to catch runoff and sediment from the sandstone bluffs and clay hills above, and they planted Native grass seeds at the site. The structures are designed to spur the growth of vegetation and recharge the soil with moisture instead of allowing it to run off and create deep ruts in the earth.
Website/source:

- *New Mexico Tribe Works to Restore Sacred Spring,* News From Indian Country (June 2009), http://indiancountrynews.net/index.php?option=com_content&task=view&id=6614&Itemid=109

Project: Zia Pueblo Energy Efficiency and Conservation Block Grant
Description: As part of this project, the Pueblo of Zia, developed an environmental strategy and solicited and received bid proposals for energy efficiency audits. According to the proposals received, however, the cost of the audits would have left little grant funding available for retrofits. As a result, the Pueblo has revised its project to install a photovoltaic solar system to provide electricity for tribal government buildings.

Tribal Program: Awarded to the Pueblo of Zia on 9/24/09.
Leader of effort: Peter M. Pino
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $38,600)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=44025&AwardType=Grants

Zuni Pueblo

Location: Zuni, NM
Website: www.ashiwi.org/
Climate Change Program: No, the Pueblo does not have a climate change adaptation plan or program. The tribe has very limited resources and is busy working on other projects for today's climate. All the current work to protect and manage tribal resources in a sustainable manner will better prepare the tribe for any climate changes in the future.

Project: Water Resources Management
Description: Since climate change affects water, then all current water resources work relates to climate change. Besides general conservation planning and management of the tribal water supplies, securing and protecting tribal water rights from external threats is an ongoing effort. Drought risk management is addressed through the Zuni Drought Contingency Plan, and flood risk management is supported by participation in the National Flood Insurance Program and by the Zuni Safety of Dams Early Warning System.
Tribal Program: Water Resources Section of the Zuni Conservation Program
Leader of effort: Kirk Bemis, Hydrologist
Source of funding: Zuni General Fund, Zuni Land Conservation Act Trust Fund, and BIA Safety of Dams Program
Website/source:

- Pueblo of Zuni website: www.ashiwi.org/
- *Zuni Adaptation to Climate,* presentation given at Tribal Climate Change Adaptation Planning and Inter-Governmental Coordination Workshop (October 2010), www.tribesandclimatechange.org/?page_id=16
- Kirk Bemis, Hydrologist, Zuni Tribe Conservation Program, written communication (November 5, 2010)

Project: Energy Efficiency and Conservation Block Grant Program
Description: The Pueblo of Zuni is developing a short- and long-term strategy for energy efficiency improvements and for renewable energy development. The tribe is developing two efficiency and renewable energy generation comprehensive planning studies.
Tribal Program: Awarded to the Pueblo of Zuni on 12/4/09.
Source of funding: US Dept. of Energy (Energy Efficiency and Conservation Block Grant Program, $267,500)
Website/source:

- www.recovery.gov/Transparency/RecipientReportedData/pages/RecipientProjectSummary508.aspx?AwardIdSur=75371&AwardType=Grants

Organizations

All Indian Pueblo Council

Location: Albuquerque, NM
Website: http://20pueblos.org/default.aspx
Climate Change Program and Projects: Could not be reached for comment.

Eight Northern Indian Pueblos Council

Location: San Juan, NM
Website: www.enipc.org/
Climate Change Program: No**.** The organization is not currently doing work on climate change and has received no requests from tribes regarding climate change issues.

Five Sandoval Indian Pueblos

Location: Bernalillo, NM
Website: https://fsipinc.org/Community.html
Climate Change Program and Projects: Could not be reached for comment.

Forest Guild

Location: Santa Fe, NM
Website: www.forestguild.org/
Climate Change Program: Yes
Although the Forest Guild is not a tribal organization, it is included in this report because it works with tribes in Arizona and New Mexico. The Forest Guild is a professional organization of forest stewards, associated natural resource professionals, and affiliates who are passionate about restoring and sustaining the integrity of our forests while meeting the needs of the communities that rely on them. It is a national organization with regional projects and programs across the country.

Project: New Mexico Forestry and Climate Change Workshop
Description: The goal of the November 2008 workshop was to provide foresters and other natural resource professionals with information about climate change's projected impacts on New Mexico's forests to incorporate into their management decision making. 130 forest managers, researchers, landowners, students, and activists attended. Several tribes participated in the workshop working groups.
Leader of effort: Howard Gross, Forest Guild
Source of funding: Biophilia Foundation, Thaw Charitable Trust, New Mexico Forest and Watershed Restoration Institute, US Forest Service Rocky Mountain Research Station, US Forest Service Region 3, the Bureau of Land Management New Mexico State Office, and Los Alamos National Laboratory Foundation.
Website/source:

- New Mexico Forestry and Climate Change Workshop, Forest Guild, www.forestguild.org/nmfccworkshop.html

Inter Tribal Council of Arizona, Inc.

Location: Phoenix, AZ
Website: www.itcaonline.com/index.html
Climate Change Program: No

Project: Technical Assistance for Tribes in Arizona
Description: The Inter Tribal Council of Arizona, Inc., (ITCA) provides technical assistance to tribes in Arizona on air quality issues, and starting this year, ITCA will include climate change. This year ITCA will work with a tribe under the FY 11 GAP Tier II plan to assist the tribe with developing a climate change action plan. This will be used as a model for working with other tribes in Arizona in subsequent fiscal years.
Program: Environmental Quality Programs
Leader of effort: Elaine Wilson, Environmental Quality Programs Director; Maureen Perkins, Tribal Air Quality Program Coordinator
Source of funding: EPA GAP TIER II funding

Southwest Tribal Fisheries Commission

Location: Mescalero, NM
Website: www.swtfc.org/index2.html
Climate Change Program and Projects: Could not be reached for comment.

Mountains north of Santa Fe, New Mexico. Source: Susan Wotkyns

Northern Arizona University campus, Flagstaff, AZ. Source: Gary Elthie

Academic Institutions

Arizona State University

Location: Tempe, AZ
Website: www.asu.edu/
Climate Change Program: Arizona State University (ASU) signed on as a participant in American College and University Presidents' Climate Commitment (ACUPCC): www.presidentsclimatecommitment.org/. The climate commitment is an effort to address global climate disruption by eliminating or limiting greenhouse gas emissions and to promote climate change research and educational efforts. ASU developed a Climate Neutrality Action Plan to guide students, faculty, staff, and partners in making the University carbon neutral by 2025, with its transportation goal set for 2035: http://carbonzero.asu.edu/. ASU has a number of climate change-related programs and projects, courses, and faculty and staff that are conducting climate change research.

Diné College

Location: Tsaile, AZ
Website: www.dinecollege.edu/
Climate Change Program: The college offers a course about climate change.

Institute of American Indian Arts

Location: Santa Fe, NM
Website: www.iaia.edu/

Climate Change Program: The Institute of American Indian Arts signed on as a participant in American College and University Presidents' Climate Commitment (ACUPCC). The climate commitment is an effort to address global climate disruption by eliminating or limiting greenhouse gas emissions and to promote climate change research and educational efforts: www.presidentsclimatecommitment.org/.

Project: Freshman Seminar course
Description: The Freshmen Seminar course addresses climate change literacy by teaching students about greenhouse gases and nuances in sustainable practices. The Freshmen Seminar course is a requirement for all students.
Leader of effort: Annie McDonnell, Department Chair of Essential Studies program
Source of funding: Received USDA dollars and currently seeking funding for additional projects.

Navajo Technical College

Location: Crownpoint, NM
Website: www.navajotech.edu
Climate Change Program: The college offers a course on wind and solar power that introduces students to the theory, design, and assembly of wind turbines, air collectors, and solar heating systems, and also offers a course on photovoltaic theory and design.

New Mexico State University

Location: Las Cruces, NM
Website: www.nmsu.edu/
Climate Change Program: New Mexico State University (NMSU) signed on as a participant in American College and University Presidents' Climate Commitment (ACUPCC): www.presidentsclimatecommitment.org/. The climate commitment is an effort to address global climate disruption by eliminating or limiting greenhouse gas emissions and to promote climate change research and educational efforts. NMSU developed a Climate Action Plan to guide students, faculty, staff, and partners in making the University carbon neutral, but has taken a conservative approach to the establishment of a timeline and milestones in the path to carbon neutrality: www.ofs.nmsu.edu/documents/ClimateActionPlanNMSU942009.pdf. NMSU has a number of climate change-related initiatives: http://sustainability.nmsu.edu/.

Northern Arizona University

Location: Flagstaff, AZ
Website: www.nau.edu
Climate Change Program: Northern Arizona University (NAU) signed on as a participant in American College and University Presidents' Climate Commitment (ACUPCC). The climate commitment is an effort to address global climate disruption by eliminating or limiting greenhouse gas emissions and to promote climate change research and educational efforts: www.presidentsclimatecommitment.org/. NAU developed a Climate Action Plan with the aim to make the campus carbon neutral by 2020: http://home.nau.edu/sustain/OurAccomplishments.asp. NAU has a number of climate change-related programs and projects, courses, and faculty and staff that are conducting climate change research, some of which are related to or focused on tribal climate change concerns.

Program: Institute for Tribal Environmental Professionals—Climate Change Program
Description: The Institute for Tribal Environmental Professionals (ITEP) assists tribes in the management of their environmental resources through effective training and education programs. ITEP serves federally recognized tribes throughout the United States. ITEP offers several climate change trainings to tribal environmental and natural resource professionals: *Climate Change on Tribal Lands* and *Climate Change Adaptation Planning*. ITEP developed the *Tribes & Climate Change* website as a resource for tribes and produces and delivers the monthly *Tribal Climate Change Newsletter*, which provides news items, resources, announcements about funding opportunities and upcoming events, and other information relevant to tribal climate

change issues. ITEP conducts outreach with tribes, other organizations, and agencies, and is developing collaborations to provide additional training, assistance and resources to tribes on climate change issues. ITEP's Environmental Education and Outreach Program (EEOP) offers a variety of resources and services to tribal schools, teachers and K-16 students on a variety of environmental issues, including climate change.
Department: Institute for Tribal Environmental Professionals
Leader of Effort: Sue Wotkyns, Climate Change Program Manager
Source of funding: US EPA (provides most of the funding), USDA Forest Service
Website/source:

- ITEP's Climate Change Program website: www4.nau.edu/itep/climatechange/
- *Tribes & Climate Change* website, www4.nau.edu/tribalclimatechange/index.asp

Project: NAU Climate Change Education Partnership Program
Description: Northern Arizona University received a $1 million grant from the National Science Foundation to increase public understanding of global climate change and help prepare the next generation of scientists and educators. NAU will focus its outreach effort on Native American and rural communities on the Colorado Plateau, targeting students who are historically underrepresented in science and math education. The Institute for Tribal Environmental Professionals is part of the team at NAU working on this project.
Department: multiple departments
Leader of Effort: Jane Marks, NAU biology professor and principal investigator for project
Source of funding: National Science Foundation ($1,000,000)
Website/source:

- *NAU Receives $1 Million to Educate Native and Rural Youth About Climate Change,* Inside NAU, www4.nau.edu/insidenau/bumps/2010/10_14_10/climate.html

Project: Development of Fire Histories/Reconstruction on the Hualapai Reservation
Description: An NAU PhD student with the School of Forestry is working on developing fire histories on the Hualapai Reservation. Forests on tribal lands have been insufficiently studied compared to other lands (state and federal) in the Southwest, and the Hualapai Tribe has Ponderosa pine forests that merit study. The fire histories of these sites would not only help fill a large gap in the network of fire reconstructions in the Southwest, but would be of great value to the tribe for resource management. The data collected can help provide important information about the frequency, size, severity and relationship between fire and climate over hundreds of years. This information will be utilized to help develop and evaluate strategies for forest conservation and resource use.
Department: School of Forestry
Project team members: Peter Fule Ph.D. (NAU School of Forestry), Charlie Murphy (Tribal Forester), Rich Powskey and Melvin Hunter Jr. (BIA and both Hualapai tribal members).
Source of funding: Arizona Science Foundation and the Mission Research Program, School of Forestry
Website/source:

- Peter Fule Ph.D., NAU School of Forestry, written communication (November 30, 2010)

Program: MS in Climate Science and Solutions
Description: NAU's new professional Master's degree program in Climate Science and Solutions is encouraging Native American students to apply; financial support for students is available. A key component of the program is an internship that will provide student with professional development through on-site direct experience. The program would like to develop some internship opportunities at tribal locations.
Department: School of Earth Sciences and Environmental Sustainability
Funding: National Science Foundation funds will support a limited number of students admitted to the program in both Fall 2010 and Fall 2011. These select students will receive full support ($15,000 per year stipend plus full tuition payment) for the first 12 months of the program. The program is designed to be completed in a sequence of two academic semesters, the summer internship experience, and a final academic semester. Support for the final semester is the responsibility of the student.
Website/source:

- Master's of Science in Climate Science and Solutions, http://climatesciencesolutions.nau.edu/

Southwestern Indian Polytechnic Institute

Location: Albuquerque, NM
Website: www.sipi.edu/
Climate Change Program: No.

Project: Plant Production, Greenhouse Nursery and Native Plant Restoration Projects
Description: The Department of Natural Resources has plant production, greenhouse nursery and native plant restoration projects which currently service 164 acres including the Bosque. The project has done a variety of mini-projects including the introduction of a moisture regime and the development of a seed bank with the primary output of cottonwood trees. The project is incorporated into Ecology and Range Management courses. The greenhouses grow Native Bosque plants and contribute to the habitat restoration of the Bosque.
Department: Natural Resources
Leader of Effort: Jeanne Lubbering, Adjunct Professor
Source of Funding: US Department of Energy
Website:

- Natural Resources Dept., www.sipi.edu/acadprog/progstudy/divinstr/ate/natr/default.asp

Tohono O'odham Community College

Location: Sells, AZ
Website: www.tocc.cc.az.us/index.htm
Climate Change Program: The college offers a course about climate change.

University of Arizona

Location: Tucson, AZ
Website: www.arizona.edu/
Climate Change Program: The University of Arizona signed on as a participant in American College and University Presidents' Climate Commitment (ACUPCC): www.presidentsclimatecommitment.org/. The climate commitment is an effort to address global climate disruption by eliminating or limiting greenhouse gas emissions and to promote climate change research and educational efforts. UA has a number of climate change-related programs and projects, courses, and faculty and staff that are conducting climate change research.

Project: Tribal Drought Information for Monitoring, Assessment, and Planning (DRI MAP)
Description: The Hopi Tribe and Navajo Nation have been experiencing widespread and persistent drought conditions for more than a decade. Limited hydroclimatological and ecological monitoring across the region has made it difficult to assess current drought impacts and anticipate future impacts. By working with tribal resource managers to develop better drought monitoring tools and tactics, the goals of the DrI MAP project are to help these communities reduce their vulnerability to drought, cope with unavoidable drought impacts, and plan for long-term sustainability in the region.
Department: Climate Assessment for the Southwest (CLIMAS)
Leader of effort: Daniel Ferguson, CLIMAS Program Manager, and Michael Crimmins, Climate Science Extension Specialist, Dept. of Soil, Water, & Environmental Science
Source of funding: NOAA
Website/source:

- CLIMAS, www.climas.arizona.edu/projects/drought-monitoring-planning-four-corners
- Hopi Tribe Dept. of Natural Resources, Water Resources, www.hopitribe.org/index.htm

University of New Mexico

Location: Albuquerque, NM
Website: www.unm.edu/
Climate Change Program: The University of New Mexico (UNM) signed on as a participant in the American College and University Presidents' Climate Commitment (ACUPCC). The climate commitment is an effort to address global climate disruption by eliminating or limiting greenhouse gas emissions and to promote climate change research and educational efforts: www.presidentsclimatecommitment.org/. UNM developed a Climate Action Plan with the aim to make the campus carbon neutral by 2050: http://sustainability.unm.edu/climateaction.htm. UNM has a number of climate change-related initiatives throughout the university.

Program: Sustainability Studies Program
Description: The Sustainability Studies Program spawns experiential learning, research, and service activities to implement practical solutions for a sustainable future on campus, the bioregion, and the planet. Sustainability Studies integrates knowledge and methodologies from the Sciences, Humanities, and Arts to provide a roadmap for students that can be applied to the design, selection, and implementation of policies, practices, technologies, and strategies. Sustainability Studies provides a dynamic feedback loop of information and practice.
Website:

- Sustainability Studies Program, http://sust.unm.edu/

Near Cochise Stronghold in the Dragoon Mountains, southeastern Arizona. Source: Susan Wotkyns


Susan Wotkyns