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Mitigating Climate Change on a Tribal Level

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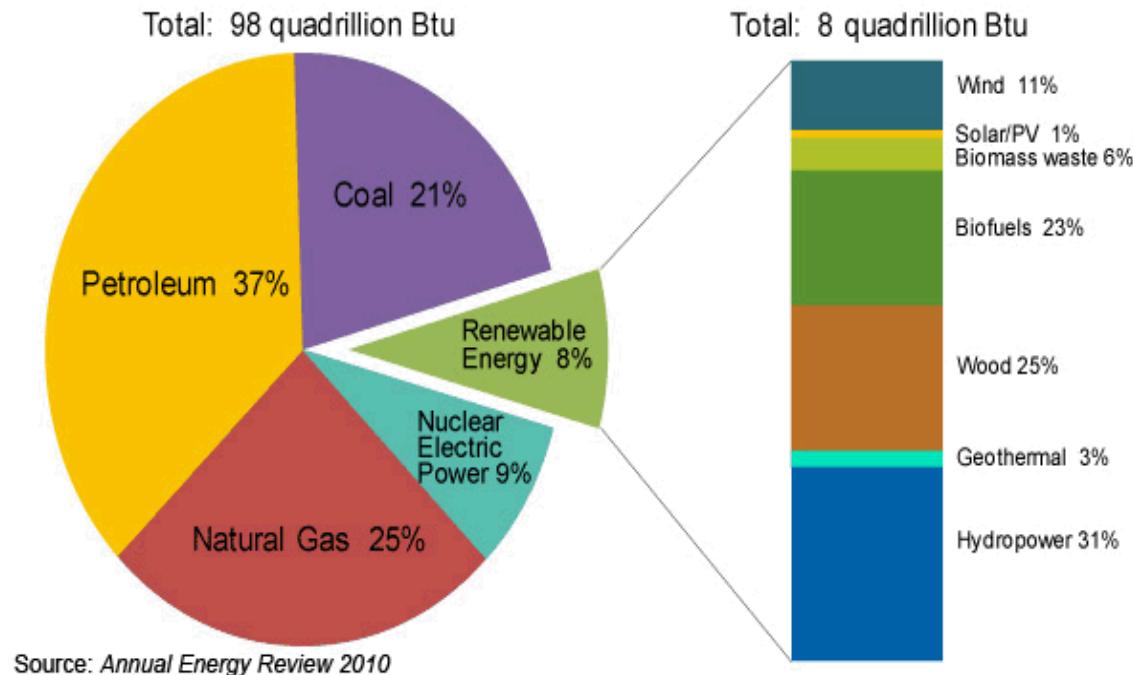
Abstract

Climate change is occurring on a global level and affects both humans and the environment.

Since the 18th century, humans began burning fossil fuels and deforesting lands to provide energy needs and this has changed the composition of the Earth's atmosphere, resulting in a changing climate. Native American tribes are extremely vulnerable to changes in the Earth's climate because their culture and sustenance are dependent on the natural environment.

About 14.2% of Native American households are still living without electricity compared to 1.4% of all U.S. households. Therefore, my research will focus on national energy use and the effects of climate change on humans and the environment. Next, I will discuss renewable energy potential and provide examples of renewable energy installations on Tribal lands. Finally, I will discuss the benefits of LEED buildings as a means for mitigating climate change on a Tribal level.

U.S. Energy Use



Tribal Climate Change and RE Potential

○ **Climate Change**

- Most vulnerable due to culture & sustenance
- Humans are part of nature
- Alaska tribes – glaciers melting; erosion due to permafrost
- Navajo – sand dunes shifting; current drought conditions

○ **Renewable Energy Potential**

- 5% of U.S. land with 10% of all energy sources
- 535 billion kWh/year of wind energy
- 17,600 billion kWh/year of solar energy
- Solar energy is best option to reduce GHG emissions; more efficient than kerosene and candles

Tribal Renewable Energy

- **Augustine Band of Cahuilla Mission Indians**

- 1.1 MW PV solar array
 - 15,000 panels produces 1,900 MWh annually
 - 25% of tribe's casino energy needs
 - \$2.6 million in rebates from Imperial Irrigation District



Source: <http://www.epa.gov/region9/climatechange/tribes.html>

- **Campo Band of Kumeyaay Nation**

- 50 MW large-scale wind farm
 - 25 turbines provides elec. for 35,000 homes in San Diego county
 - Lease land, don't own turbines



Photo courtesy NREL

Benefit of RE Potential

- Help reduce GHG emissions compared to conventional power plants
- Incentives aside from federal tax credits
- Power to casinos and buildings
- Economic development tool for tribes
- Example for others to develop RE on commercial/utility-scale

LEED

- “Leadership in Energy and Environmental Design”
- Third-party internationally recognized program
- Promotes and ensures that a building is sustainable through key areas:
 - Sustainable Sites
 - Water Efficiency
 - Energy and Atmosphere
 - Indoor Environmental Quality
 - Materials & Resources
- Point-based system

Navajo Nation and LEED



Photo courtesy Colleen Cooley

- NTUA Chinle, AZ district office
- 69 kW: Two 34.5 kW solar arrays
- LEED-gold standard
- 30% of building needs



Photo courtesy Chelsea Chee

- NTUA Crownpoint, NM district office
- 69 kW: Two 34.5 kW solar arrays
- LEED-platinum standard

Conclusion

- **Tribal RE potential:**
 - lead to RE projects, reduce GHGs, environmental/economic benefits
- **Tribal Projects:**
 - Navajo: NTUA LEEDing by example
 - California: Tribes develop large scale wind/solar
- Projects are and will continue to mitigate climate change