

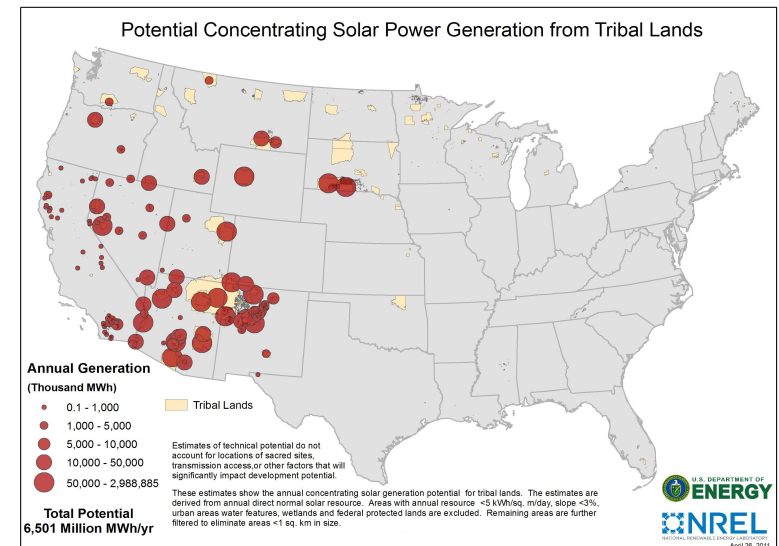
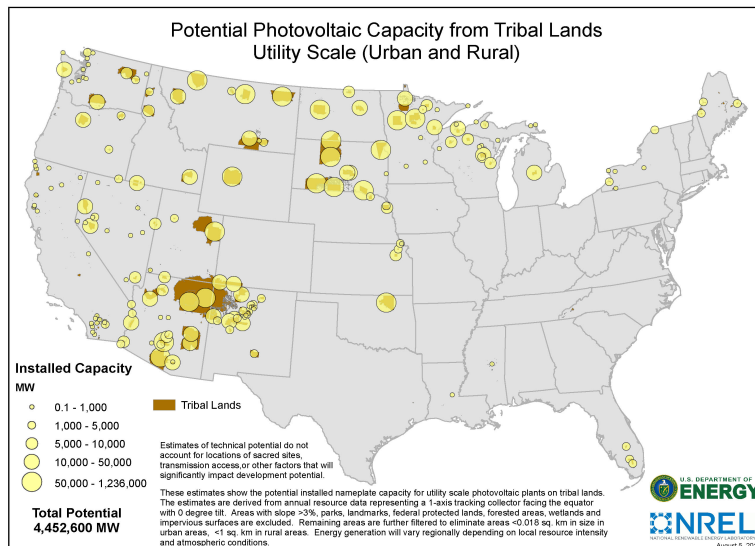
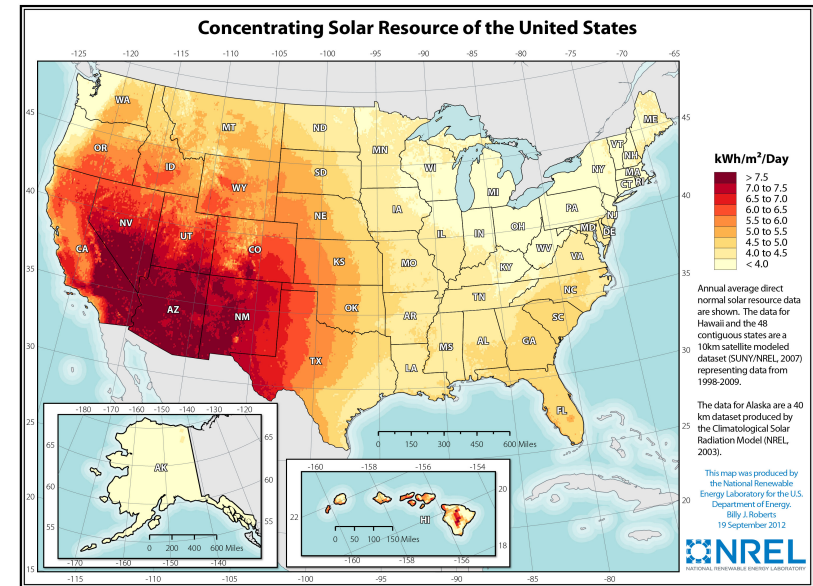
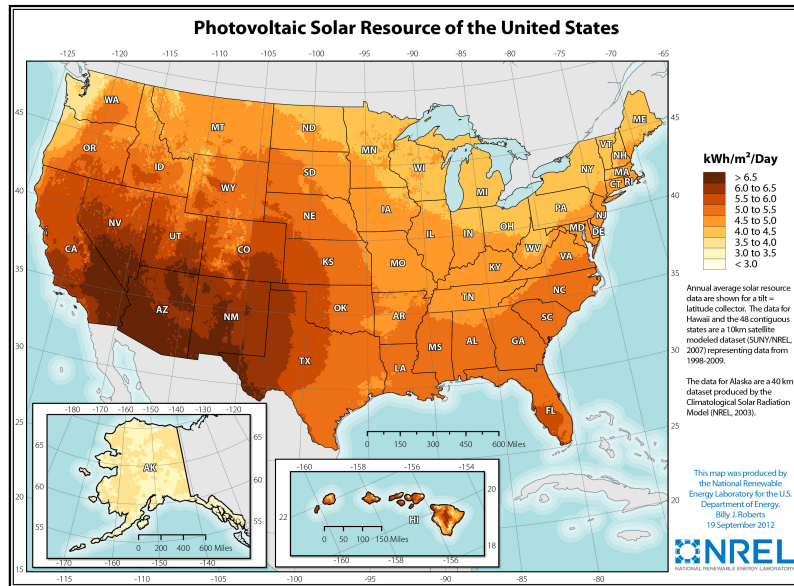
# **POTENTIAL, NEED, AND BARRIERS TO RENEWABLE ENERGY ON TRIBAL LANDS**

**Thomas Jones PhD Student, SNRE Natural Resources  
Studies, American Indian Studies Minor**

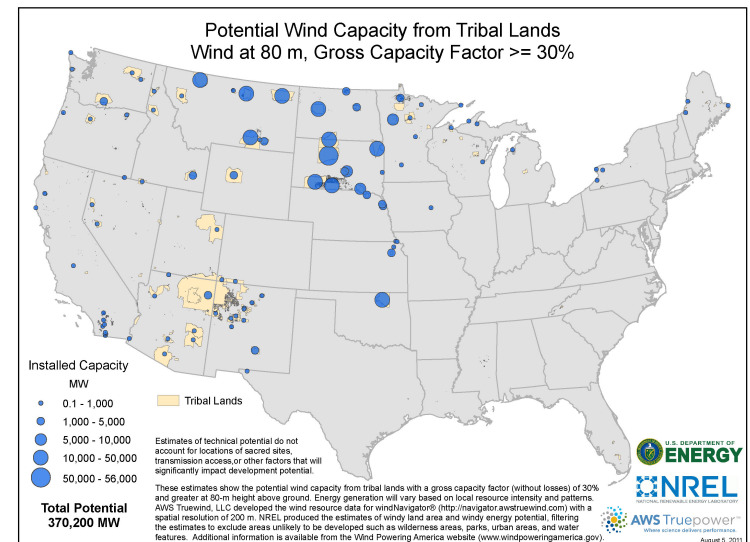
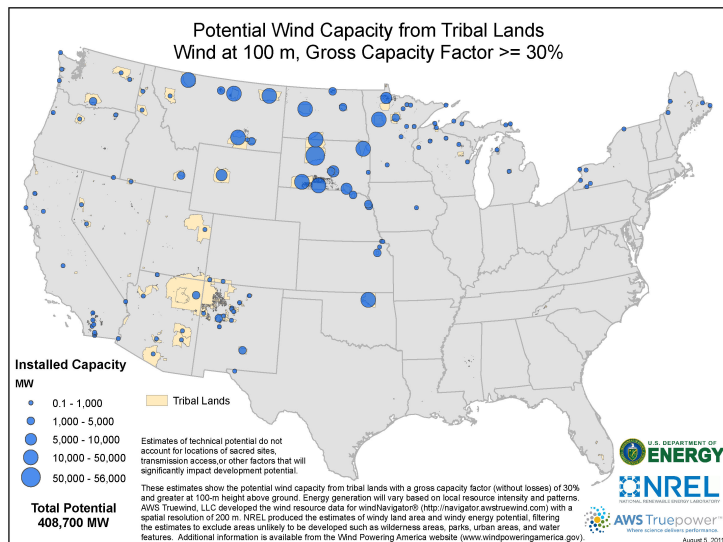
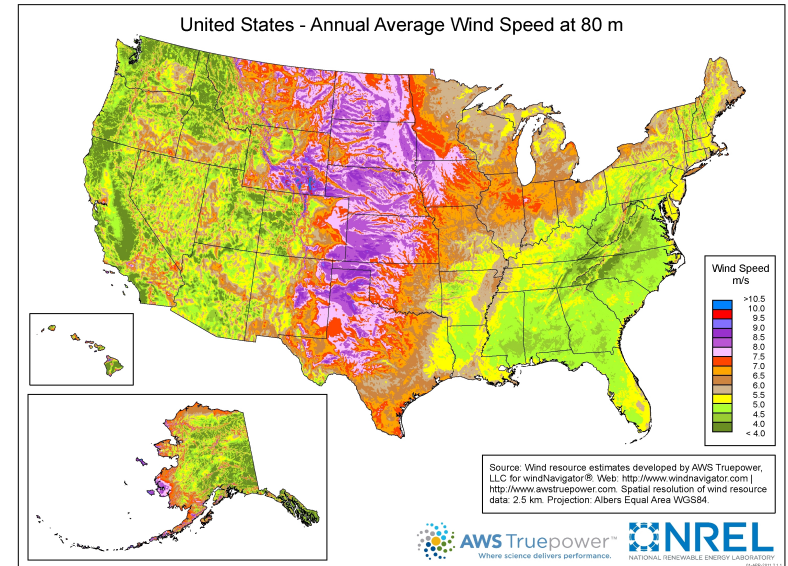
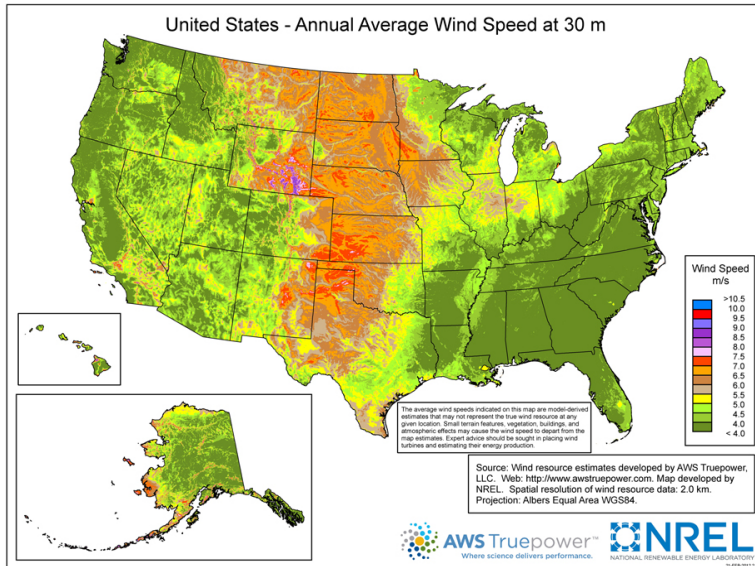
**Len Necefer PhD Candidate, Carnegie Mellon  
University, Engineering and Public Policy**



# Solar Potential in the United States (NREL)



# WIND ENERGY POTENTIAL UNITED STATES (NREL)





# NEED FOR ENERGY

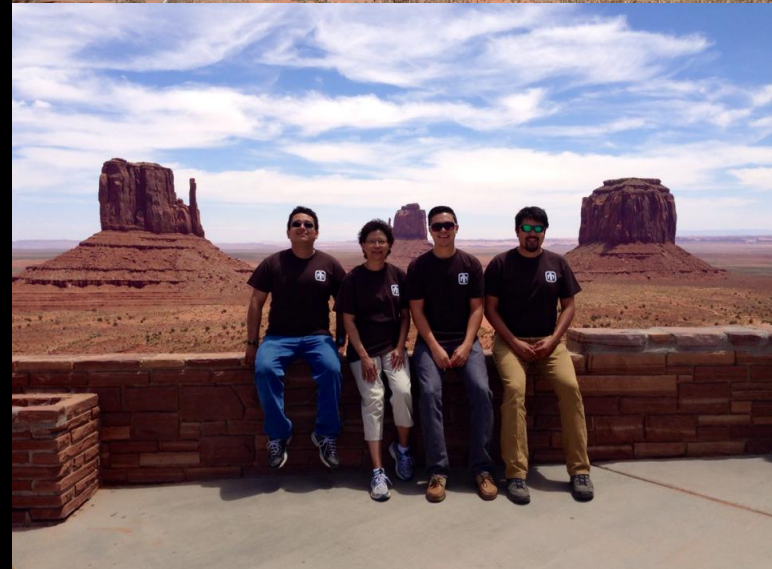
- EIA estimates 14.2% Native American households are without access to energy (1.4% Natl. avg)
  - 75% are on the Navajo Nation
- 28% poverty rate on reservation 22% combined on/off
  - 15% all US





# NAVAJO NATION FOUR CORNERS REGION

- 18,000 homes without electricity
- Candle, kerosene, propane, diesel
- Wood burning stoves for heat
- Perishable food daily chore
- Miles from the grid
  - Remote and isolated
- \$27,000-\$48,000/mile
- Kayenta and Navajo mines
- NGS (CAP), FCPP
- Oil + Gas exploration



# POTENTIAL AND NEED

Why has there not been widespread development?





# PREVIOUS RESEARCH ON BARRIERS TO DEVELOPMENT

- **Regan (2014)**
  - Identifies federal regulations as a critical barrier to energy development
- **Greenhowe (2013)**
  - Acknowledges energy potential
  - Identified mistrust of outside partnerships and tribal sovereignty as barriers
- **Brookshire and Kaza (2013)**
  - Federal programs key to capacity development
  - Energy Planning correlates with project development
  - All energy resources were considered





# RESEARCH GAP

- Previous research identifies conflicting barriers
- No clear consensus on barriers
- Strong claims to specific areas that are fatal to project development
- We want to ask experts, with field experience, in Indian Energy what they consider to be barriers to development
- Why haven't more projects been developed?



## FINDING 1: FINANCING AND FUNDING

- **Lack equity**
- **Tribes are risk adverse + not willing/unable to take on debt**
- **Markets for renewable energy**
  - Renewable Energy Tax Credits
  - State renewable portfolio standards
- **Remote locations often far from infrastructure**
- **Finding a partner + customer can be difficult**



## FINDING 2: TRIBAL LEADERSHIP AND STAFF

- Many Tribal governments lack capacity
- Increasing the capacity at staff level
  - 1-2 year term limits and governance structure
- Tribal and federal experts agree there is a continued need and room for expansion for federal technical assistance
  - Partnerships (making better ones)
  - Risk management





## FINDING 3: CULTURAL ACCEPTANCE ISSUE OF SCALE

- **RE –consistent with many tribes' cultural values**
  - preservation and protection of the environment
- **Acceptance is contingent upon the scale of a project**
  - Negative impacts on cultural resources, sacred sites, landscapes, view sheds and plants/wildlife
  - May not see natural resources as economic resources
  - For whom and by whom



## **FINDING 4: TRIBAL SOVEREIGNTY**

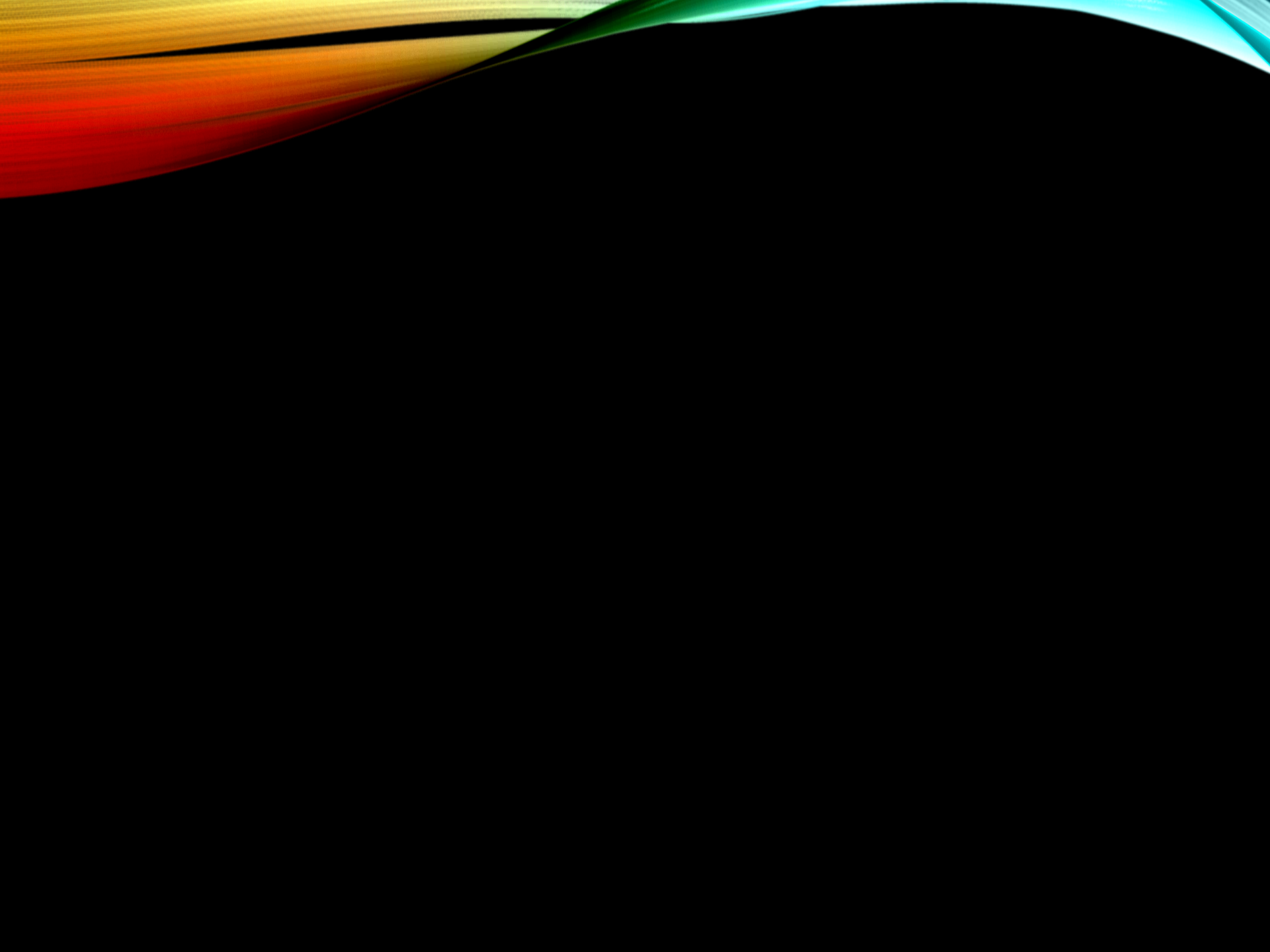
- **Motivation to provide energy for community**
  - Tribal utilities
  - Facility and community scale projects
- **Waivers of sovereign immunity common and non-issue**
  - Waiving is a necessary business transaction
- **Decision not to waive sovereign immunity**
  - Mistrust of outside entities
  - Outside investors including other tribes
  - Perceived investment risk
- **Regulatory authority and RPS**

# CONCLUSIONS AND FUTURE WORK

- Each tribe is unique and faces a host of barriers
- Previous research does not effectively capture barriers
- Expand federal capacity building opportunities
  - Strategic energy planning sessions, webinars, conferences, technical assistance, financial funding
- Address project risk management concerns
- Improve Partnerships
  - Mistrust
  - Funding / financing
  - Customer (PPA)







# METHODS

- **Delphi method used for survey**
  - Iterative synthesis of opinions of authorities of a subject
- **Identification of experts**
  - Experts in federal and tribal governments that directly work with Indian energy
  - Tribal Staff (5) and Experts from DOE and DOI (5)
  - Open ended questions / non directive
  - Interviewees Anonymous
- **Questionnaire protocol**
  - Elaborate on involvement with tribal energy
  - Direction of renewable energy in next decade on tribal lands
  - Rank ordering of barriers from most to least significant
  - How barriers will be addressed in next decade on tribal lands
  - Native Nation Building related questions
  - Importance of federal programs

# **FUTURE ENERGY DEVELOPMENT ON TRIBAL LAND**

- **More small scale projects** 5
- **Capacity building** 4
- **Tribally managed projects** 4
- **Critical for Alaskan Communities** 3
- **Distributed Generation / Community Scale** 3
- **Not many large scale projects** 3



# RANK ORDER OF IMPORTANCE OF BARRIERS

## Most Significant Barrier

Financing / Funding

Tribal Leadership / Staff

Customer

Partnerships

Infrastructure

6

6

5

5

4

## Least Significant Barrier

Tribal Sovereignty

Non-tribal govt/public

Financing / Funding

Strategic Energy Planning

Cultural Acceptance

5

4

3

3

2

# HOW WILL BARRIERS BE ADDRESSED?

- Capacity building 5
- Depends on Tax Credits 2
- Partnerships 2
- Renewable Energy Portfolio Standards 2
- Climate Change Impacts 1

# CULTURAL ACCEPTANCE

- Scale of project significant 6
- Landscape / Viewshed 4
- Support renewable energy 4
- Each tribe is unique 3
- Environmental protection low priority 2

# TRIBAL SOVEREIGNTY

- Limited waivers of sovereignty common 7
- Providing energy important 5
- Regulatory Authority (RPS/Transmission) 3
- Capacity building 2
- Detrimental to development 2