Sandia National Laboratories

Exceptional service in the national interest

EMPOWERING TRIBAL MEMBERS THROUGH SOLAR EDUCATION:

The Key First Steps to Solar Education and Planning

Dresean Abeyta

Summer Undergraduate Intern

Sandia National Laboratories

Department 08924 Photovoltaics & Materials Technology

Presented to Department of Energy Office of Indian Energy Policy & Programs (DOE IE)

August 6, 2024

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia LLC, a wholly owned subsidiary of Honeywell International Inc. for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

SAND2024-10159PE

DRESEAN ABEYTA

- Sandia / DOE IE Intern Summer 2024
- From Alamo, NM
- Diné Nation (Navajo Nation)
- University of New Mexico
  - Chemical Engineering, Junior
    - Concentration in Materials Processing
  - B.S.Ch.E: May ’26 planned
- Long-Term Goals:
  - Master of Science - Biomedical and Mechanical Engineering
  - Ph.D. - Chemical Engineering

Monument Valley NTUA Visit, Photo by Sherralyn Sneezer

EMPOWERING TRIBAL MEMBERS THROUGH SOLAR EDUCATION

LOGIC MODEL OF INDIAN ENERGY RESOURCES

- Role of Department of Energy, Office of Indian Energy (DOE IE) in Tribal Renewable Energy Projects
- Order of Important DOE IE Webinars with Key Takeaways
  - 1. Fundamentals of Tribal Energy Industry
  - 2. Renewable Energy Technologies
  - 3. Assessing Energy Needs and Resources
  - 4. Initial Scoping of Energy Projects on the back of an Envelope
  - 5. Steps Toward Your Tribal Community Energy Future
- Why is an Energy Project a Tribal Community Effort?

ROLE OF DOE IE IN TRIBAL RENEWABLE ENERGY PROJECTS

- What is the DOE IE and why are they important?
  - According to the DOE Office of Indian Energy's website, their mission is to "is to maximize the development and deployment of energy solutions for the benefit of American Indians and Alaska Natives."(1)
  - Advancing Tribal Energy Sovereignty
- What they offer:
  - Technical Assistance
  - Information about Grants and Incentives
  - Webinars
  - Workshops
  - IE Internship at Sandia Labs

Picuris Pueblo Site Visit, Photo by Jennifer Valdez

1. FUNDAMENTALS OF TRIBAL ENERGY INDUSTRY

- Business View of an Tribal Energy Project
  - Feasibility
    - Initial Considerations
    - Tribe's Role in Project
  - Development/Construction
    - Finances of Energy Project
  - Ownership Structures
    - Direct Ownership
    - Ownership with Debt
    - Power Purchase Agreement (PPA)
- How Does Money Come Back to the Tribe?

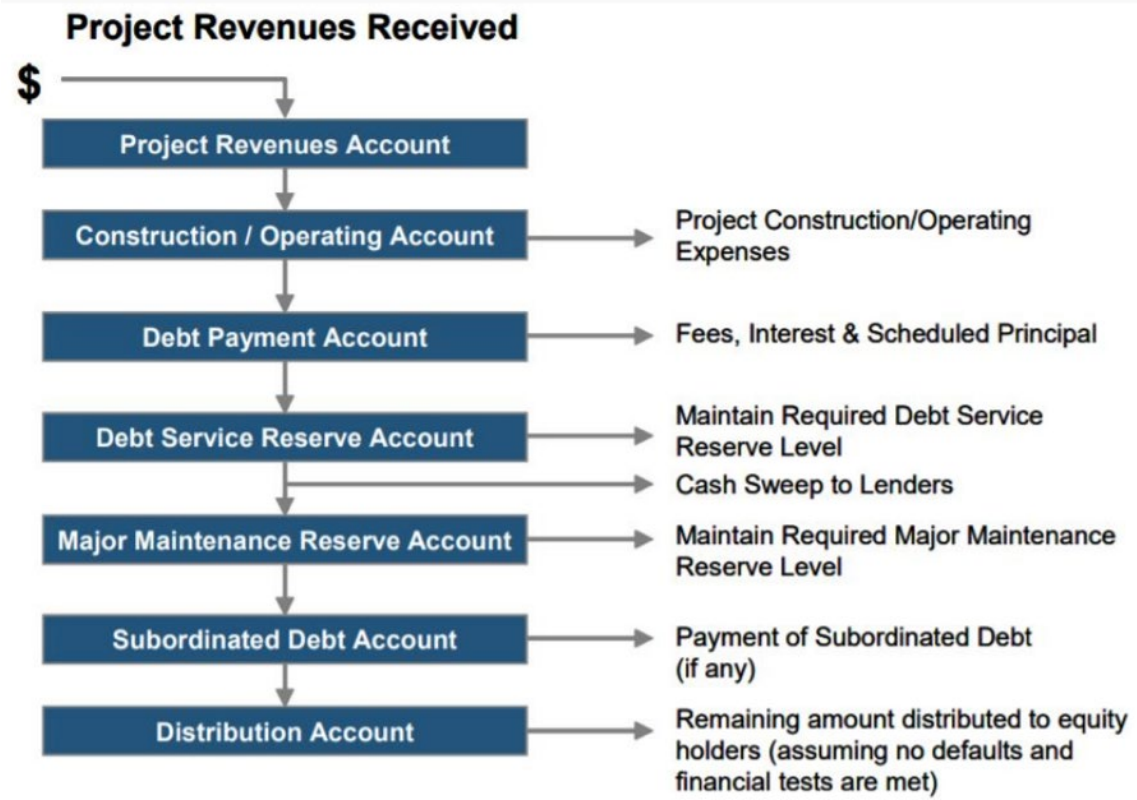

Figure from NREL(2) within DOE IE Webinar

2. RENEWABLE ENERGY TECHNOLOGIES

- What is Renewable Energy?
  - Comes from natural sources
    - Solar, Hydro, Biomass, Wind, etc.
  - Produced faster than consumed
  - Can be used in place of traditional sources
  - Energy can be harvested anywhere in the country with the appropriate technology
    - Windmills, Solar Panels, and Dams
- Why Focus on Solar Energy?
  - According to the Department of Energy's website," Solar energy is the fastest growing and most affordable source of new electricity in America."(4)
  - Tribal lands have some of the greatest potential

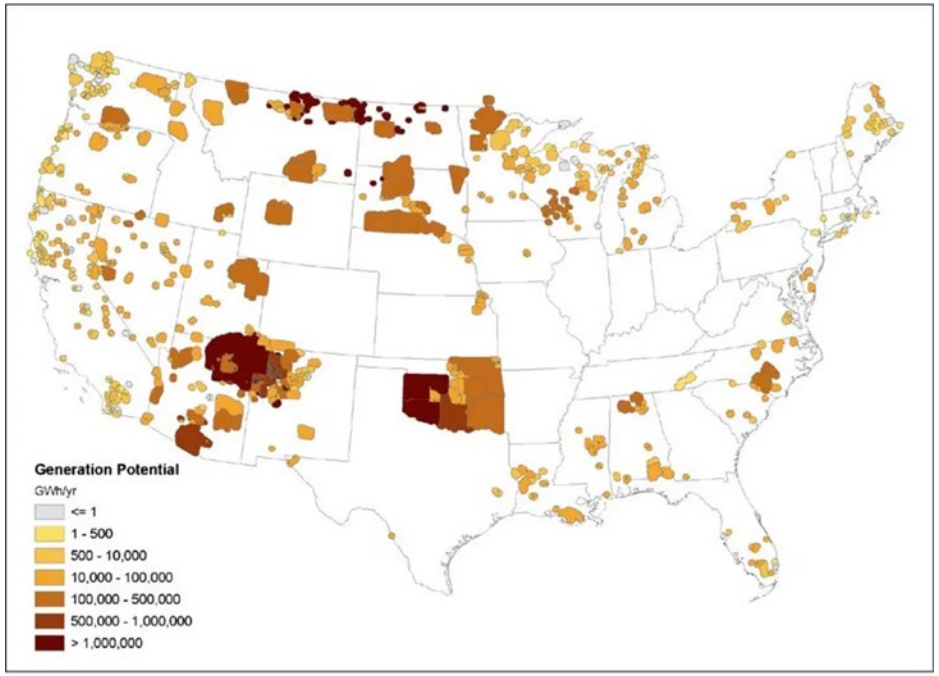

Figure from Tribal Energy Atlas (3)

3. ASSESSING ENERGY NEEDS AND RESOURCES

- **Why is this needed?**
  - Successful solar energy projects require:
    - Careful planning
    - Accurate data
    - Informed decision-making
  - DOE Resources:
    - Technical Assistance
    - Funding Opportunities
    - Webinars/Workshops
  - NREL Tools:
    - System Advisor Model (SAM)
    - In My Backyard (IMBY)
  - Other Resources:
    - Database of State Incentives for Renewables & Efficiency (DSIRE)
    - Other Tribes with Experience

Photo from DOE (4)

4. INITIAL SCOPING OF ENERGY PROJECTS ON THE BACK OF AN ENVELOPE

- Options Analysis
  - Energy Objectives
  - Specific Project Goals
  - Option Identification
  - Approach
  - Preliminary Screening
  - Pre-Feasibility Analysis
  - Option Selection

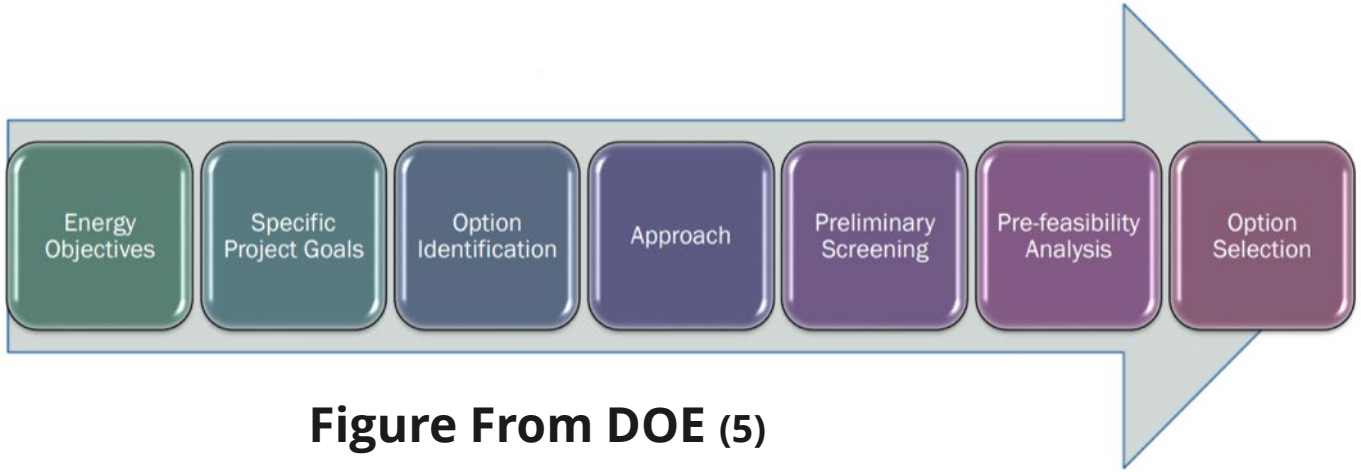

Figure From DOE (5)

5. STEPS TOWARDS YOUR TRIBAL COMMUNITY ENERGY FUTURE

- Five-step Framework
  - Self-Assessment for Potential
  - Feasibility Studies
  - Planning and Development
  - Financing and Construction
  - Operation and Maintenance

Figure from DOE IE (6)

WHY IS A SOLAR ENERGY PROJECT A COMMUNITY EFFORT?

- Why involving the community is important?
  - “Accessible and meaningful community engagement and public participation for Tribes is vital to acquire an authentic and detailed understanding of what the community needs are for energy sources.” (7)
- What are the best ways to engage with the community (8)
  - Hold strategic energy planning sessions or workshops
  - Form a network of collaborations and partnerships.
  - Advertise workforce development opportunities into projects.

UNM AISES Community Meeting, Photo by Dresean Abeyta

THANK YOU!
ANY QUESTIONS?

REFERENCES

1. https://www.energy.gov/indianenergy/about-us
2. https://www.energy.gov/sites/default/files/2019/04/f62/Lowder-financing.pdf
3. https://maps.nrel.gov/tribal-energy-atlas
4. https://www.energy.gov/solar
5. https://www.energy.gov/sites/default/files/2019/05/f63/pierce-energy-options-analysis.pdf
6. https://www.energy.gov/sites/default/files/2015/06/f23/1d-fivestepoverview.pdf
7. https://www.energy.gov/sites/default/files/2023-11/Arguello_Report_SAND_SAND2023-09029.pdf
8. https://www.energy.gov/sites/default/files/2023-11/Sarah_LaVallie_SAND2023-08664.pdf