Oxford Solar Project Lessons Learned

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Rebecca Kauffman, SUAE President
Agenda

- Background
  - Southern Ute Indian Tribe
  - Southern Ute Alternative Energy

- Solar Project Overview
  - Why Now?
  - Why this particular project?

- Project Development Process
  - Permitting
  - Land access
  - Utility Negotiation

- Project Next Steps
  - Remaining Activities
Background

• **Tribal Members**: 1,400+

• **Reservation**: 313,070 acres
  exterior: 681,306 acres

• **Employment**: The Tribe is the largest employer in La Plata County with more than 1,300 employees.
Southern Ute Alternative Energy (SUAE) is
- A for-profit business owned by the Tribe

The mandate is to invest in alternative and renewable energy.
- Funds
- Operating Companies (including projects)

Alternative Energy’s objective is to focus on opportunities with a
- positive environmental impact
- sound technologies
- sound economics

Primary areas of focus include: Solar, Wind
Solar Project Overview

- ~1,000kW ground-mount Photovoltaic (PV) project
- Interconnection near an underutilized substation
- Power sold to local utility
- Electricity generated equivalent to the usage of about 250 households
- $3M budget including $1.5M award from USDOE TEP/EERE - Community-Scale Clean Energy Projects in Indian Country
The Journey

Why Now??
Why this particular project??
Why Now?

► We have the solar resource
  – And had completed the feasibility work required

► Part of Tribe’s overall plan to diversify their businesses
  – Decision started that process in 2006

► The technology started to become economical for our area
  – Costs dropped over 60% over last 5 years
Solar Feasibility Study

Part I -

- Identified the best potential locations
  - Developed a Geographic Information System (GIS) based model to evaluate locations
    o Proximity to infrastructure (roads, transmission, etc.)
    o Topography (slope, aspect and flood plains)
    o Solar resource
    o Land Ownership
    o Habitat for threatened and/or endangered species
    o Others

<table>
<thead>
<tr>
<th>Lesson Learned</th>
<th>Conclusion</th>
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</table>
| You need to do your homework. | • Most potential “projects” are not viable  
• Identify viable projects without spending a lot of money |
GIS Based Solar Suitability

Project Location

Legend
- Areas of Interest
- Solar Suitability Scores
  - Red Areas More Suitable
    - 0-418
    - 419-461
    - 462-493
    - 494-518
    - 519-544
    - 545-584
    - 585-680
- *Tribal Boundary

Area 1
Area 2
Area 3
Area 4
Area 5
Area 6 (DISMISSED)
Area 7 (DISMISSED)

Ignacio
## Solar Feasibility Study

### Part II – Review the market

- Evaluated opportunities for electricity sales

### Lesson Learned

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<td>You need to do your homework.</td>
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<td>• Identify viable projects without spending a lot of money</td>
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<tr>
<td>Understanding Energy Markets is Difficult</td>
<td>• The price you can get for your energy is unique and driven by many factors including local incentives, competition, generation profile, and demand.</td>
</tr>
<tr>
<td>Identifying the players can be complex</td>
<td>• Selling locally or far away there are potentially many players involved.</td>
</tr>
<tr>
<td></td>
<td>• Their roles and motivations are not necessarily easy to discern.</td>
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</table>
Why this particular project?

- Evaluated the project goals, desired role for the Tribe and what the Tribe has to offer. (Land? Buildings? Project Management? Labor?)
- Identified opportunities to make a project economically viable
  - Community Solar? (NREL technical assistance, START program)
  - Grant Funded Project? (identified and applied for grant)

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<tr>
<td>Tribal Projects have many opportunities for assistance</td>
<td>• Need to have a project that is well defined</td>
</tr>
<tr>
<td>Need to have a way to quickly evaluate project economics</td>
<td>• Many tools available online (System Advisor Model, PV Watts, RETScreen)</td>
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<td>• Can also build a custom spreadsheet</td>
</tr>
<tr>
<td>Putting someone on point is critical to success.</td>
<td>• Need a Project Manager with time and incentive to make the project succeed.</td>
</tr>
<tr>
<td>Look for ways to simplify the project.</td>
<td>• Categorical Exclusion.</td>
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<td>• No third party ownership</td>
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Our Project Initially Defined

- Technology: Ground mounted photovoltaic (PV)
- Financing: Partial grant funded
- Offtake: The Tribe is “virtually” net metered
- Benefits:
  - Tribe saves money on electricity use
  - Utility buy in and high level agreement
Permitting/Land Access

- **Environmental**
  - Eligible for a Categorical Exclusion due to early farming and ranching activity which disturbed the land
  - The site also has naturally occurring selenium, e.g., natural brownfield

- **Geotech**
  - Difficult issue for this project given the nature of the soil
  - Utilized an outside contractor and took extra care in this evaluation

- **Land Lease and Rights of Way**
  - Right to use and access the land
  - Complexities
    - BIA water ditches
    - Private property
    - Utility rights of way and infrastructure
    - Oil and gas infrastructure

- Identified a “clean” 40 acres for a 10 acre project
Discussions included:

► Interconnection Agreement
  • Negotiated with local electric utility
  • Defines the terms under which the project can connect to the grid

► Wheeling Agreement
  • Cost and terms by which energy will be delivered to a distant buyer/end user

► Power Purchase Agreement
  • Defines the rates the project will be paid for the energy provided to the buyer
Utility Negotiation

- **Step 1 – Homework**
- Who are you dealing with?
- What is your historical relationship?
- What do you need? What do you want?
  - Who you are and your intentions
  - A Customer vs. a Tribe!!!!
- What do they need? What do they want? What is their motivation?
<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Motivation</th>
<th>Owners</th>
<th>Their Rulebook</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investor Owned Utility (IOU)</strong></td>
<td>For Profit</td>
<td>Investors/ Owners</td>
<td>Receive a franchise license from the State</td>
<td>Generation, Bulk Power sales, Transmission, Distribution</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PUC governance</td>
<td></td>
</tr>
<tr>
<td><strong>Public Utility (PPU)</strong></td>
<td>Not for Profit</td>
<td>Municipalities Counties Tribes</td>
<td>Locally self-governed</td>
<td>Generation, Distribution</td>
</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cooperative (Coop)</strong></td>
<td>Not for Profit</td>
<td>Member Owned (customers)</td>
<td>Some Federal, some state.</td>
<td>Mostly distribution (some generation coop of coops)</td>
</tr>
<tr>
<td></td>
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<td>Governed by elected Board of Directors</td>
<td>Critical to treat all customers the same</td>
<td></td>
</tr>
<tr>
<td><strong>Federally Owned (WAPA)</strong></td>
<td>Not for Profit</td>
<td>Federal Government</td>
<td>Federal</td>
<td>Generally wholesale to utilities</td>
</tr>
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Utility Negotiation

Step 2 - Identify Points of Leverage

- Rights of Way on Tribal Land
- Major customer of utility
- Develop a tribal utility (various approaches)
- Legal precedent
- The Utility’s need for the power (load growth, IRP, RPS, new regulations, other mandates, public pressure, etc.)
Utility Negotiation

Step 3 - Investigate what is market price and a "fair" price

- Publically available prices
- Talk to other developers
- Hire a rate consultant
- Know the price you need
  - Project economics
  - Costs and options
  - Run multiple iterations and scenarios
Be a little patient but keep pushing

- Keep the dialogue going – if you don’t no one else will…
- Look for common ground but be persistent
- Develop and work to maintain trust

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<td>Know as much as you can about the Utility</td>
<td>• Completing the homework before you start discussions pays back during the process.</td>
</tr>
<tr>
<td>Keep doing the math</td>
<td>• Understanding the project economics and flexibility is critical to reach a reasonable result.</td>
</tr>
<tr>
<td></td>
<td>• Knowing the project inside and out can keep you from wasting time and money.</td>
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<tr>
<td></td>
<td>• Project costs can change over time.</td>
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<td>Putting someone on point is critical to success.</td>
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Our Current Activities

Selection of the Engineering, Procurement and Construction (EPC) Contractor

• Release Request for Qualifications (RFQ)
• Select a limited number of contractors to receive Request for Proposals (RFP)
• Release the RFP
• Score and rank the proposals
• Negotiate the EPC contract
Remaining Activities

- Finalize Design (Spring of 2016)
- Construction (Summer 2016)
- Commercial Operation (Fall 2016)
  - Operation & Maintenance initially contracted with the EPC contractor
End Product