Ute Mountain Ute Tribe

COMMERCIAL SCALE RENEWABLE ENERGY PROJECTS

CONSIDERATIONS AND TRANSMISSION POTENTIAL

Scott Clow
Environmental Programs Director
DOE-WAPA Webinar March 30, 2016
Commercial Scale Feasibility Studies Undertaken to Date

• Commercial Scale Solar Site Feasibility
  – GIS assessment model including available information on cultural resources, water resources, visual resources, road access, proximity to transmission, slope, aspect, exclusion areas and additional related projects
  – Transmission Interconnect Analysis

• Preliminary work towards FERC licensing for a pumped-storage hydroelectric project

• Pre-Feasibility Interconnection Study for a 25 MW Solar Generation Facility on the Ute Mountain Reservation (WAPA and DOE)
Study Area
Results Site 1

Site 1: New Mexico

• 3,148 acres
• Very close or adjacent to proposed pumped hydro project
• Within 3 miles of a WAPA 345 kV transmission line
• Within 5 miles of the Shiprock and San Juan substations
• Access on established roads
• Close to established UMUT water sources (2 to 3 miles)
• Below mesa so less visible from UMU Tribal Park
• Presence of threatened or endangered species is somewhat uncertain
Results  Site 2

Site 2: New Mexico

- 2,685 acres
- Very close or adjacent to proposed pumped hydro project
- Within 5.5 miles of a WAPA 345 kV transmission line
- Approximately 8 miles to the Shiprock and San Juan substations
- Close to UMUT water sources (2 to 3 miles)
- On top of mesa so more visible to UMU Tribal Park and longer road access
- Transmission line connection must ascend 1200 feet to the top of mesa
- Presence of threatened or endangered species is somewhat uncertain
Sites 1 and 2
Sites 3 and 4
Site 5
Site 6

Tessera Solar
Ute Mountain Ute
Solar Feasibility Study

Suitable Solar Power Area
UMUT Lands
Exclusion Areas
Highway
Major Road
Local Road
Spring/Stream
Connector
Artificial Path
Stream: Intermittent
Wash
Lake/Pond
Wetland
Farm Boundary Poly
Central Pivot Irrigation

0 0.375 0.75 1.5 Miles
1:48,000

Site 6 (2,815 acres)
Site 6 (1,274 acres)

Ecosphere
Environmental Services
Date: 2/15/2011
Sites 7 and 8
Assessments in Study:

- General Information about Large Generation Interconnect Potential and Processes
- Interconnection locations and types, related costs
- Large Generator/Small Generator Cut-off (20mW)
- Interconnection Queue Processes
- Transmission Issues based on Total Transfer Capacity, Available Transfer Capacity, Points of Delivery and Points of Receipt and Types of Products
- Marketing Issues and Concerns
- Pumped Storage Hydroelectric Interconnect Options and Analysis (project size is a major variable)
Many Potential Customers and Opportunities in a Transition away from Coal

• Northern NM and 4 Corners “Common Bus”
  – 12 lines interconnected
  – 6 or more potential major customers
  – More Constrained to west and Southwest
  – Some Interconnect (and transmission) Options may require a WECC three-phase rating process to further evaluate potential and opportunities
Interconnect Analysis

- 3 Types of Transmission Interconnects from at Shiprock Substation 345 kV, 230 kV, 115 kV
  - 345 not feasible for smaller projects (20mW and under)
  - 230 feasible but not practical without build out plans to 100-150mW
    - Distance to interconnect is great for a small project to pay out
    - One Developer indicates this is feasible for a staged solar (PV) project - ~50mW stages
  - Analysis based on 25mW concept, without consideration of large scale pumped storage hydroelectric project or 100+ mW solar
  - ~$6m-$8m
- Plant Located Step up vs. Substation Step up 34.5 – 115 kV analyzed
Additional Interconnect Locations Considered

• San Juan Substation
  – Many lines to cross could complicate this
  – ~$14 million to upgrade and connect

• New tap/substation into 345 kV WAPA – Tri-State
  – Closest to potential generation location (2 miles)
  – ~$42 million
Summary

• Tribe has Land and other resources to build a substantial **Commercial Solar Facility and Pumped Storage Hydroelectric Generator**
  – Small generator potential with Farmington Electric and others
  – Large generator potential with many various customers
• Interconnect scenarios vary and present opportunities and challenges in planning and scaling
  – Project Scales and investment in interconnect
    • One Developer has a promising forecast on this if relationships can be revived and Tribe can input some initial capital
  – PPA and Queue dynamics in timeframes for marketing and building
    • Solar- short term
    • Pumped Storage – long term
Next Steps

• Tribal Renewable Energy Planners still want a local community scale demonstration project to engage Membership in understanding solar and hydroelectric projects
  – 1-2mW local project
  – Energy Deflection Structure rebuild for micro-hydro project
• Further research on Rocky Mountain Power transmission line interconnect in Colorado for commercial projects
• Tribe needs a specific staff person to lead these projects instead of an ad hoc committee

Thanks for listening 😊