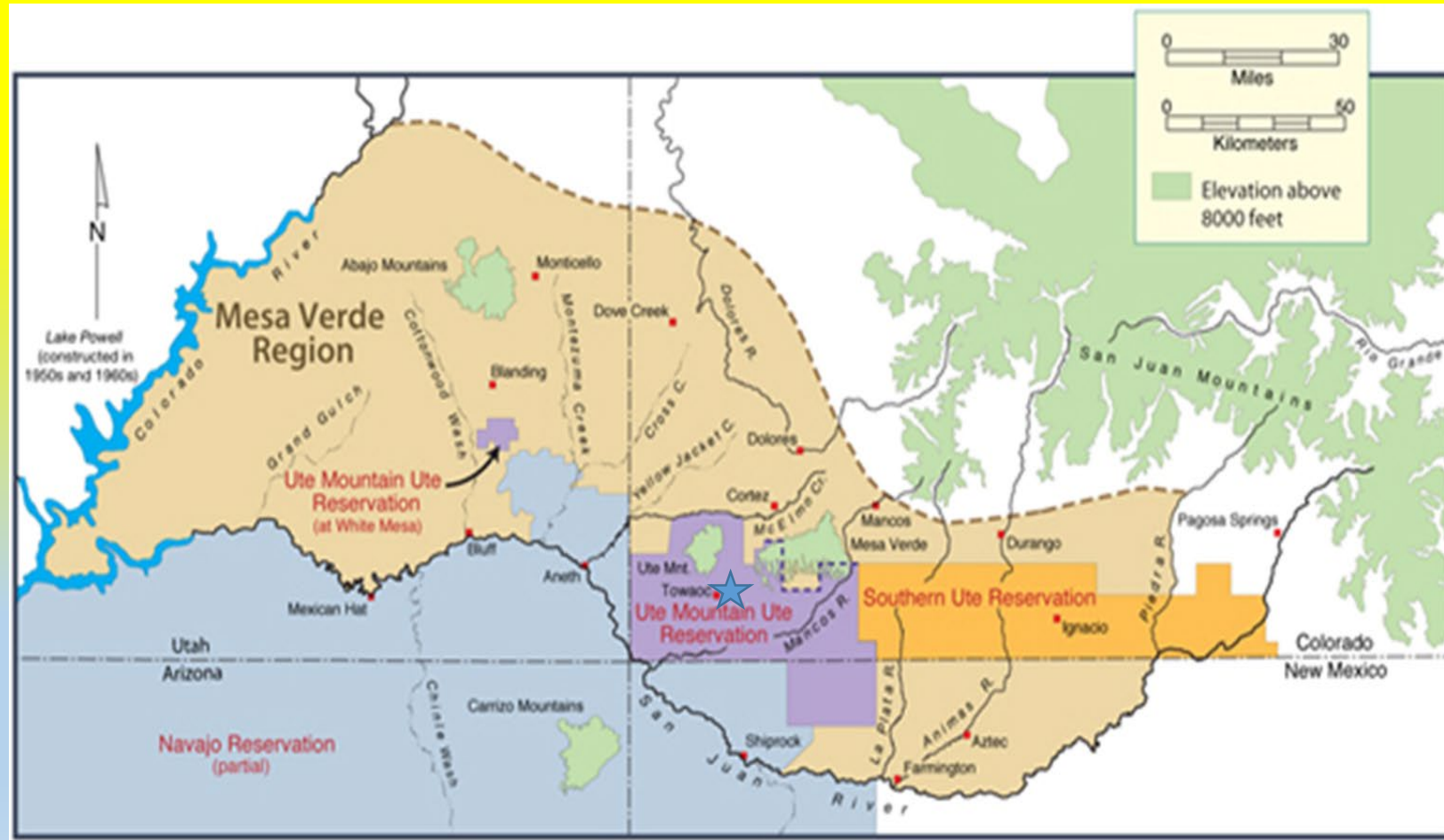


**Ute Mountain Ute Tribe
Towaoc, Colorado**

Ute Mountain Ute Tribe

Overview

- The Utes were Hunters & Gatherers and considered a war-like people
- The Utes, originally were seven (7) Bands situated in Colorado & Utah
- The Weeminuche Band is now known as the Ute Mountain Ute Tribe
- 2,500 Tribal Members
- Colorado & Utah Residence
- 55 Years of Age Life Expectancy
- 26 Years Median Age
- 582,321 acres Total Trust & Tribal Fee Lands (541,209 Trust Land & Tribal Fee Lands 41,112)

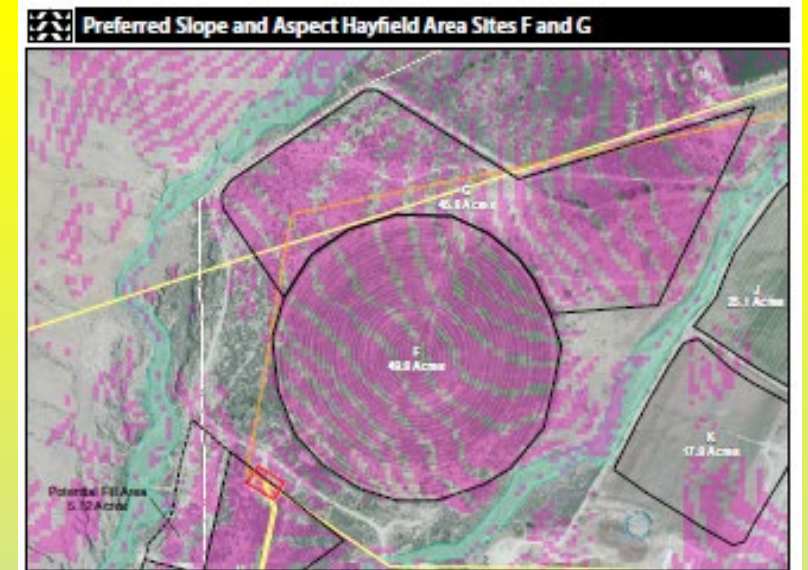


Master Sustainability Plan

- Land
- Hydro
- Solar



Tribal Administration Building
Courtesy Jim Rapp



- Goals – start small, then go big
- Solar Installations on government and housing buildings
- 2014 Feasibility Study – DOE Funded Planning Grant
- START Grant and Strategic Planning with Sandia Labs- Sandra Begay et al.
- Energy Efficiency – DOE funded EERE grant for energy audits and small facility solar

Project Overview



High Level Goals & Outcomes:

- Actualize phase I planning of 2014 Feasibility Study; deploy 1 MW array.
- Provide paid job skills training for Tribal members (intern positions) in solar installation, maintenance and repair, and additional Grid Alternatives led training through TERO, Temporary Worker Program, and for volunteers.
- Off-set both a substantial number of buildings, and substantial percentage of Tribal load (over 10%) with clean solar power, eliminating between 1,515 tons of greenhouse gas emissions annually.
- Community solar bill credits to be negotiated with utility; 20% enterprise, 57% residential, 33% government buildings.* *Modified during contracting with Grid Alternatives
- Set UMUT on a path to energy independence; save tribe an estimated \$172,200 in energy expenses annually and save an estimated \$3,444,000 over the life of the solar system.** ** Subject to interconnection agreement

Project Participants

- Engineering, Procurement, Construction contractor is GRID Alternatives
 - Leading installation
 - Supporting Tribal workforce goals
 - Supporting leveraged dollars by donating developer fee
- Local Electric Company – Empire Electric
- Engaged Tribal Enterprise: Weeminuche Construction Authority
 - Site work
 - Possible A/C Electrical Contracting



Project Overview (continued)

Funding:

DOE	\$973,820
UMUT Match	\$973,820
Leveraged Dollars	<u>\$216,404</u>
Total Budget:	\$2,164,044



Complex interconnection

- Behind the meter(s) of large enterprise loads along 160/491
- Currently no single load big enough to allow 1 MW interconnection; coupling a number of loads behind one meter is current strategy
- Likely to establish a master meter with O&M relationship negotiated with the local utility to handle current underground lines and transformers

Project Status

- Project Manager Hired!
- James Jensen
 - Recently Designed Similar Project for Southern Ute Tribe
 - Hit the Ground Running
 - Successfully Navigating all Partners and Contractors and DOE grant



Project Status

Contracting:


- Ute Mountain Ute Tribe – Grid Alternatives
- Grid Alternatives – Circuitous Engineering
- Grid Alternatives – Trautner Geotechnical
- Grid Alternatives – Weeminuche Construction (pending)
- Ute Mountain Ute TERO – Grid Alternatives, Subs

NEPA:

- DOE issued a Categorical Exclusion
- Location was changed, DOE maintained Cat-Ex
- BIA has indicated it will concur with DOE Cat-Ex
 - Documentation Pending

DOE Grant Modifications

Thank You Jami and Tweedie!!!



REQUEST FOR PROPOSALS

Ute Mountain Ute Project
Engineering & Design Scope of Work

Scope of Work & Deliverables

- Provide electrical engineering support regarding preferred array siting
- Participate in-person in one or more Customer Options Meeting(s) with Empire Electric Association (EEA)
- Determine financial considerations and potential drawbacks for siting and both interconnection options listed below:
 - o Option 1: a 12.47kV (primary) interconnection behind the casino's meter. Evaluation of this option should also include the following considerations:
 - How to best measure PV generation to quantify and benefit appropriate parties, excluding the casino; and
 - Whether this option could facilitate future interconnection of energy storage
 - o Option 2: a 480V (secondary) interconnection behind the casino's meter. Evaluation of this option should also include the following considerations:
 - How to best measure PV generation to quantify and benefit appropriate parties, excluding the casino; and
 - Whether this option could facilitate future interconnection of energy storage

7/25/2017

U.S. DOE: Office of Energy Efficiency and Renewable Energy - Environmental Questionnaire

PMC-ND
(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION



RECIPIENT: Ute Mountain Ute Tribe

STATE: CO

PROJECT TITLE : Ute Mountain Ute Tribe Community Scale Solar Initiative

Funding Opportunity Announcement Number DE-FOA-0001660 Procurement Instrument Number DE-IE0000095 NEPA Control Number GFO-0000095-001 CID Number

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

Project Status

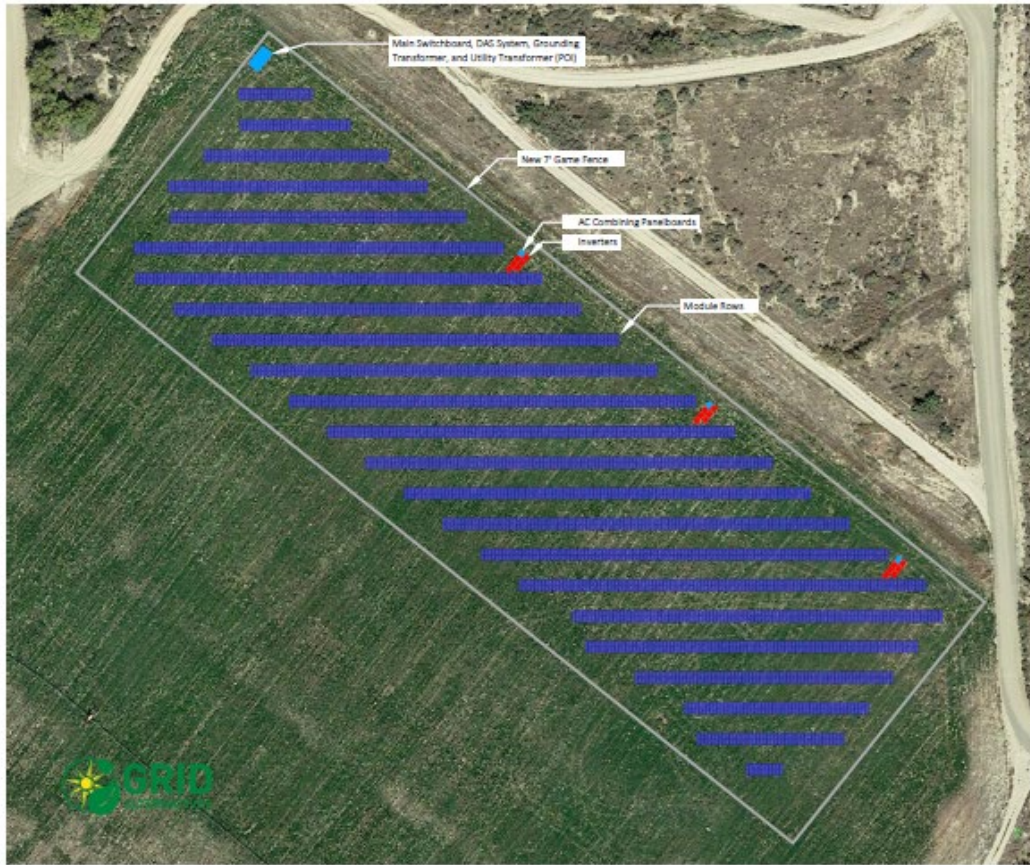
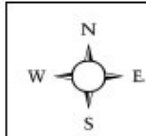
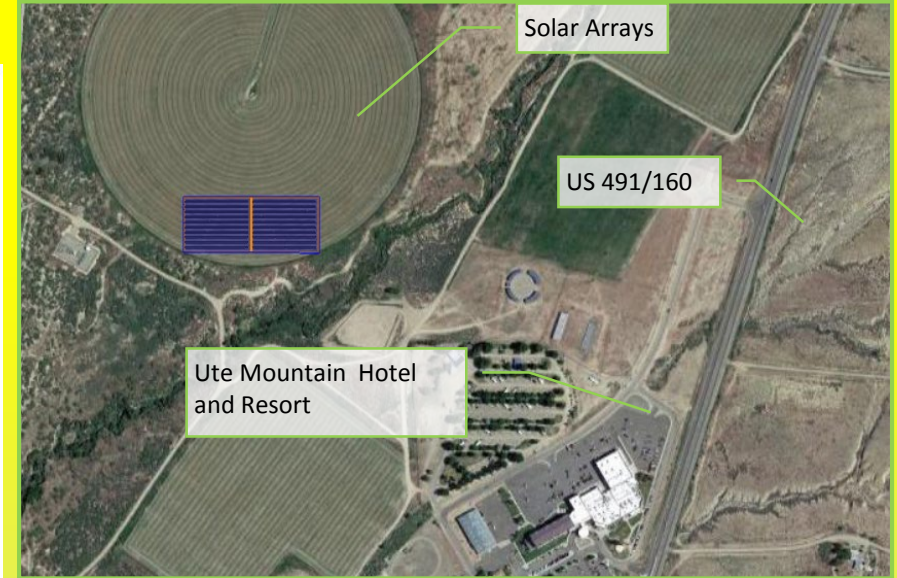
- Geotechnical Analysis Completed in Fall of 2018
- Primary Panel Procurement undertaken early in 2018 due to impending import tariffs (Advantage with Grid Alternatives)
- Completing Financial Modeling in December 2018
- Financial Modeling to Influence Interconnection Agreement Proposal with Electric Cooperative
- Visualizing workforce plan
- Developing schedule
 - Earliest ground breaking/construction- January 2019



Project Location – Changed in 2018



Previous Plan



System Details
 System Size: 1.229 MW-DC, 0.960 MW-AC
 Modules: (3,840) Telesun TP672M 320W
 Inverters: (16) Solectria PVI 60TL

Estimated Generation: x,xxx MWh/year

Total Site Perimeter: 2,252'
 Total Site Area: 5.54 acres



Grid Alternatives
 Colorado
 1120 W. 12th Ave.
 Denver, CO 80204

EMUT a - Community Solar
 Address: 3 Westminster Dr., Torrance, CO 80188
 Parcel #: 000101197 N
 Lot: 1008-68944 W

Preliminary Design

Site Plan

ISSUE
 Issued: Only Asset
 Issues: 10/10/2018
 Date: No Scale

REVISIONS

NO.	DATE	BY

A

1.0

Project Overview Continued

- Conceptual Schematic
- Interconnection Decisions Pending

System Specifications

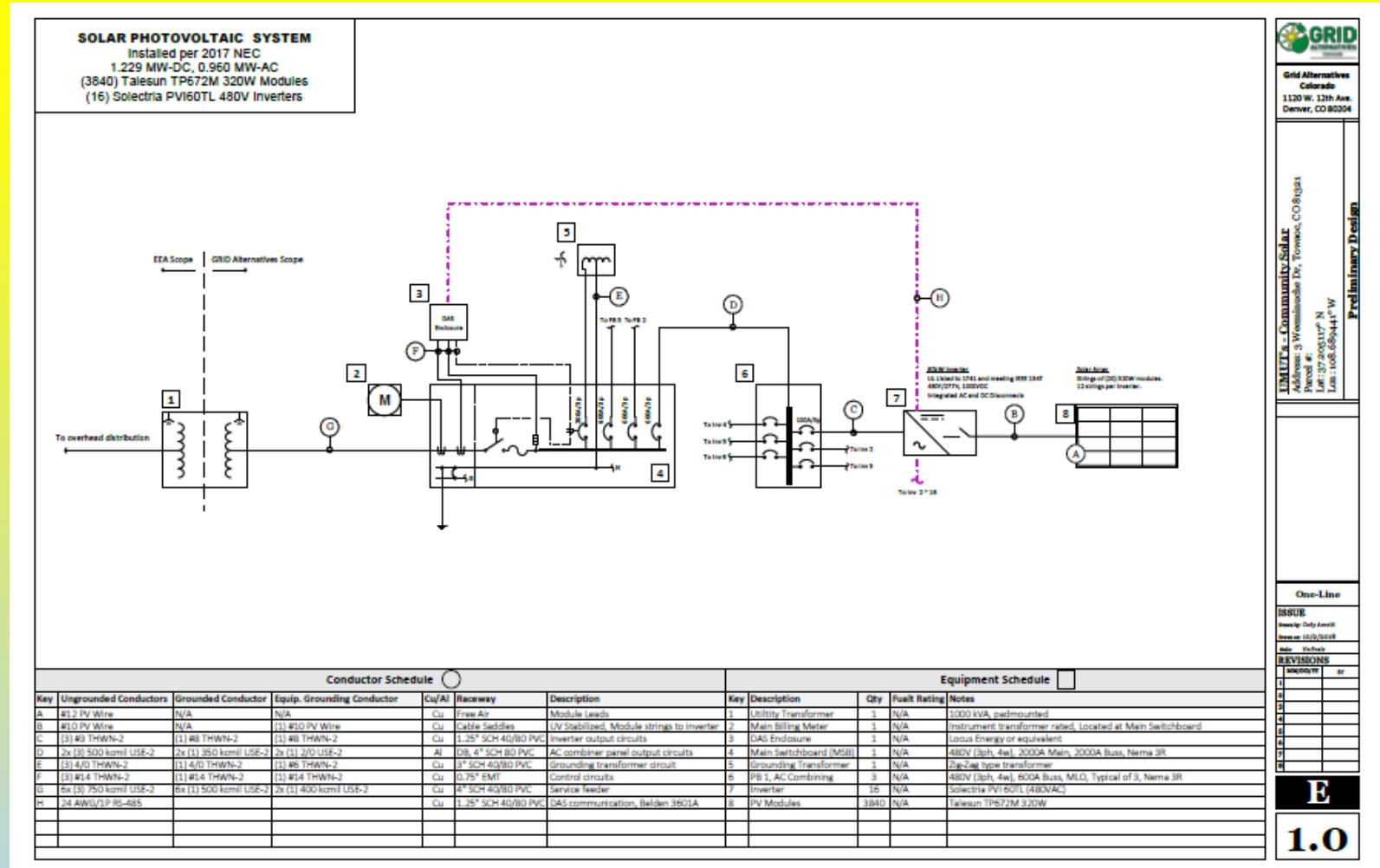
System Size: 1.229 MW-DC, 0.960 MW-AC
 Modules: (3840) Talesun TP672M 320W
 Inverters: (16) Solectria PVI 60TL
 Racking System: Solar FlexRack G3X
 Data Acquisition: Locus Energy
 Est. Generation: x,xxx MWh/year

Applicable Codes & Standards

2017 National Electric Code
 2015 International Building Code

Design Criteria

Risk Category: I
 Wind Speed: 90 mph (ASCE 7-10)
 Exposure: C
 Snow Load: 30psf
 High Temp (ASHRAE 2%): 34°C
 Low Temp (ASHRAE Extreme Low): -19°C



Project Overview Continued


➤ Interconnection Decisions

➤ Financial Modeling Drivers

- Empire Electric “Large Commercial Customer” Pricing Scenario
 - Influences Demand Charges- not simple fixed rate
 - Reduces the Credit Value of Some of the Meters/Customers
 - Affects Bill Credit to Residential Customer Price Point
 - Fixed Panel vs. Single Axis Trackers

➤ Interconnection Scenarios

- Tri-State Power Supplier, NTE 1MW & Policy 115
- 1 Master Meter-Infrastructure Purchase, Existing Price Structure
- Interconnect at Largest Customer Meter, Multiple Meters
- Propose “Outside the Box” Price Structure with Master Meter-Infrastructure Purchase
- Final Decision for proposal by Tribe VERY SOON



TRI-STATE
Generation and Transmission
Association, Inc. **Board of Directors Policy**

Subject: MEMBER SYSTEM DISTRIBUTED GENERATION POLICY			Policy No: 115
Original Issue: 1-9-02	Last Revised: 5-3-17	Last Reviewed: 5-3-17	Page 1 of 10

OBJECTIVE

The Wholesale Electric Service Contract between Tri-State and the Member Systems allows each Member System the option of using generation resources they own or control to serve up to five percent (5%) of the Member System's total load. This policy describes how this option will be implemented. The five percent (5%) represents a right, not an obligation of the Member System.

It is intended that the implementation of the 5% option should minimize subsidization between Member Systems that choose to implement this option and Member Systems that do not.



Empire Electric Association, Inc.
801 N. Broadway P.O. Box K Cortez, CO 81321-0676 Phone (970) 565-4444
www.eea.coop

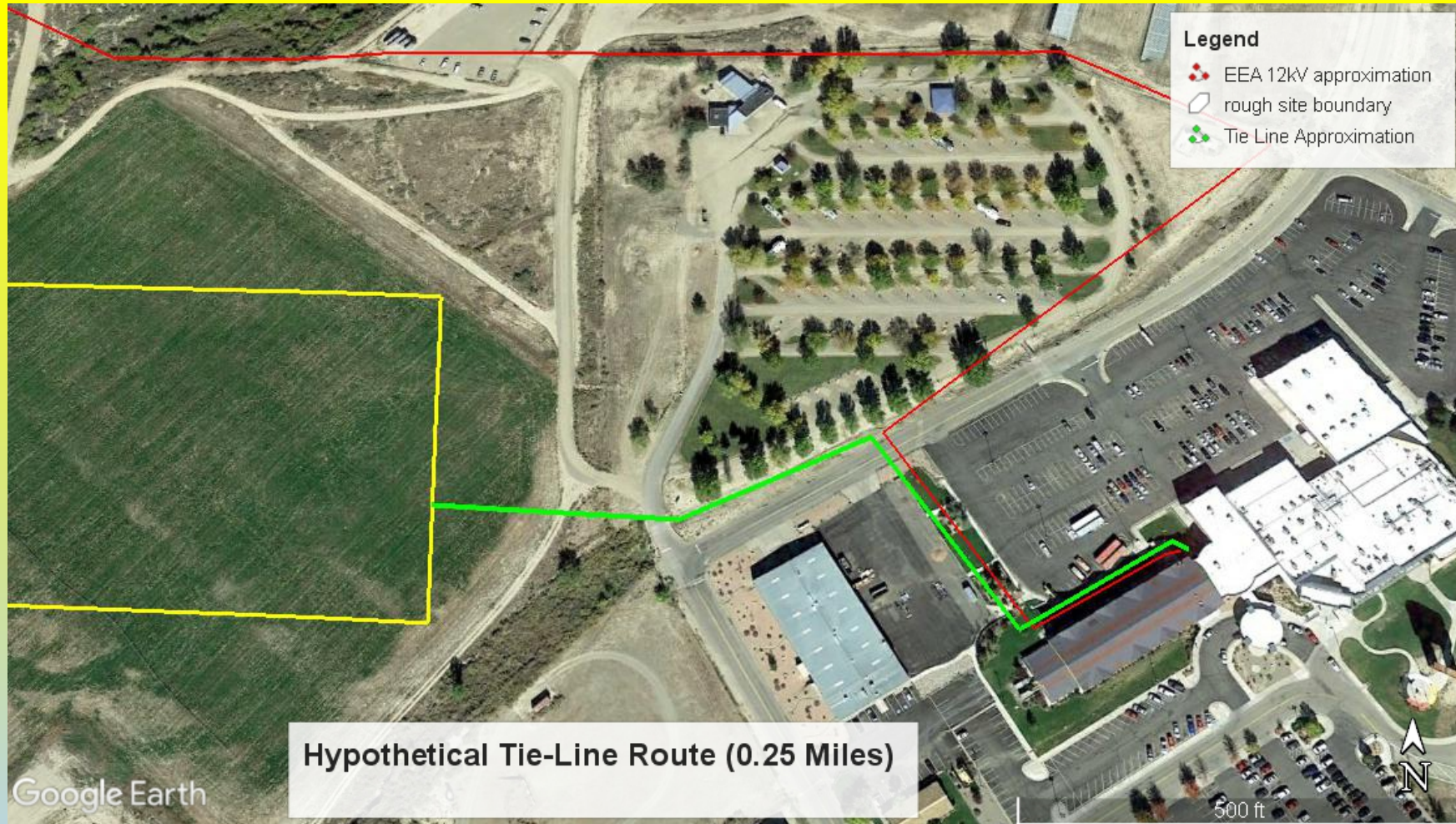
Distributed Energy Resource Interconnection Agreement

This Agreement is made and entered into this ____ day of _____, 20____, by and between EMPIRE ELECTRIC ASSOCIATION, INC., 801 North Broadway, Cortez, Colorado (“Empire”) and _____ (“Customer”) whose address is _____ (“Customer’s Address”). Empire and the Customer may be referred to herein individually as a “party” or collectively as the “parties.”

- 1) **Purpose.** This Agreement is required for Customer to interconnect a customer-generator (“Generator”) to Empire’s electrical grid. If the Generator is to be net metered behind an existing load, this agreement also allows Customer to receive service under Empire’s Net Metering Rate Schedule.
- 2) **Term.** This Agreement shall remain in effect as long as the Customer’s Generator is interconnected to Empire’s electrical grid. The Customer’s Generator shall be considered a fixture and shall be attached to the land located at the Customer’s Address.

Project Overview Continued

➤ Interconnection Decisions



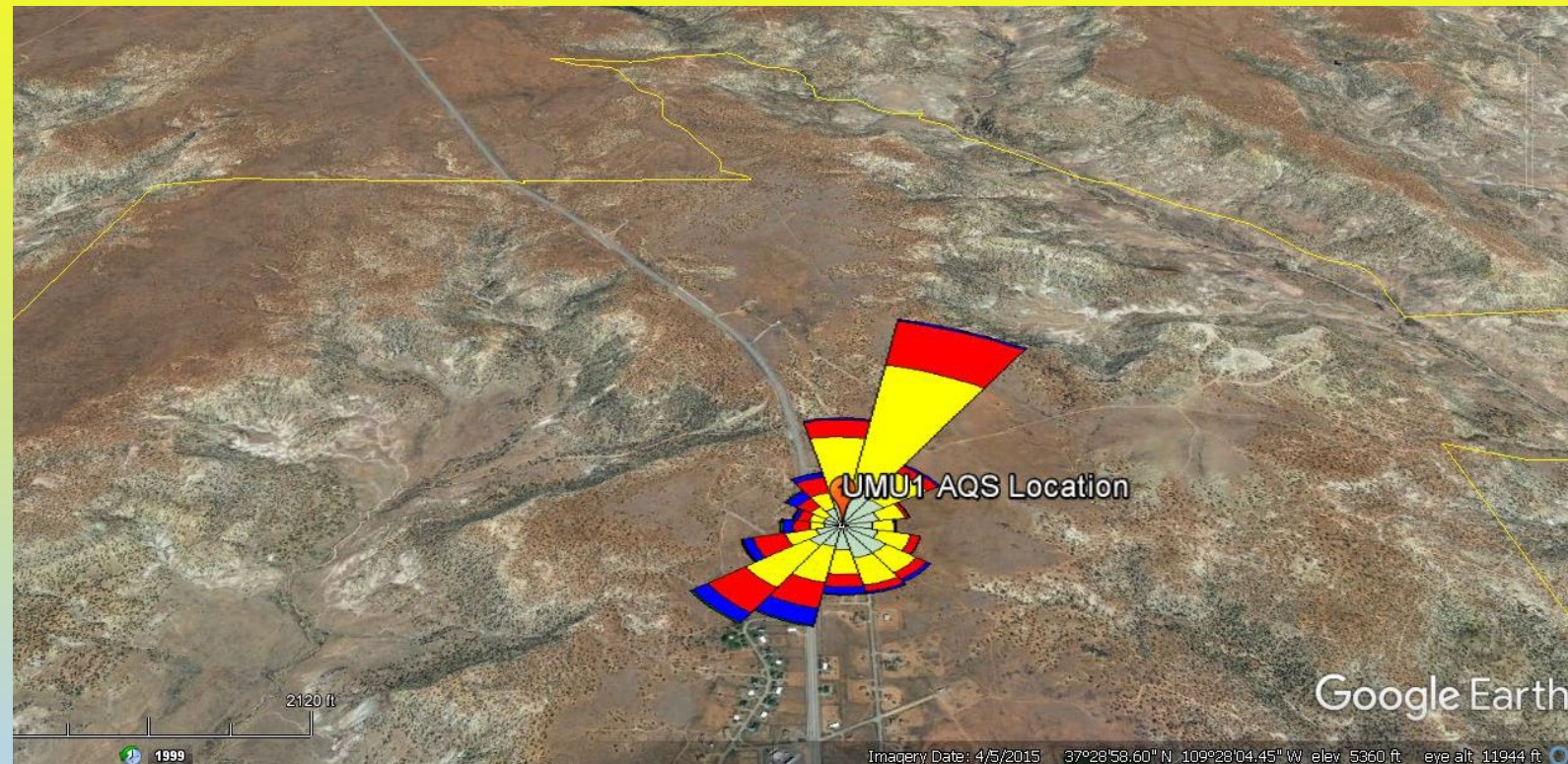
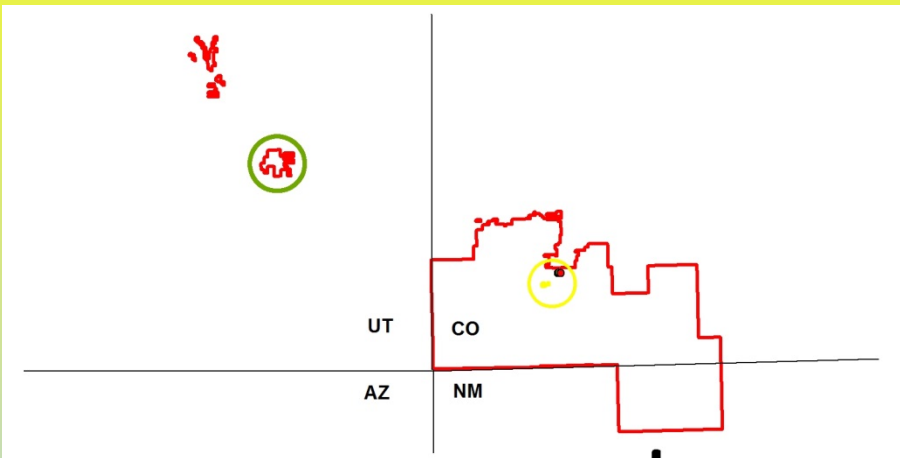
Future Phases of Community Solar

- Additional kW – MW at current site
- Brownfields to Greenfields
- Additional Facility Scale Offsets



Future Phases of Community Solar

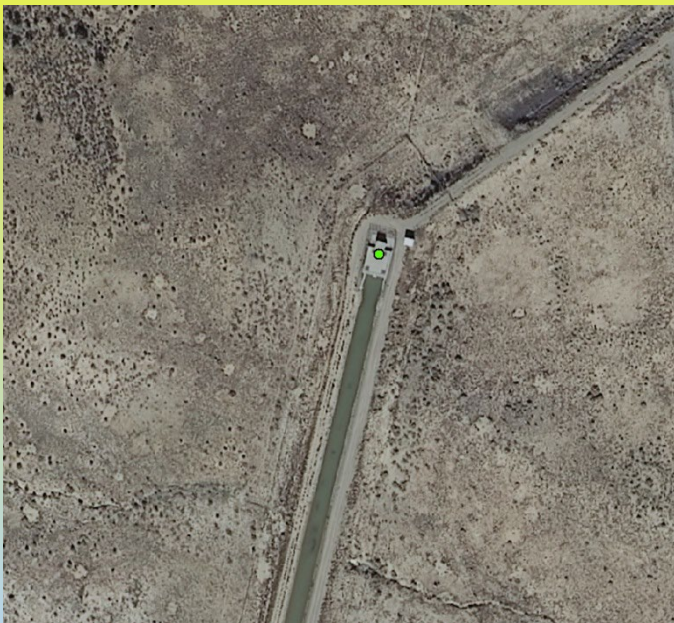
- White Mesa Community Solar
- White Mesa Wind



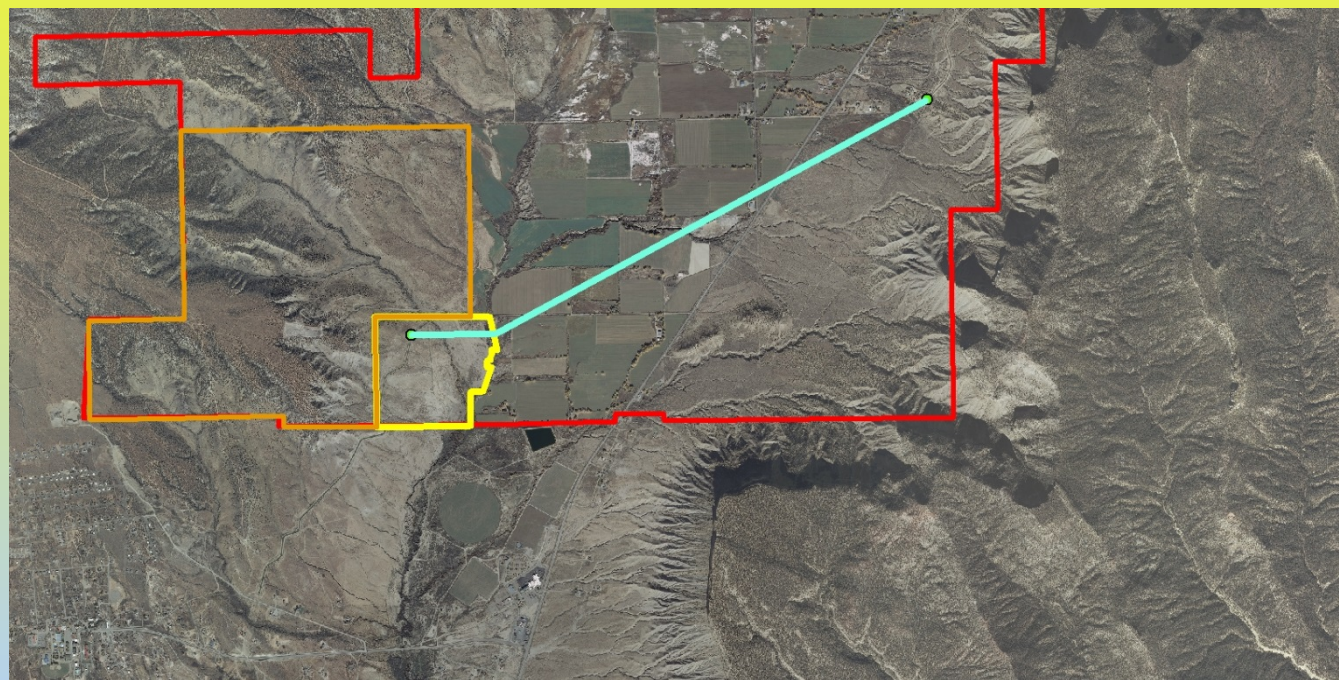
Renewable Energy Future for Tribe Commercial Opportunities



- Micro-Hydroelectric Project
 - 1.4 MW during irrigation season
 - >7000 MW-hours annually
 - Partners: Dolores Water Conservancy District, Tri-State Energy Power Purchase



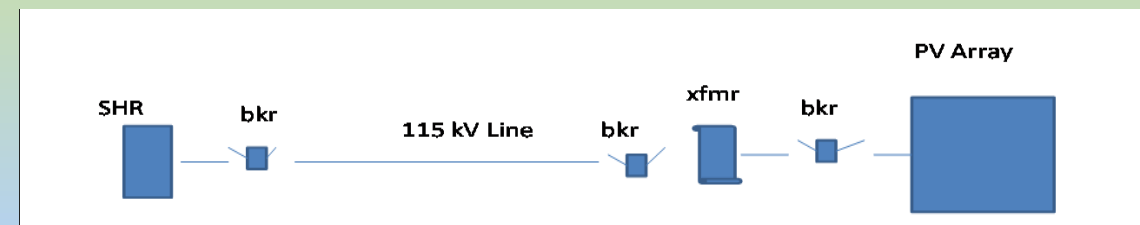
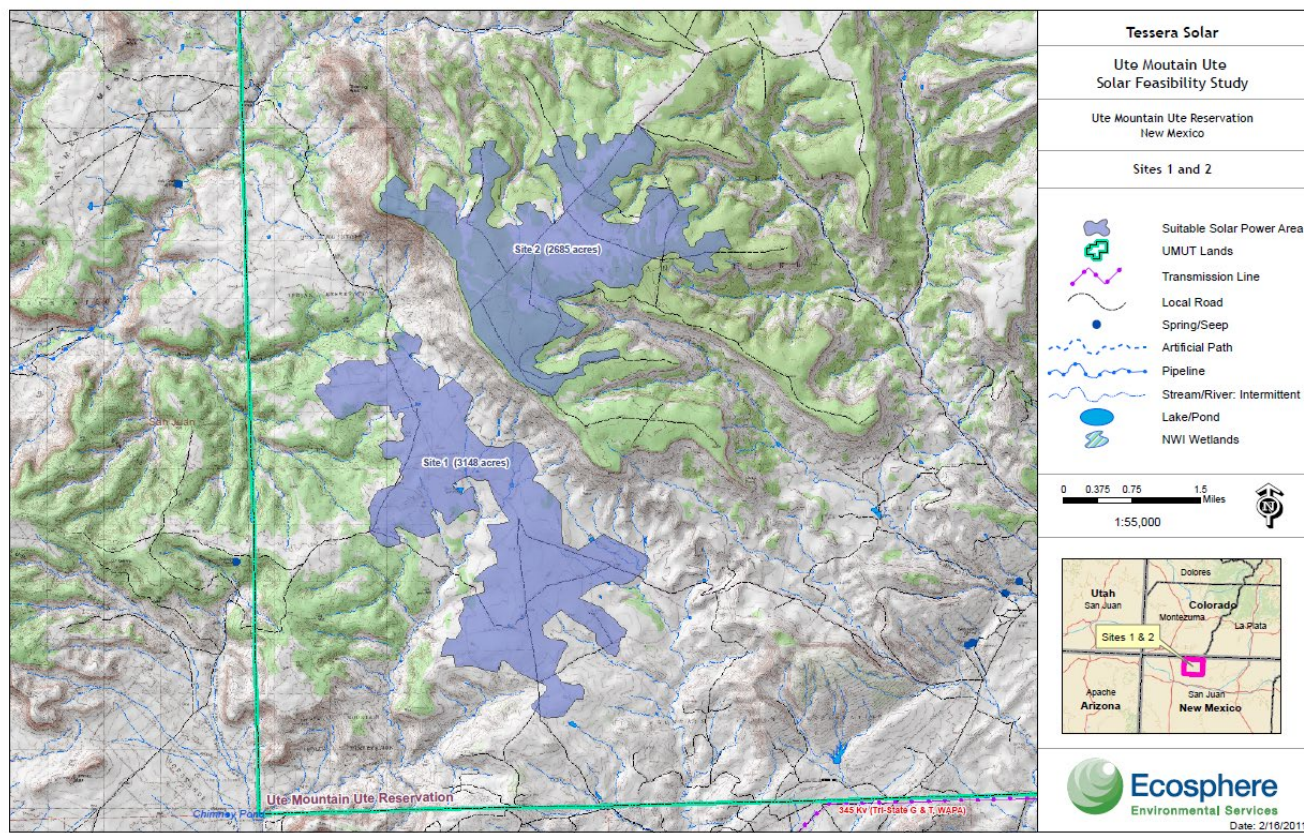
Towaoc Highline Canal
Courtesy Steve Albert



Large Scale Commercial Renewable Energy



- Commercial Solar
- Energy Storage



Challenges to Get Here

- Interconnection Scenarios More Complicated than Originally Anticipated
- Financial Modeling
- NEPA – Multi-agency
- Geotechnical (may not be severe)

- The Big Question from Tribal Members: “What Happened to that Solar Project?..”

- Thanks for Your Attention

