



U.S. DEPARTMENT OF
ENERGY

Office of
Indian Energy

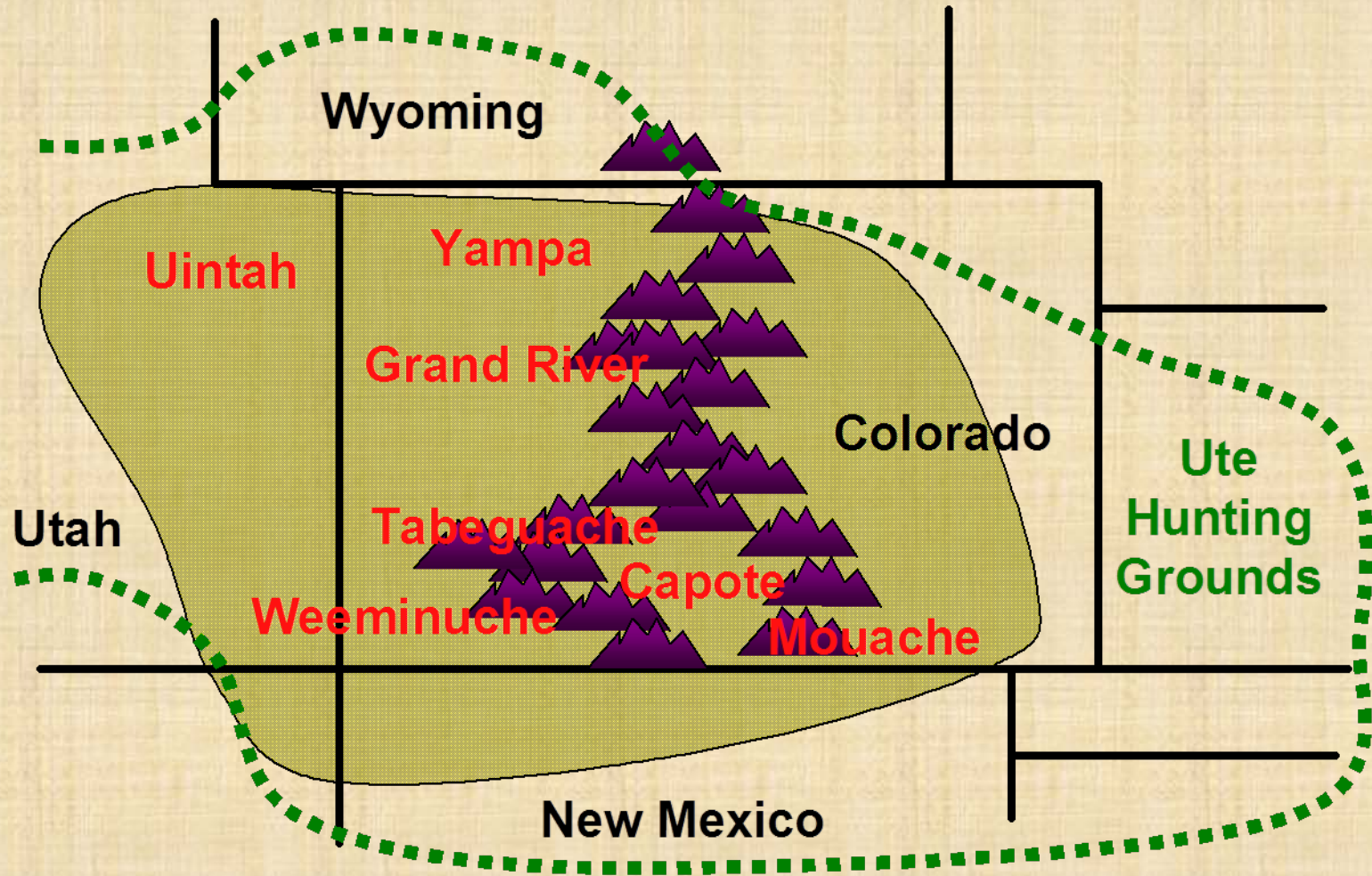
Oxford Solar Project

*Presented by
Brent Brown, Construction Project Manager*



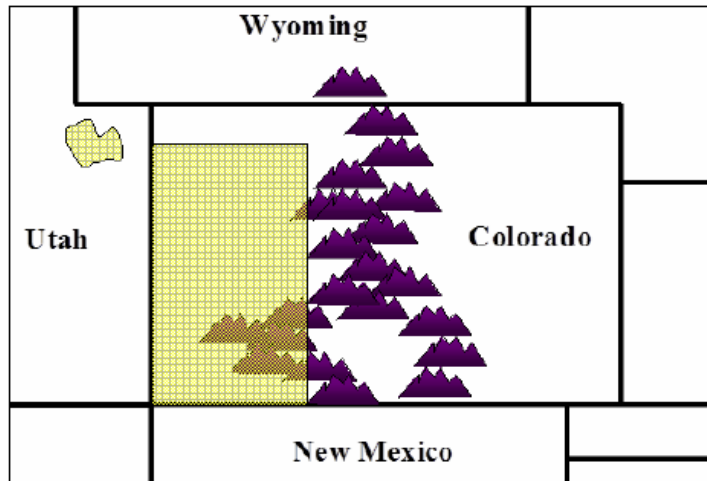
*Southern Ute Indian Tribe
Ignacio, Colorado
November 13th, 2017*

Historic Ute Land

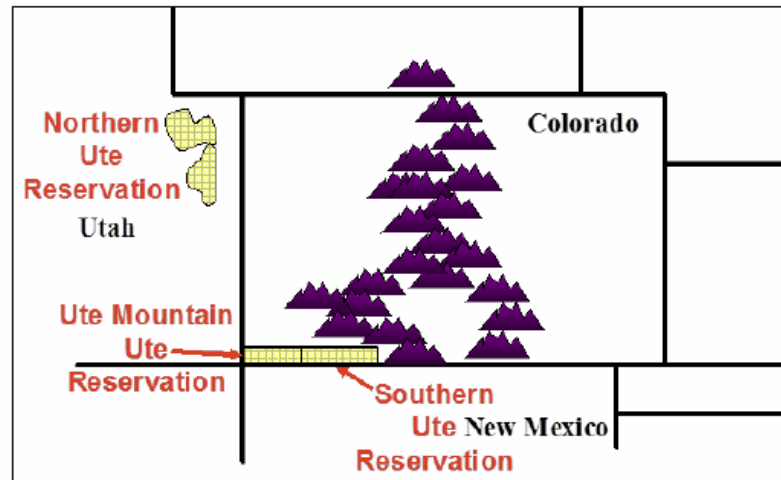
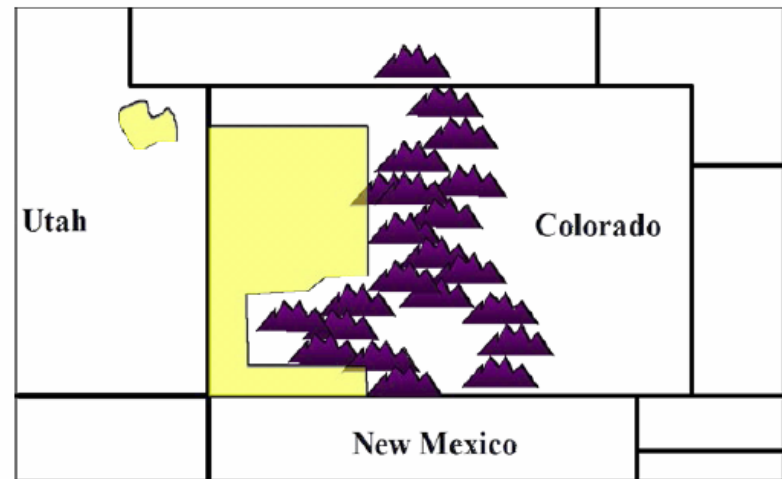


Ute History

Original Ute Reservation
in 1868



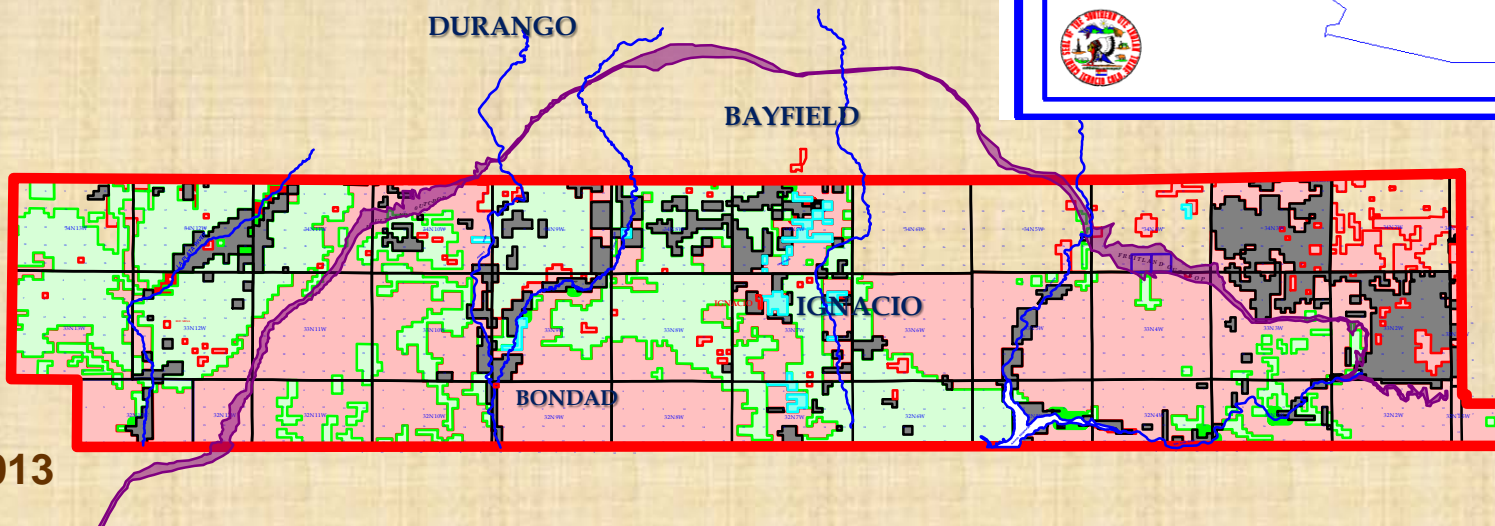
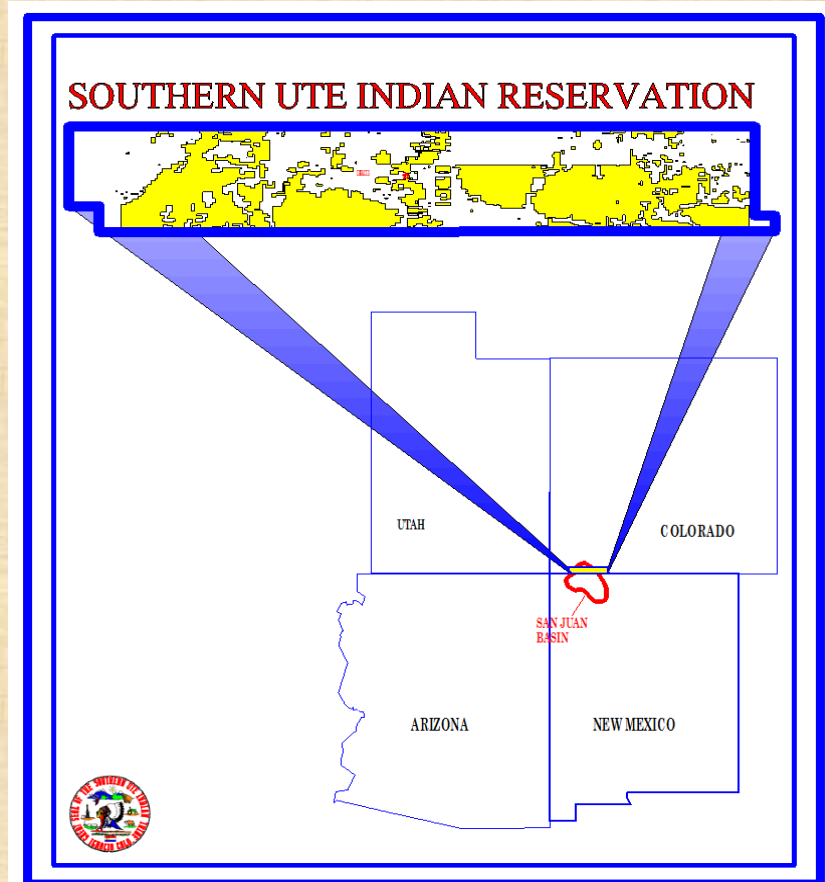
The Ute Reservation after the
Brunot Cession in 1873



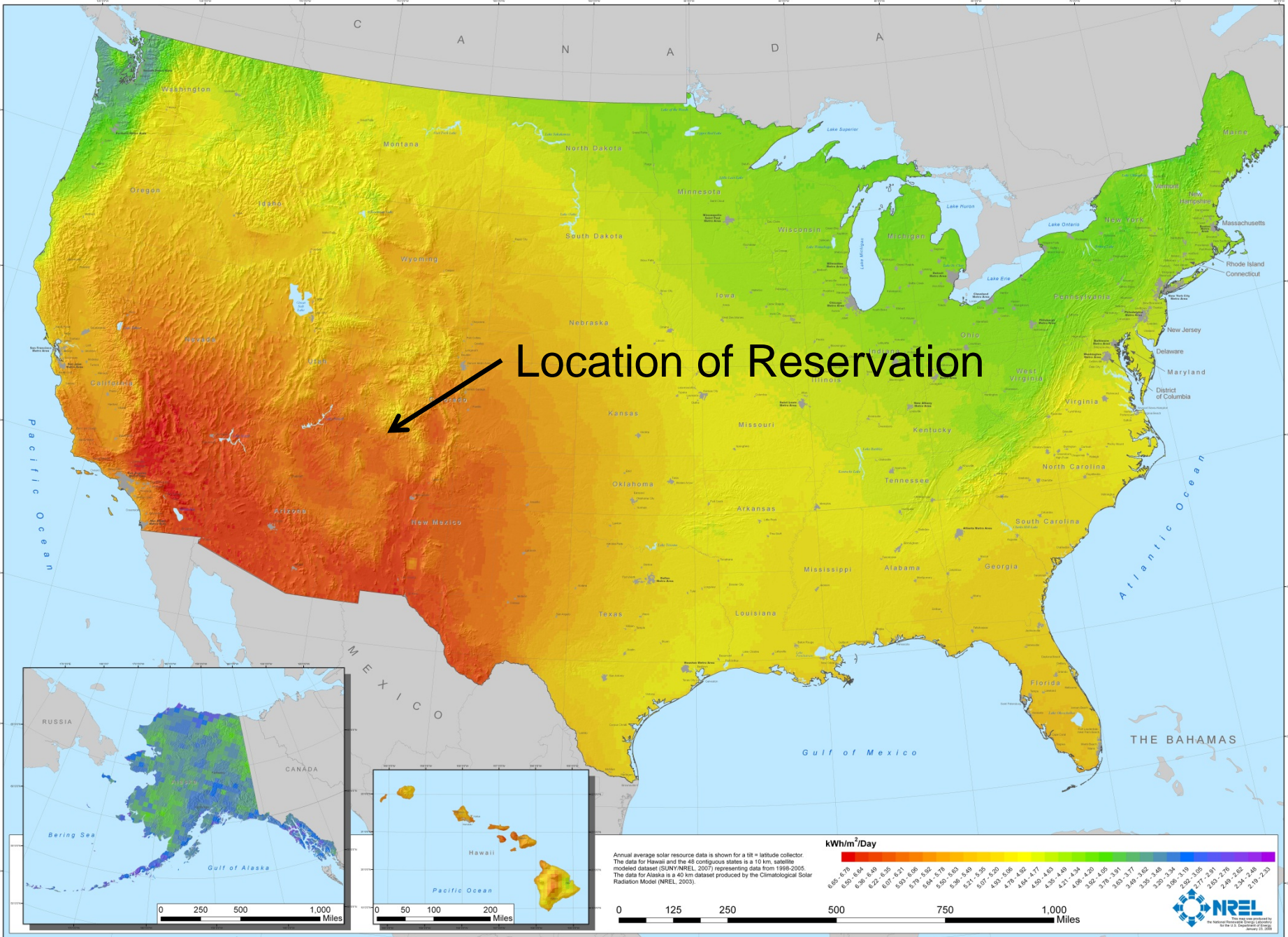
Current Ute Reservations

Southern Ute Statistics Today

- **Tribal Members:** 1,500
- **Reservation:** 1,064 square miles
- **Employment:** The Tribe is the largest employer in La Plata County with more than 1,300 employees.



United States Photovoltaic Solar Resource : Flat Plate Tilted at Latitude



Solar Feasibility Study

Conducted a broad study of solar energy options (2012-2013)

➤ Goals

- Identify Lands best suited for solar PV projects
- Identify if Utility and/or Commercial scale solar is currently viable on the Reservation
- Identify needed conditions for economically viable projects

➤ High level analysis of solar energy opportunity within Reservation boundaries

- Utility Scale – wholesale energy, ground mount, greater than 1MW
- Commercial Scale – net metered, roof mount, less than 1MW

➤ Solar photovoltaic (PV) technology

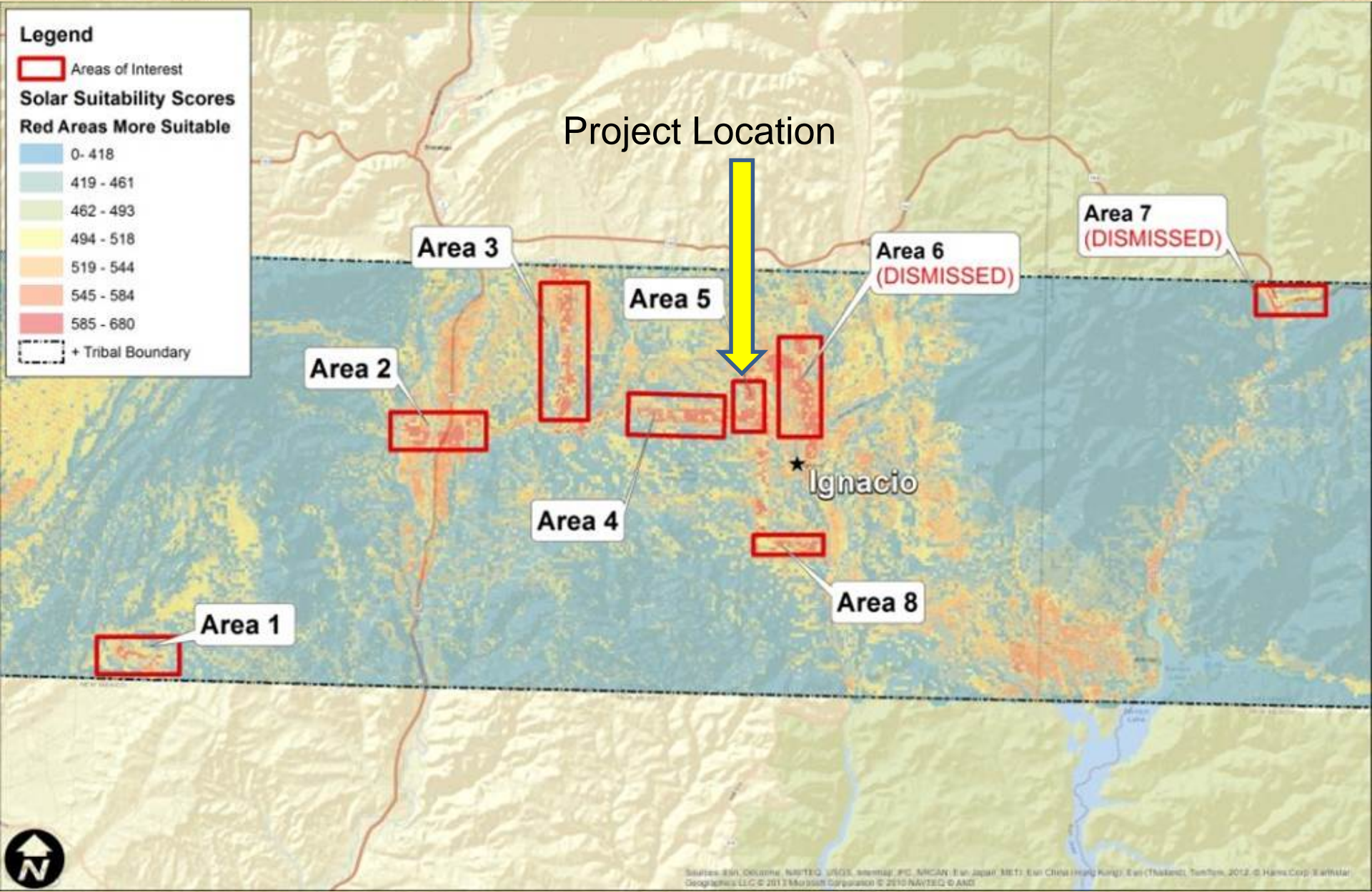
- Low Technology Risk
- Rapid Price Decline
- Widely Deployed

Solar Feasibility Study

Identified most suitable areas for utility scale solar

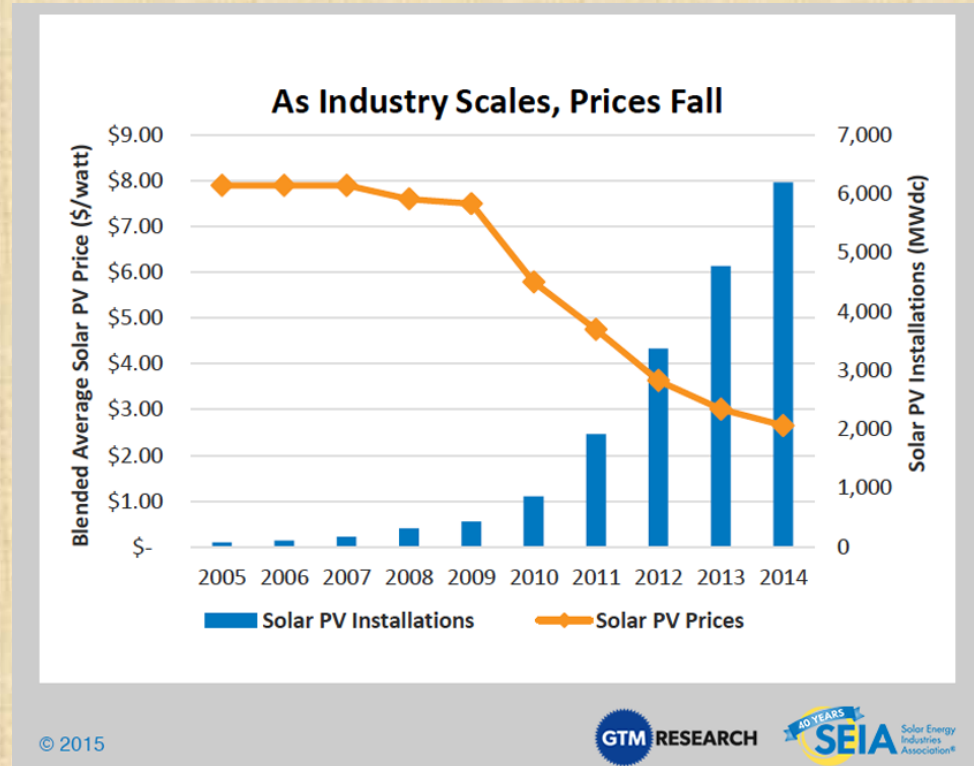
- Utilized site based parameters that impact energy generation, development cost and/or development risk
 - Proximity to transmission infrastructure
 - Proximity to roads
 - Topography (slope, aspect and flood plains)
 - Solar resource
 - Land Ownership
 - Habitat for threatened and/or endangered species
 - Others
- Utilized GIS data and developed parameter weighted scoring methodology to compare sites (Solar Suitability Score)
- Collected data and mapped all Reservation lands
- Selected 8 most promising areas

GIS Based Solar Suitability



Does Solar Make Sense?

- Part of Tribe's overall plan to diversify their businesses
 - Decision started the process in 2006
- We have the solar resource
- The technology became economically feasible
- From 2009-2014 Solar costs dropped over 60%
- Grant was critical to the project



Permitting / Land Access

➤ Environmental

- NEPA - Eligible for a Categorical Exclusion due to early farming and ranching activity which disturbed the land

➤ Geotech

- Utilized an outside contractor and took extra care in this evaluation

➤ Land Lease and Rights of Way

- Right to use and access the land (e.g., Trust land)
- Complexities
 - BIA water ditches
 - Private property
 - Utility rights of way and infrastructure
 - Oil and gas infrastructure

Utility Negotiations

Discussions included:

➤ **Interconnection Agreement**

- Negotiated with local electric utility
- Defines the terms under which the project can connect to the grid

➤ **Power Purchase Agreement**

- Defines the rates the project will be paid for the energy provided to the buyer
- Power purchased at \$0.072/kWh



Construction Overview

- Finalize Design (Summer of 2016)



- ~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

Construction Overview

Construction Started (Fall 2016)



Construction Overview

Underground Conduit



Pile Structures



Inverter Assembly



Construction Overview

- Energize and Test the Array
- Commission the System
- Commercial Operation (Spring 2017)



Construction Overview



Site Stabilized



Tri-State Installing Monitoring Equipment



Monitoring Program

Southern Ute

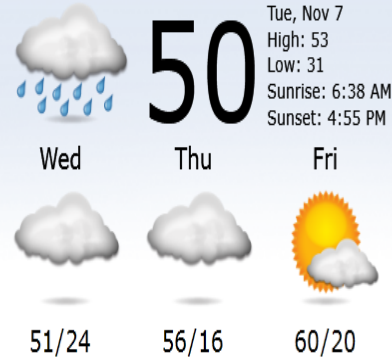
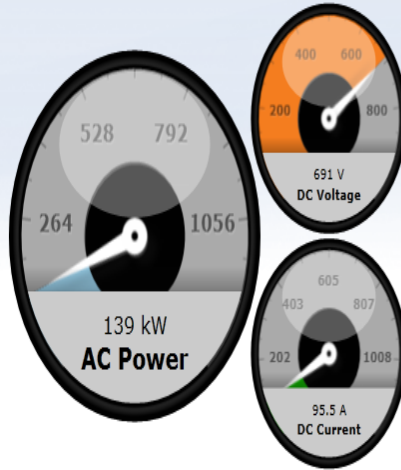


- Quick Links
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 - Portfolio
 - Marketplace
 - Help
 - Support
 - About
 - Log Out
- Live View
 - Site Info
 - Inverter
 - Weather
 - Production Meter
 - Environment
 - Trackers
 - PV Hierarchy
- Data
 - Data Download
 - Analyzer *New*
 - Timeline
 - Summary
 - Map
 - Scheduled Reports
 - Report Wizard
 - Rule Tool
- Maintenance
 - Site Setup
 - Hardware
 - Site Alerts
- My Account
 - Settings

Sect.26, T-34N, R-8W
LaPlata County
Durango, CO 81137
USA

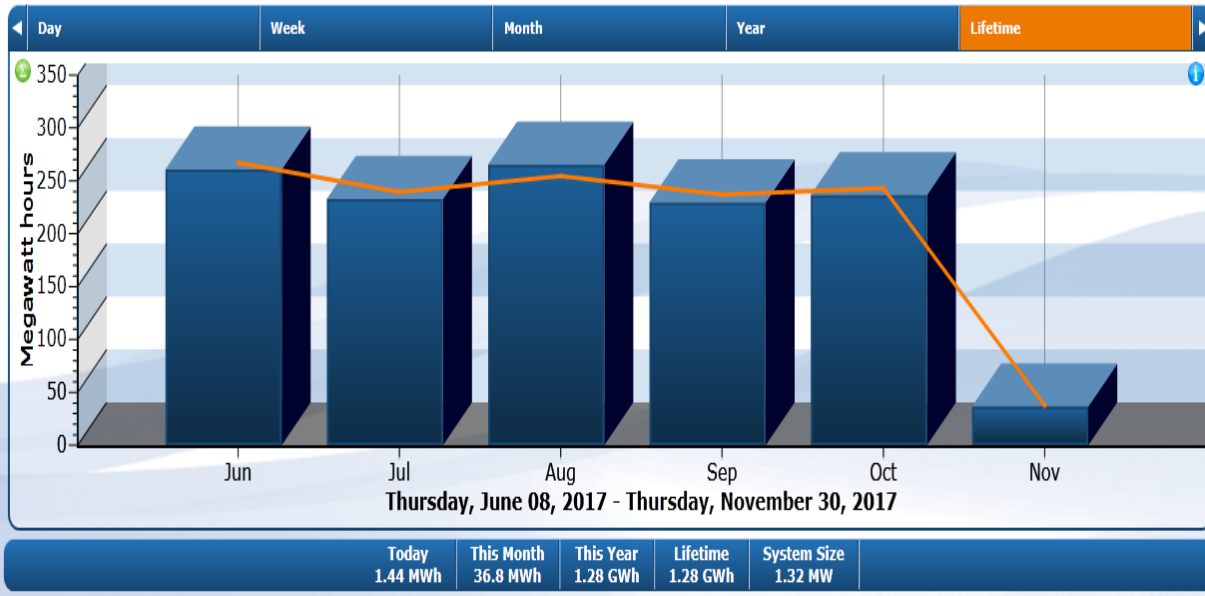
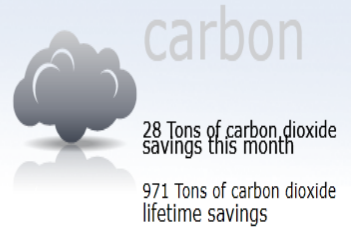
Acquisite:
<http://166.211.230.21:8080/setup/>

Devices	
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	Cell Modem Last update: 8 minutes ago
	Production Meter(MarkII) 139 kW Last update: 8 minutes ago
	Solectria 36TL #1 5.1 kW Last update: 9 minutes ago
	Solectria 36TL #2 5.2 kW Last update: 9 minutes ago
	Solectria 36TL #3 5.1 kW Last update: 9 minutes ago
	Solectria 36TL #4 5.3 kW Last update: 9 minutes ago
	Solectria 36TL #5 5.2 kW Last update: 9 minutes ago
	Solectria 36TL #6 5.1 kW Last update: 9 minutes ago
	Solectria 36TL #7 5.1 kW Last update: 9 minutes ago



Tuesday, November 07, 2017 2:33 PM

Sun azimuth: 224.2 elevation: 23.7
[View MiniSite...](#)



Dedication Ceremony July 24th, 2017



Tribal Council Members: Kevin Frost, Lorelei Cloud, Adam Red, Tyson Thompson

Photo courtesy of the Southern Ute Drum - Ignacio, CO

Governor Hickenlooper Inspecting the Array

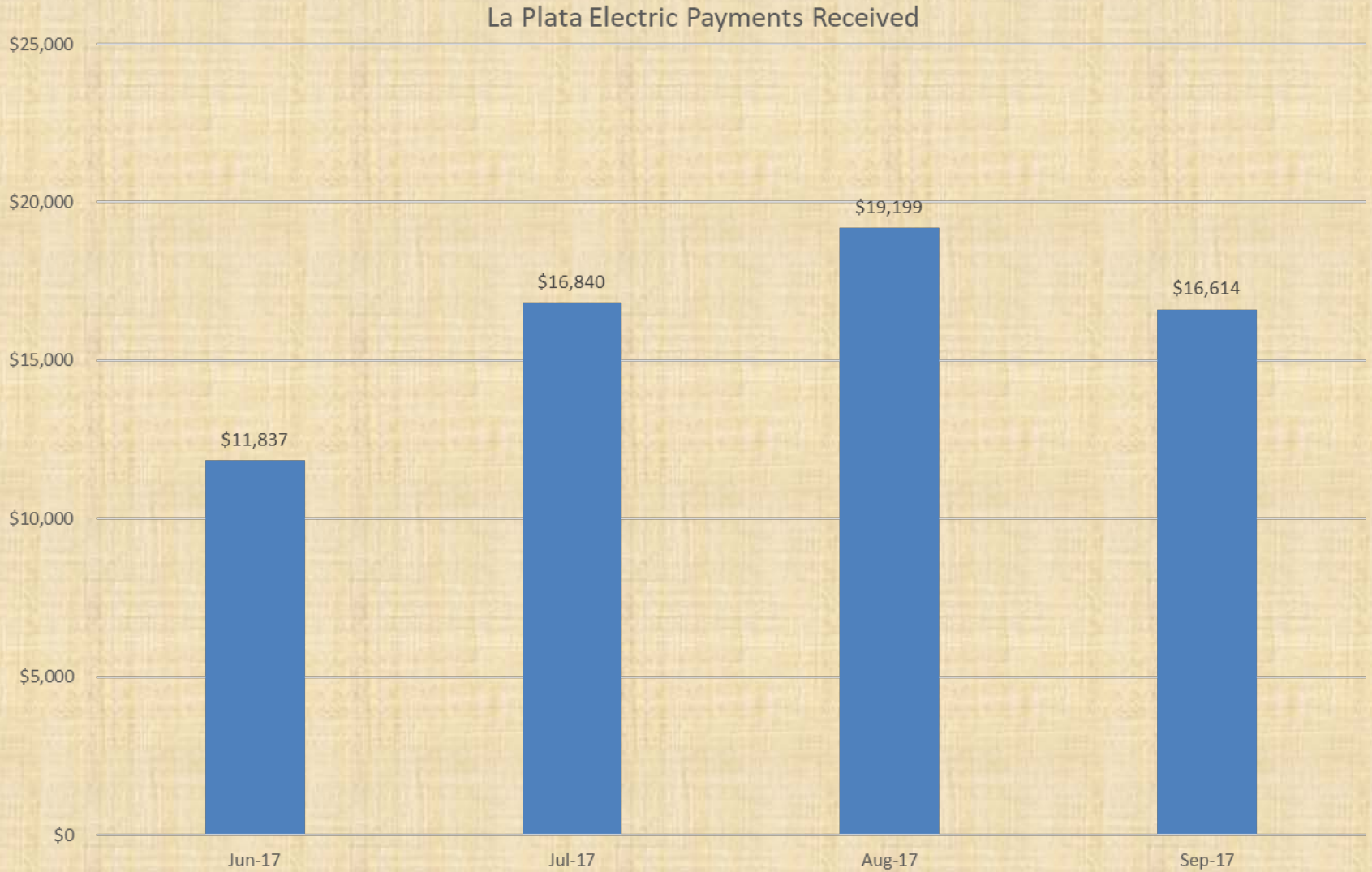


Photo courtesy of the Southern Ute Drum - Ignacio, CO

Lessons Learned

- Start negotiations with your area electric company early in the project in order to reach agreement for the power purchase and interconnection.
- Submit the archeological, environmental and wildlife studies to the appropriate agency early in the planning stages in order to obtain the FONSI.
- Contract a local solar company for the post construction operation and maintenance of the facility.
- Work closely with the regional BIA agency to obtain all required easements and right of ways.
- Be prompt with the required grant quarterly reporting.

What We Have Earned



Questions?

Contact Information

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