NAVAJO HOPI LAND COMMISSION, NAVAJO NATION

Renewable Energy Development

Paragon-Bisti Solar Energy Ranch

Feasibility Study

DOE Tribal Renewable Energy

Business Development and Financing

August 23-25, 2011

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Scott Prosuch PM, Tetra Tech
Annette Blue, Blue Hawk Design

Navajo Renewable Energy (RE)

- Clean and sustainable
- Doing the Right thing
- Fits with our culture
- Unlocks the value of tribal lands
-

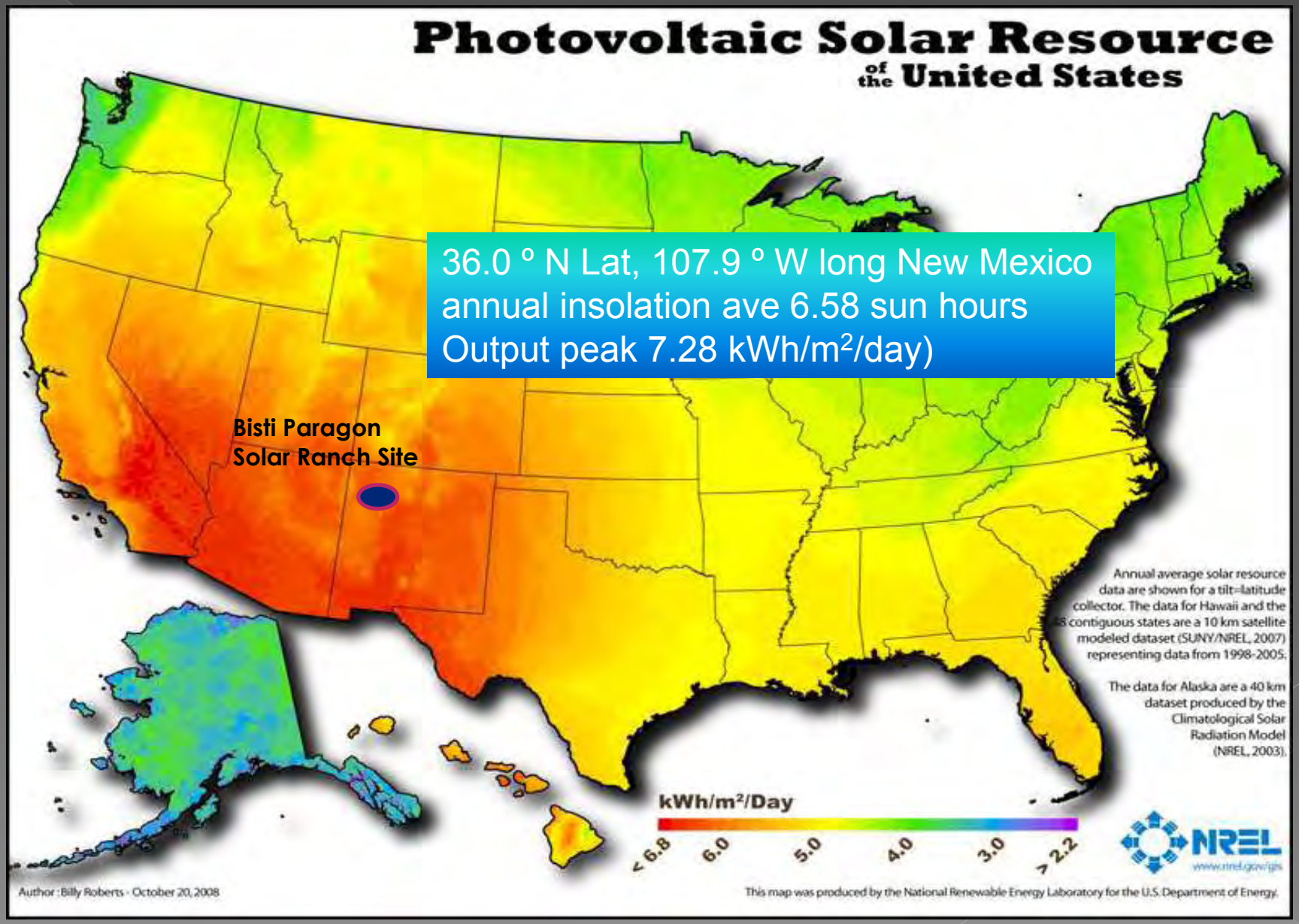
Tribal Benefits

- Giving back to the Navajo Nation
- Long term benefits
  - Jobs
  - Training
  - Payment
  - Model for future RE projects

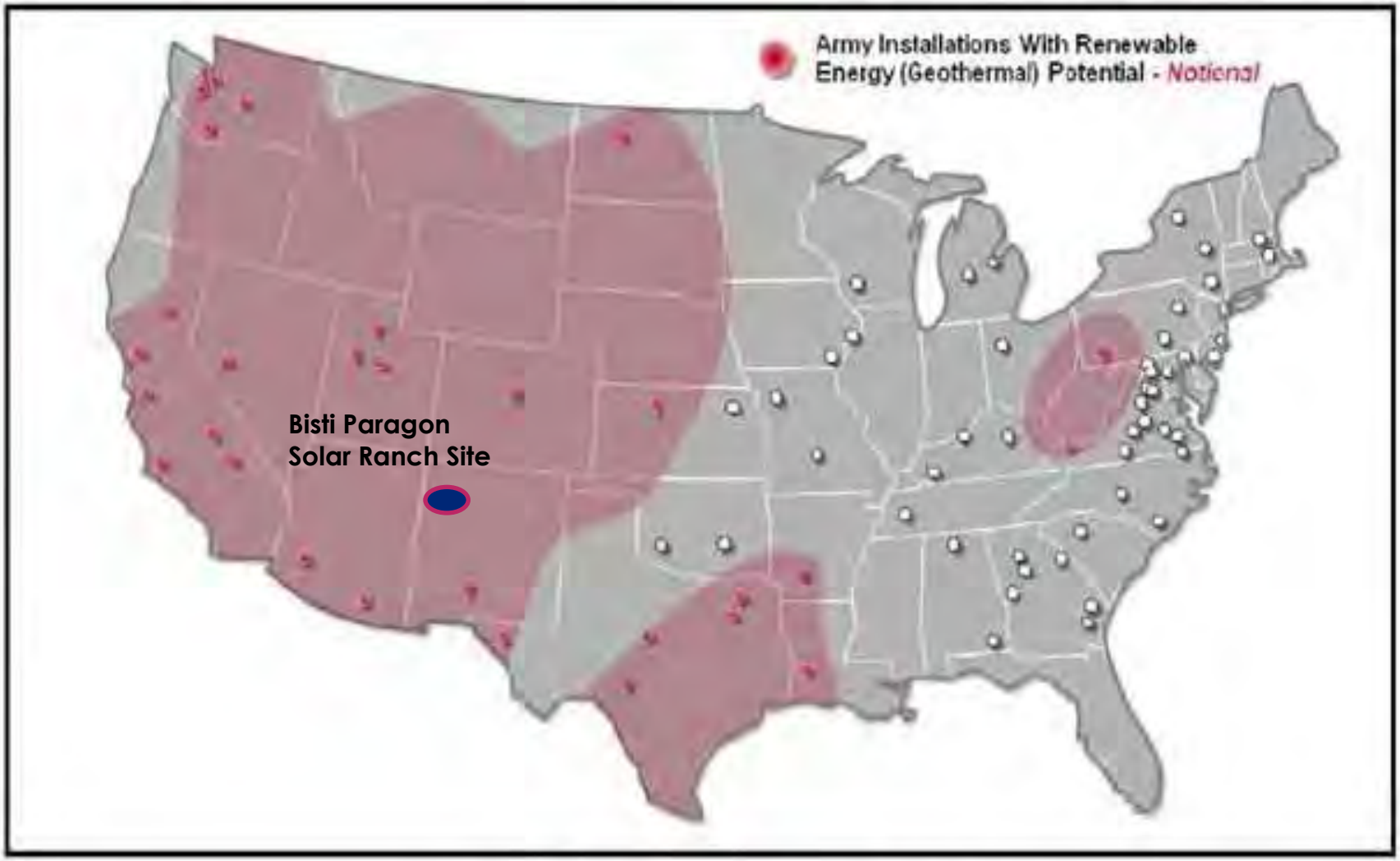
Agenda

- Overview
- Goals of the Tribe
- Program Objectives
- Project Maps
- Benefits of the Project
- Project Approach
- Export Markets
- Transmission, Inter-connection
- Economic Analysis
- Business Plan
- Environmental issues
- Milestone Schedule

Renewable Energy Options

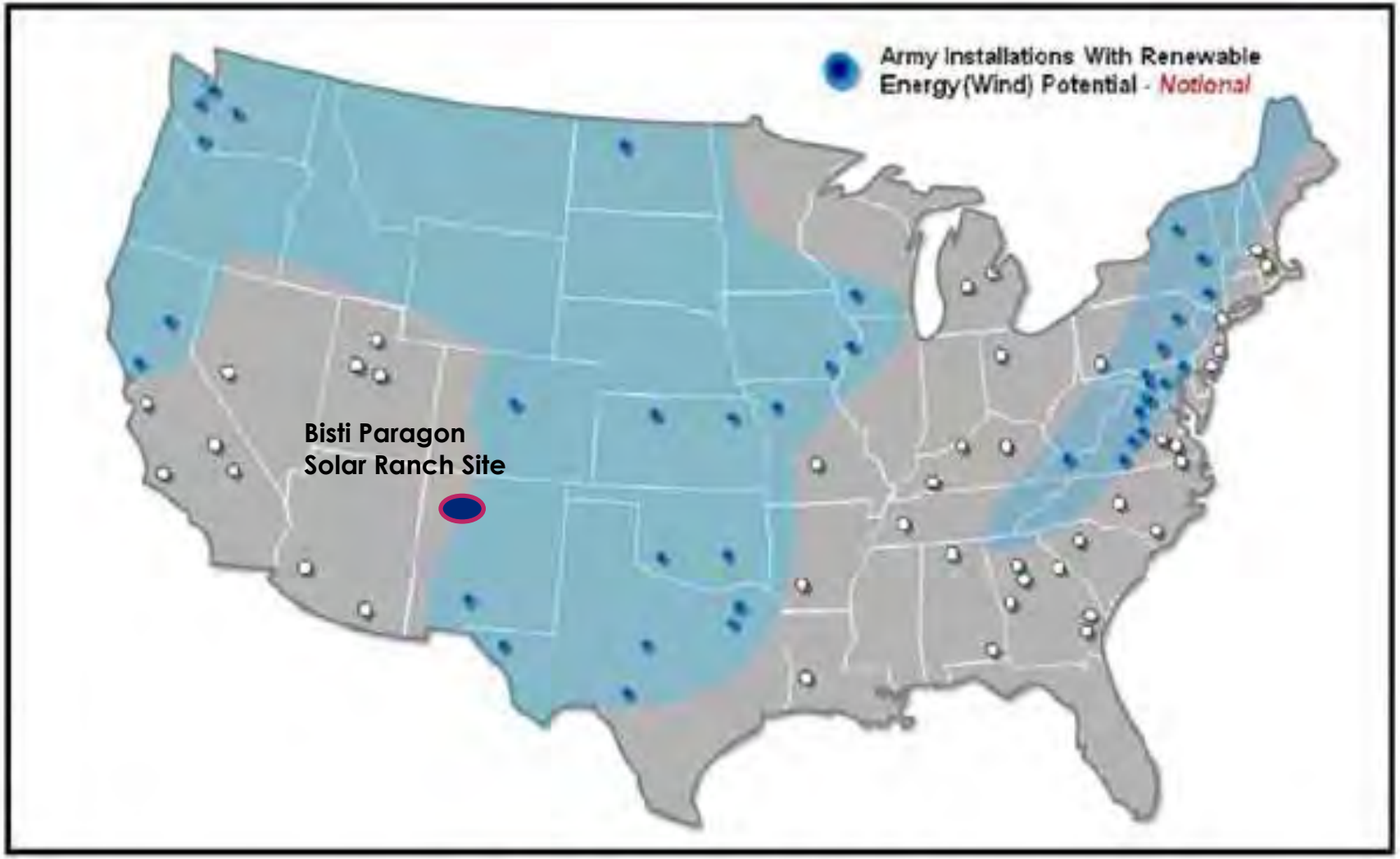


Renewable Energy Options - Geo



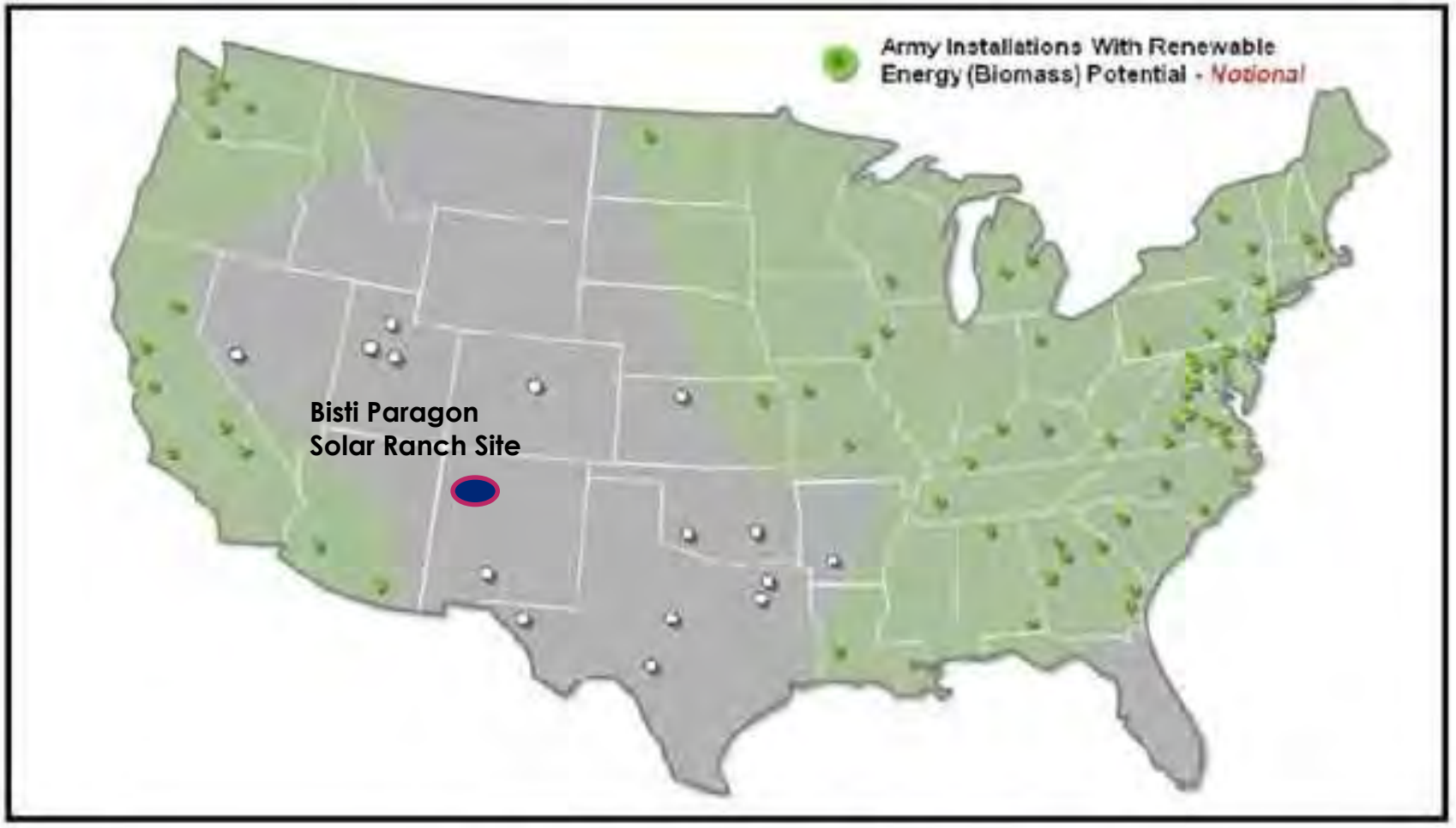
Geothermal Potential

Renewable Energy Options - Wind



Wind Potential

Renewable Energy Options - Bio



Overview of the Proposed Program

- Renewable energy (RE), Paragon-Bisti Ranch NW New Mexico
- Land set aside under the Navajo-Hopi Land Settlement Act (NHLSA) for the benefit of Relocatees
- 22,000-acre RE program
- With photovoltaic (PV), potential for > 4,000 megawatts (MW)

Goals of the NHLC

- Develop the Navajo Nation's RE assets into one of the most successful program among Tribal nations
- Produce economically viable power using sustainable natural resources
- Unlock the value of our lands to benefit Tribal members and the Relocatees

Benefits to the Tribe

- ***Culture*** – wealth derived from RE resources
- ***Society*** - training and careers
- ***Environmental*** - Displacing carbonaceous or hydrocarbon-containing fossil fuels used in 4000 MW, reduce greenhouse gas (GHG) emissions by about 20 million tons per year
- ***Long-term*** - clean commercial power, profitable enterprise based on RE

Navajo Lands & Program Site

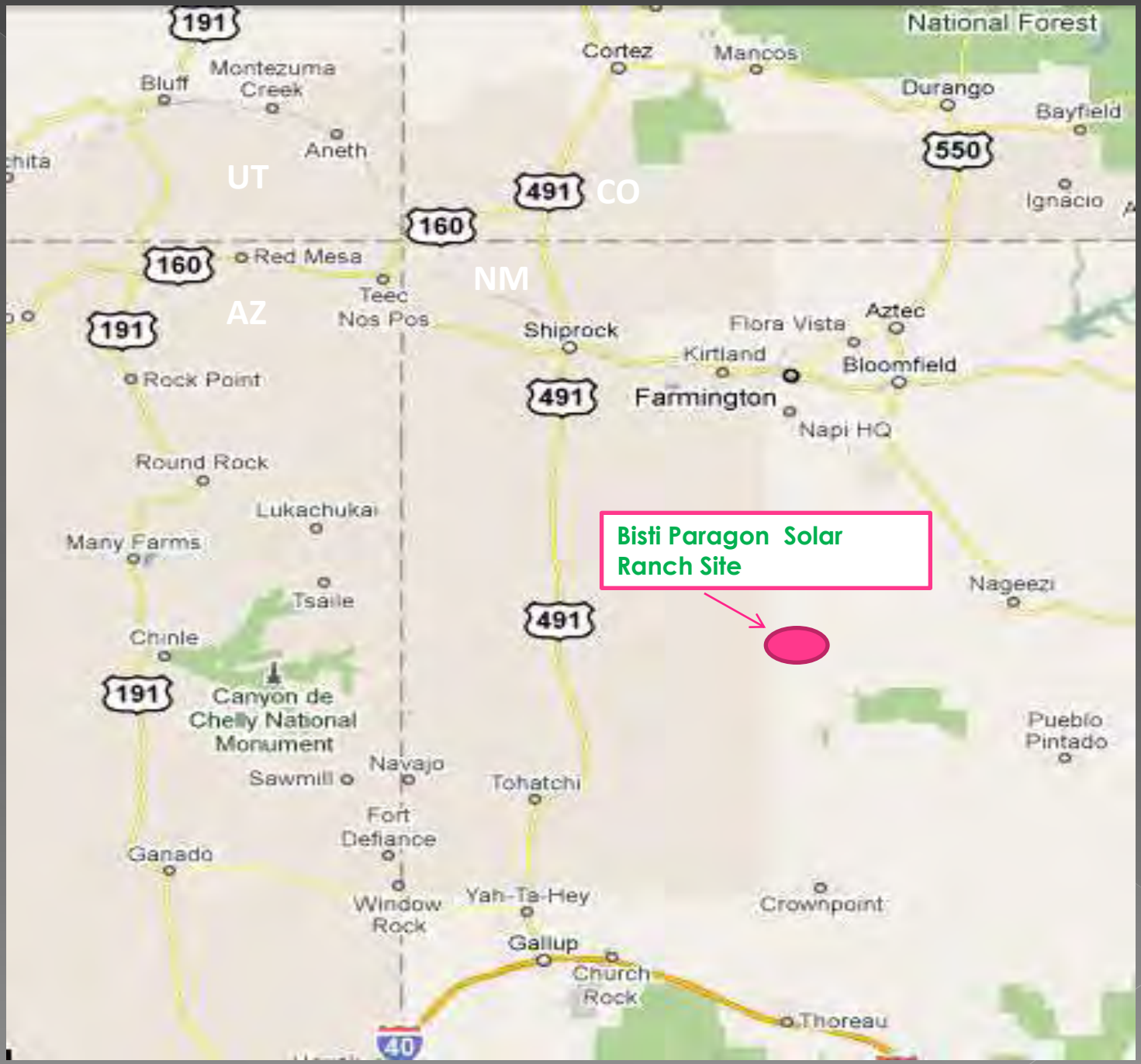
Bisti Paragon Ranch

Program Approach

Multi Phased Approach

Phase I

- Team with Tetra Tech and Blue Hawk Design
- Preliminary critical issues analysis - completed
  - RE Potential
  - Transmission line
  - Capacity
  - Export market
  - ROW
  - Environmental
  - Social and Cultural Issues


National Forest
Cortez
Mancos
Durango
Bayfield
Bluff
Montezuma Creek
Aneth
UT
CO
NM
AZ
191
491
160
550
Ignacio
Red Mesa
Teec Nos Pos
Shiprock
Flora Vista
Aztec
Kirtland
Bloomfield
Farmington
Napi HQ
Rock Point
Round Rock
Lukachukai
Many Farms
Tsaile
Chinle
Canyon de Chelly National Monument
Bisti Paragon Solar Ranch Site
Nageezi
Pueblo Pintado
Navajo
Sawmill
Tohatchi
Fort Defiance
Ganado
Window Rock
Yah-Ta-Hey
Crownpoint
Gallup
Church Rock
Thoreau
40

Program Approach

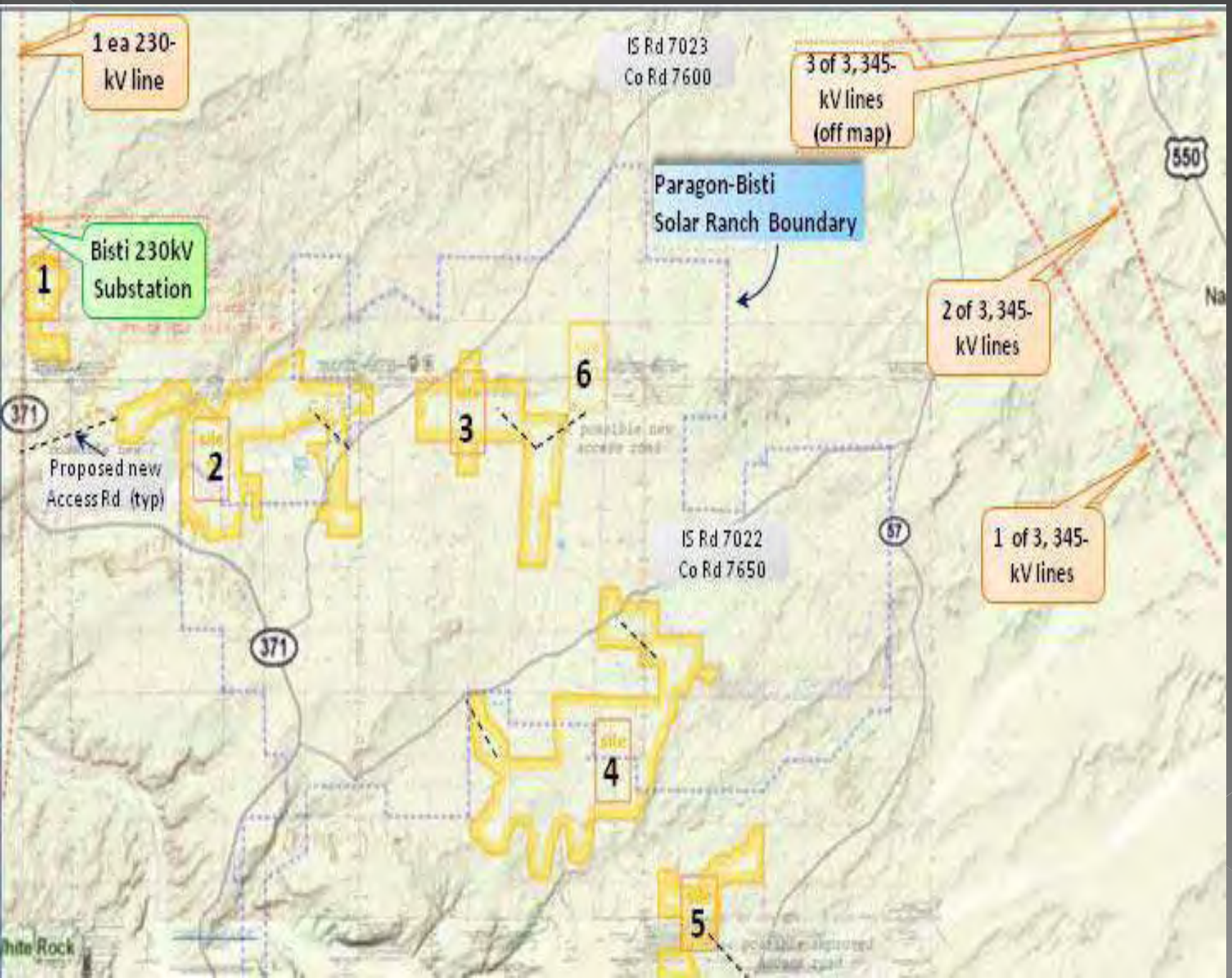
Phase II - Feasibility Study

- Determine the **technical and economic viability** of the RE program
- Survey and **characterize the entire site**
- **Apportion the 22,000-acre** site into individual solar ranches
- Develop and **model the lifecycle cost** and benefits of the program
- Define environmental requirements
- Explore opportunities for training and employment of Tribal members

Program Approach

Phase III – Preconstruction

- ***Front-end site evaluation*** - basic infrastructure, environmental , permitting issues, alternative technologies
- ***Prepare and issue Request for Information (RFI).*** Interest from industry.
- ***Issue RFQ.*** *attract qualified developers and EPC contractors*
- ***Develop financial models and lease agreement***
- ***Issue formal Request for Proposal (RFP).*** obtain viable proposals developers
- ***Review qualifications and*** *proposals, and* ***select Best Value*** *developers*


1 ea 230-kV line
IS Rd 7023
Co Rd 7600
3 of 3, 345-kV lines (off map)
550
Paragon-Bisti Solar Ranch Boundary
Bisti 230kV Substation
1
2 of 3, 345-kV lines
6
3
371
Proposed new Access Rd (typ)
2
IS Rd 7022
Co Rd 7650
57
1 of 3, 345-kV lines
371
4
5

Program Approach

Phase IV – Construction

- ***Sign the lease*** and partnering agreement.
- Host ***partnering meetings*** between NHLCO, the Navajo Nation, the developer, and other stakeholders.
- ***Construction preparation***, engineering design, submission of plans, obtaining environmental permits, transmission line studies, and negotiation of ***Power Purchase Agreements*** (PPA).
- Mobilization, site preparation, infrastructure improvements, construction, and grid-tie.

Site	Township and Section	Acres	Potential Power (MW)	Land Status	Miles to Road	Miles to 230 kV Bisti sub.	Miles to 230 kV Line BI	Miles to 345 kV Line FW
1	Sec 31, T24N R13W; Sec 6, T23N R13W	640	160	ALL Selected and Conveyed – surf and min	0	2	0	16
2	Sec 9-14, 23, 24, T23N R13W; Sec 6-9, 17, 20, 21, T23N R12W	4,000	1,030	ALL Selected and Conveyed – surf and min	0-3	6-9	3-7	11-14
3	Sec 2, 10-12, 14, T23N, R12W Sec 7, 18, 19, T23N, R11W	3,330	830	BOTH Tribal (1280) *and* Selected and Conveyed – surf & min (2050)	0-3	13-15	10-13	10-11
4	Sec 27, 28, 33-35, T23N, R11W Sec 3-5, 8-10, T22N, R11W Sec 1, 12,13, T22N, R12W	6,560	1,640	BOTH Tribal (4960) *and* Selected and Conveyed – surf and min (1600)	0-1	18-22	15	12-14
5	Sec 13-15, 22, 23, 26, 27, T22N, R11W	1,960	490	ALL Tribal	1	25	17	12
6	Sec 5, 8, T23N, R11W	870	220	ALL Tribal but landlocked	2	16	14	8
Totals		**17,360**	**4,370**					

Program Approach

Phase V - Long-Term Operations and Maintenance

- Training and education
- Potential for long term jobs
- Positive impact on economy

Economic Analysis Tribal Benefits

- Land - based on BLM $34/ac per annum = $25,000 to $200K/ranch = total ~$600K/yr
- Power production - $6,750 / MW-yr
- Annual royalties and/or rents - build-out anticipated $27M
- Cumulative payroll over life of the project, estimated as much as $1.5 billion to $2.6 B
- Positive impact on the local economy $2.7 billion to $6.5 billion

Export Markets

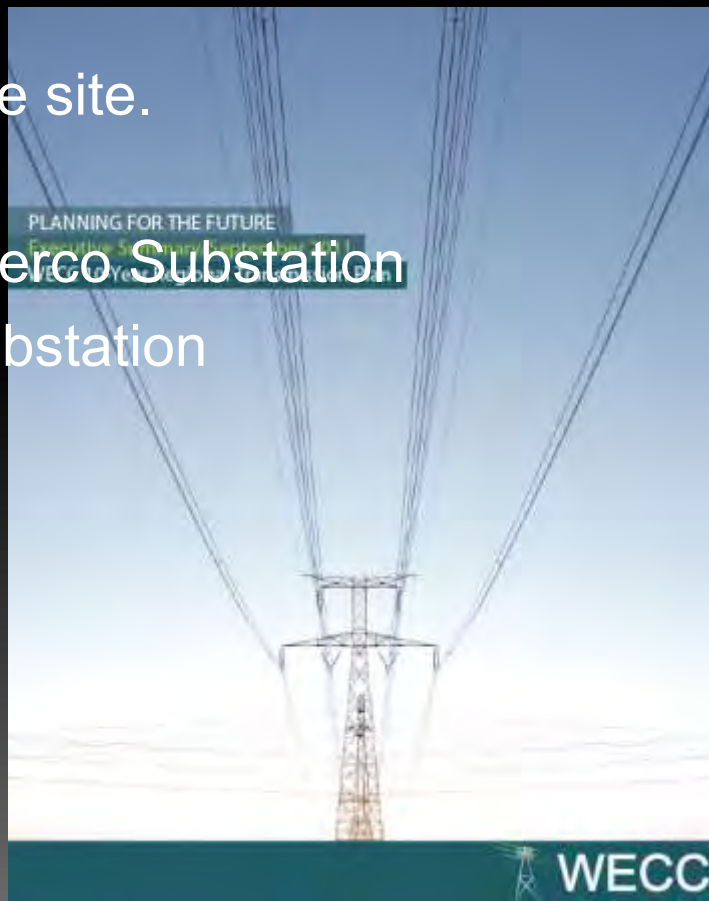
- **M**arkets for RE throughout the Western Electricity Coordinating Council (WECC)
- California new 33% Renewable Portfolio Standard (RPS) 2020
- New Mexico Public Service Company of NM (PNM), RPS of 20%
- NM Renewable Energy Transmission Authority establish transmission corridors to move green electricity to market
- Arizona Public Service
- Tucson Electric Power
- Tri-State Generation

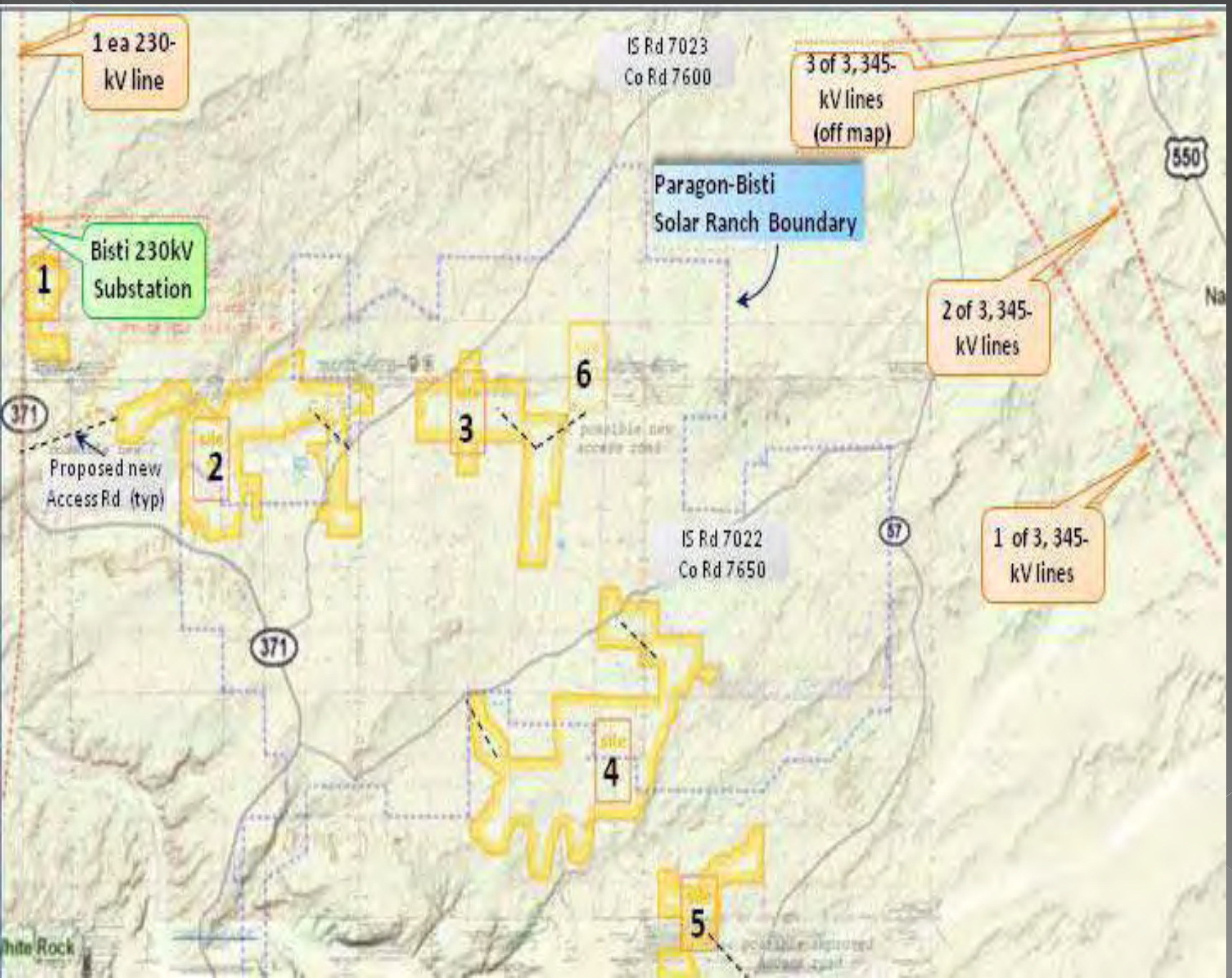
Transmission and Inter-connection

- Public Service Company of New Mexico (PNM) operates a 230-kV line that passes just west of the site - 6 miles
- Line connects the Four Corners Power Plant to Ambrosia Substation
- PNM operates three 345-kV lines east of the site.

1. West Mesa Substations near Albuquerque
2. Connects San Juan Power Plant to Rio Puerco Substation
3. Connects San Juan Power Plant to Ojo Substation

- Early assessments indicate 150 MW of capacity on 230-kV line, some capacity on 345-kV line
- Right-of-way (RoW) for siting new power Lines critical consideration

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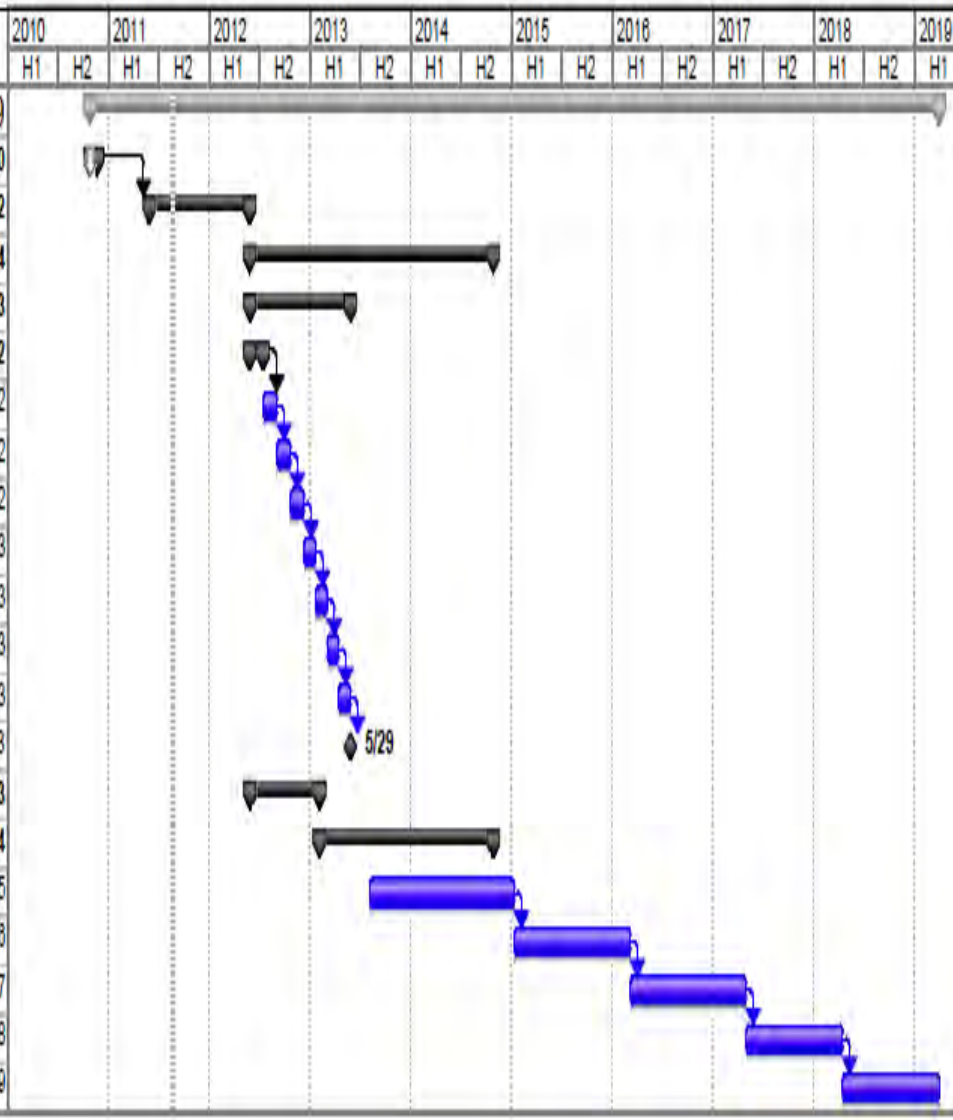
Schedule

Task Name	Duration	Start	Finish
Paragon Ranch Solar Project - Final 3 Phases	2199 days	Thu 10/28/10	Tue 4/2/19
1. Present Phase One Tetra Tech Study	20 days	Thu 10/28/10	Wed 11/24/10
2. Phase Two Tetra Tech Study (during 2011)	260 days	Wed 6/1/11	Tue 5/29/12
3. Phase Three Development Activities	631 days	Wed 5/30/12	Wed 10/29/14
3.1 Select Project Developer for Parcel One (during 2012)	261 days	Wed 5/30/12	Wed 5/29/13
Prepare RFP	35 days	Wed 5/30/12	Tue 7/17/12
Prepare proposal evaluation criteria	35 days	Wed 7/18/12	Tue 9/4/12
Send RFP to candidate developers	35 days	Wed 9/5/12	Tue 10/23/12
Hold pre-bid meeting	35 days	Wed 10/24/12	Tue 12/11/12
Provide additional information	30 days	Wed 12/12/12	Tue 1/22/13
Receive / evaluate proposals	30 days	Wed 1/23/13	Tue 3/5/13
Interview project developer short list	30 days	Wed 3/6/13	Tue 4/16/13
Negotiate with short listed developers	30 days	Wed 4/17/13	Tue 5/28/13
Select project developer for Parcel 1	1 day	Wed 5/29/13	Wed 5/29/13
b. Power Purchase Agreement (PPA) process	180 days	Wed 5/30/12	Tue 2/5/13
c. Permitting	451 days	Wed 2/6/13	Wed 10/29/14
3.2 Parcel 2 project development (repeat above steps)	375 days	Wed 8/7/13	Tue 1/13/15
3.3 Parcel 3 project development (repeat above steps)	300 days	Wed 1/14/15	Tue 3/8/16
3.4 Parcel 4 project development (repeat above steps)	300 days	Wed 3/9/16	Tue 5/2/17
3.5 Parcel 5 project development (repeat above steps)	250 days	Wed 5/3/17	Tue 4/17/18
3.6 Parcel 6 project development (repeat above steps)	250 days	Wed 4/18/18	Tue 4/2/19



Closing Thoughts

- Very Unique Project!
- Timing is critical
- Potential for significant private investment for program and NHLC