



San Carlos Apache Tribe

Energy Organization Analysis & Solar Feasibility Study



2012

funded by grants from the
US Department of Energy
Tribal Energy Program

San Carlos Apache Mission Statement

The Apache People will live a balanced life in harmony with spirituality, culture, language, and family unity in an ever-changing world and shall create a strategic framework for our tribe to grow and prosper.



Reservation Boundary



The Tribe and Reservation



- 90 miles from Phoenix.
- 2,400' to 8,300' elevation.
- 1.83 million acres.
- Grasslands, Sonoran desert and forests.
- Rivers - Salt, Gila, Black, San Carlos.



- Power - 100% purchased, 98% non-renewable, retail rates 2X+ Nat'l average.
- 4 power providers – SCIP (BIA), APS, Graham County Coop, Morenci Mine.
- Commercial hydropower potential – the 1930's Coolidge Dam.
- Excellent solar and geothermal potential.



- Economy - government, ranching, farming, forestry, gemstones, traditional arts, outdoor recreation, gaming, hunting/fishing.
- 14,600 enrolled Tribal members.
- 11,700 resident Tribal members.
- Communities - San Carlos, Bylas, Peridot.
- Cutter - Casino/Resort, airport, sawmill.
- 500+ “rural” residents.



- Source of 90% of world's peridot gemstones.
- Salt River Canyon – “mini Grand Canyon”.
- One of largest populations of southwestern willow flycatchers (ESA listed).
- San Carlos Lake – 4th largest in Arizona (*not recently – drought!*), recreation, maybe hydropower again someday!



San Carlos Apache Energy Strategy & Program 2008 - 2013



Energy Strategy & Program PURPOSE

“Provides a framework for future energy initiatives that support the San Carlos Apache Tribe’s energy security and independence, and that will reduce the negative impacts of energy consumption and greenhouse gas emissions on the Tribe’s people and Reservation”.

“This Strategy sets the stage for a vigorous and forward-looking set of Tribal energy plans, projects, and programs”.

2008 - 2013 Energy ACTIONS

- 2008: Energy goals in Tribal Strategic Plan.
- 2009: \$317,000 EECBG “entitlement” grant.
- 2010 - 2012: EECBG programs & projects undertaken.
- 2010: Hired & trained Tribal building energy auditors.
- 2010 - 2012: Ongoing building energy audits.
- 2011: \$171,000 US DOE-funded energy organization grant.
- 2011: Adopted Tribal Energy Strategy & Program (EECS).
- 2012: Adopted Tribal Energy Organization Analysis (EOA).
- 2012: \$221,000 US DOE-funded solar feasibility study grant.
- 2012: Hired Tribal energy program coordinator w/EOA grant.
- 2012: Tribal radio station w/solar power - funded by EECBG.
- 2012: Initiated solar feasibility study - Phase 1 complete.
- 2010, 2011, 2012: San Carlos Apache Tribal Energy Summits.

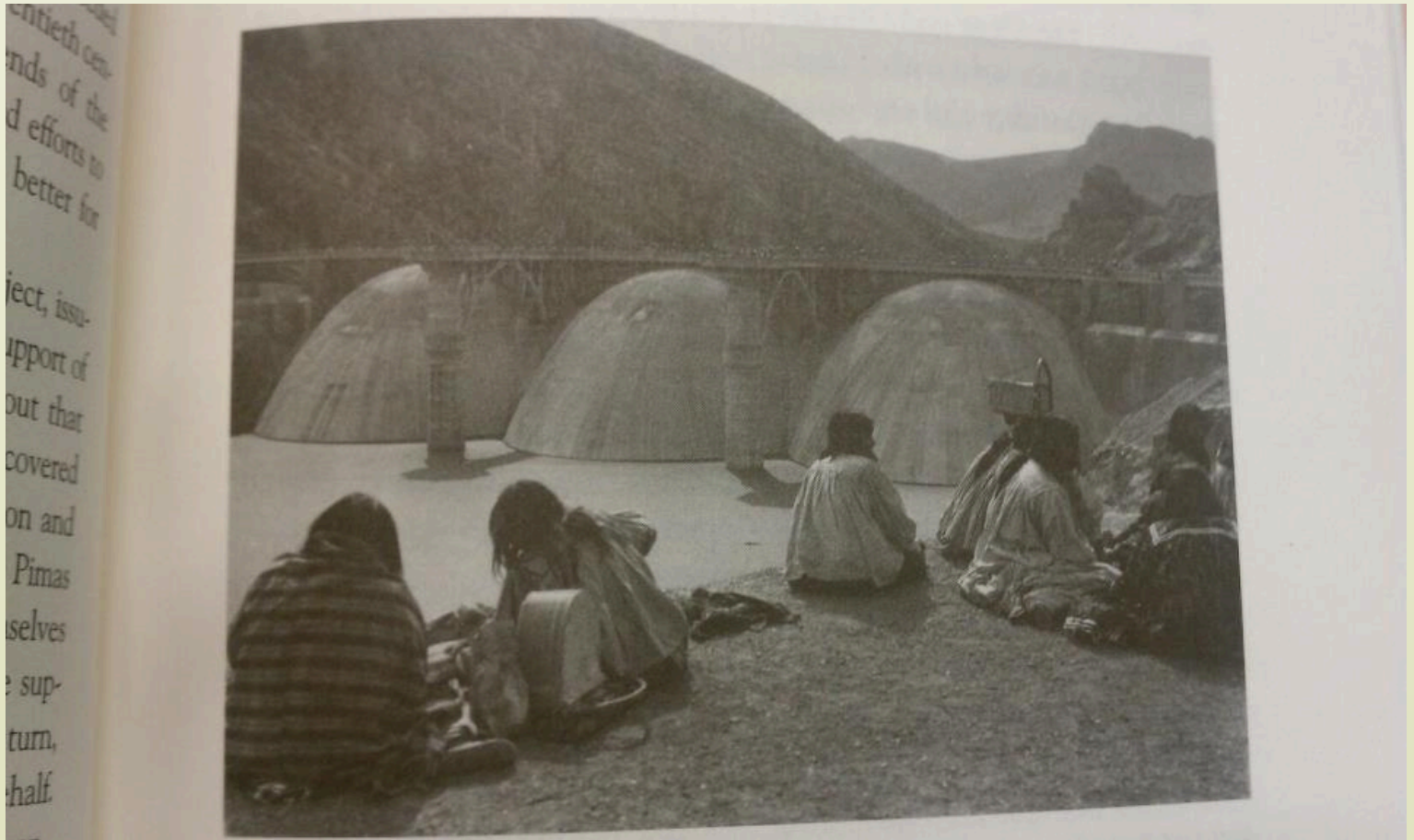
2013 Energy PLANS

- Complete solar feasibility study & launch tribal energy utility.
- Build 1.4MW community-scale solar power @ Apache Gold Casino/Resort.
- Install solar @ new Bylas elementary school.
- Continued implementation of 2011 EECS & 2013 Solar Study.
- Identify additional community-scale solar project(s) to build.



Energy Organization Analysis

Our first hydropower operators!



Coolidge Dam circa 1930's

Possible Energy Organization Forms

- Ad-hoc (case-by-case project assignment)
- Government Office/Department
- Joint Venture
- Tribal Corporation
- Utility Authority
- Energy Service Company (ESCO)
- Electric Cooperative

Analysis included: forms of incorporation; combined multiple options; and near- and long-term phasing.

Energy Organization Evaluation Criteria

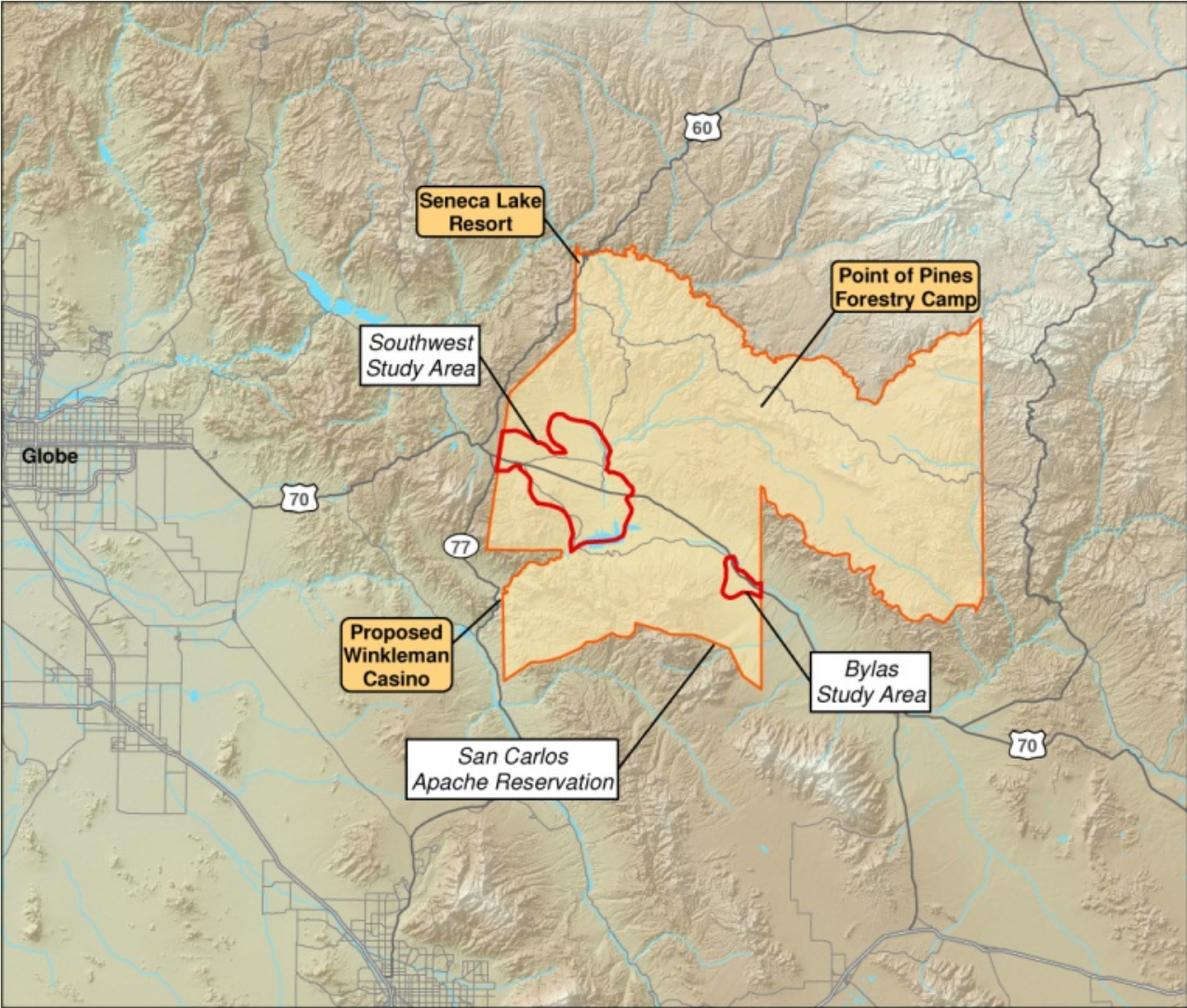
Rated 4 to 8 parameters for each different form of energy organization in each of the following five areas:

- Sovereignty & Self-sufficiency
- Economic Development & Financial Stability
- Cultural & Social Values
- Environmental Values & Impacts
- 2011 Energy Strategy Consistency

Option Evaluation Process

- Ratings by Parametrix & Tribal Planning.
- Refinement by oversight committee (Tribal officials, enterprise managers).
- Work sessions @ 2011 Energy Summit.
- Consolidate & describe outcomes.
- Recommendations to Tribal Council.
- **ADOPTION!** *“Incorporate an energy utility”*
- **IMPLEMENTATION!** *Work plan and incorporation papers soon to Tribal Council.*

Solar Feasibility Study



Solar Study Objectives

** Inform sound decision-making for site selection and infrastructure development options for commercial-scale solar development in the southwestern Reservation.

** Identify opportunities for community-scale solar development in the southwestern and Bylas areas of Reservation.



Solar Feasibility Study Elements

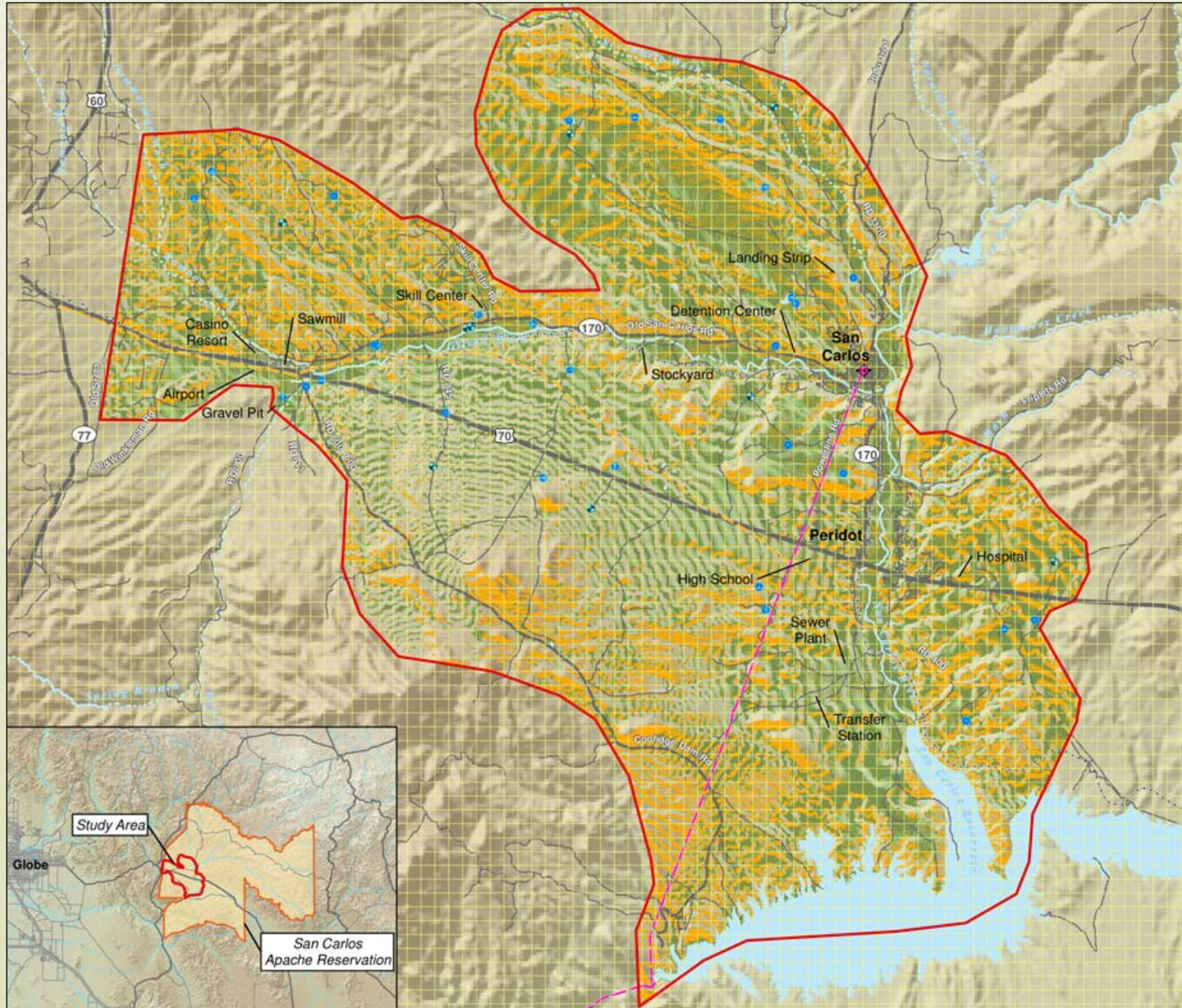
Phase 1

- * Assess baselines conditions, including key site characteristics
- * Match sites to infrastructure, generation, and transmission
- * Identify 2 to 3 sites for commercial-scale solar development
- * Identify sites for community-scale solar development

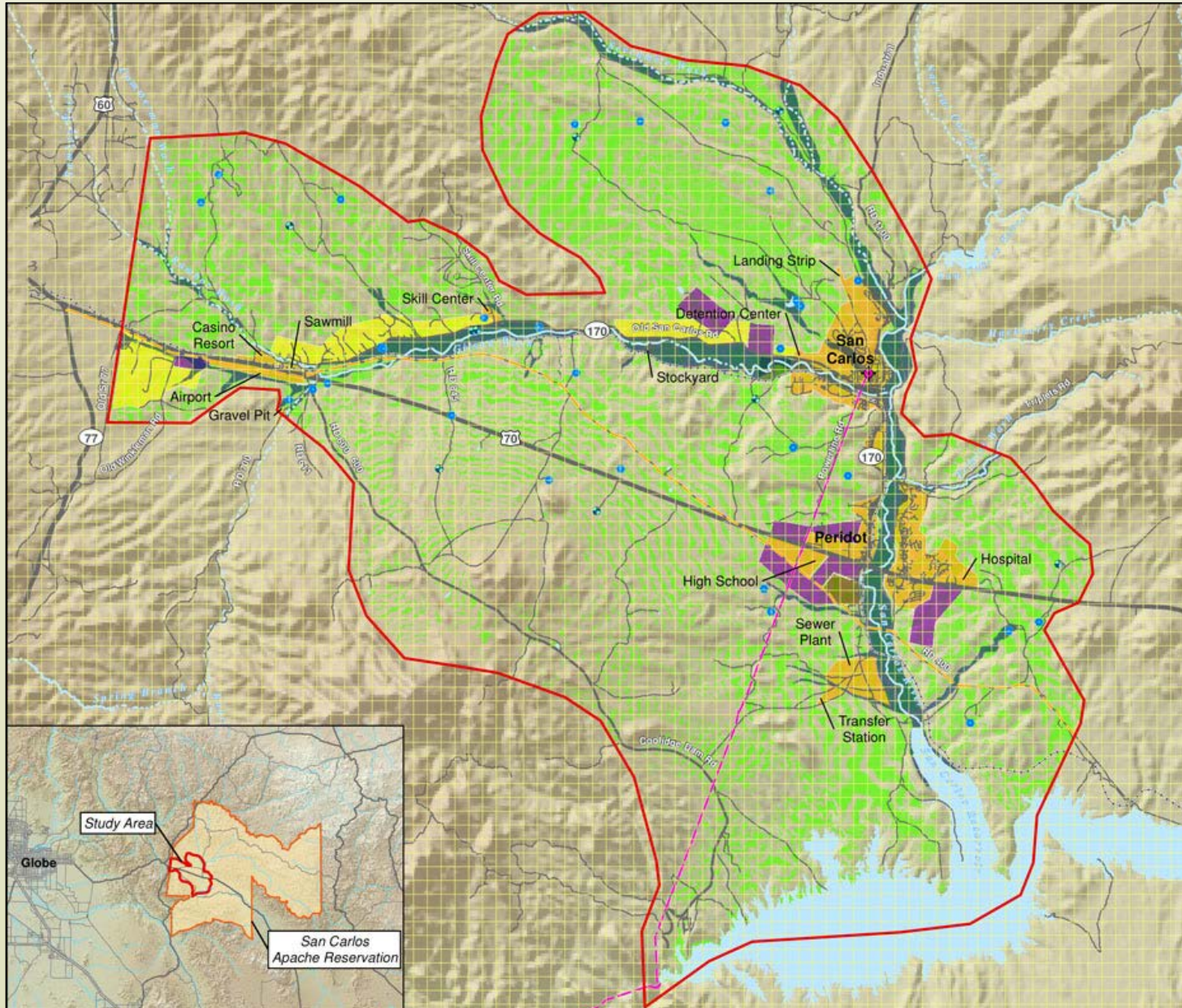
Phase 2

- * Conduct more detailed assessment on “finalist” sites
- * Document costs and benefits - economic, cultural, social
- * Outline financial & business plan(s)
- * Recommend priority sites and systems for both scales

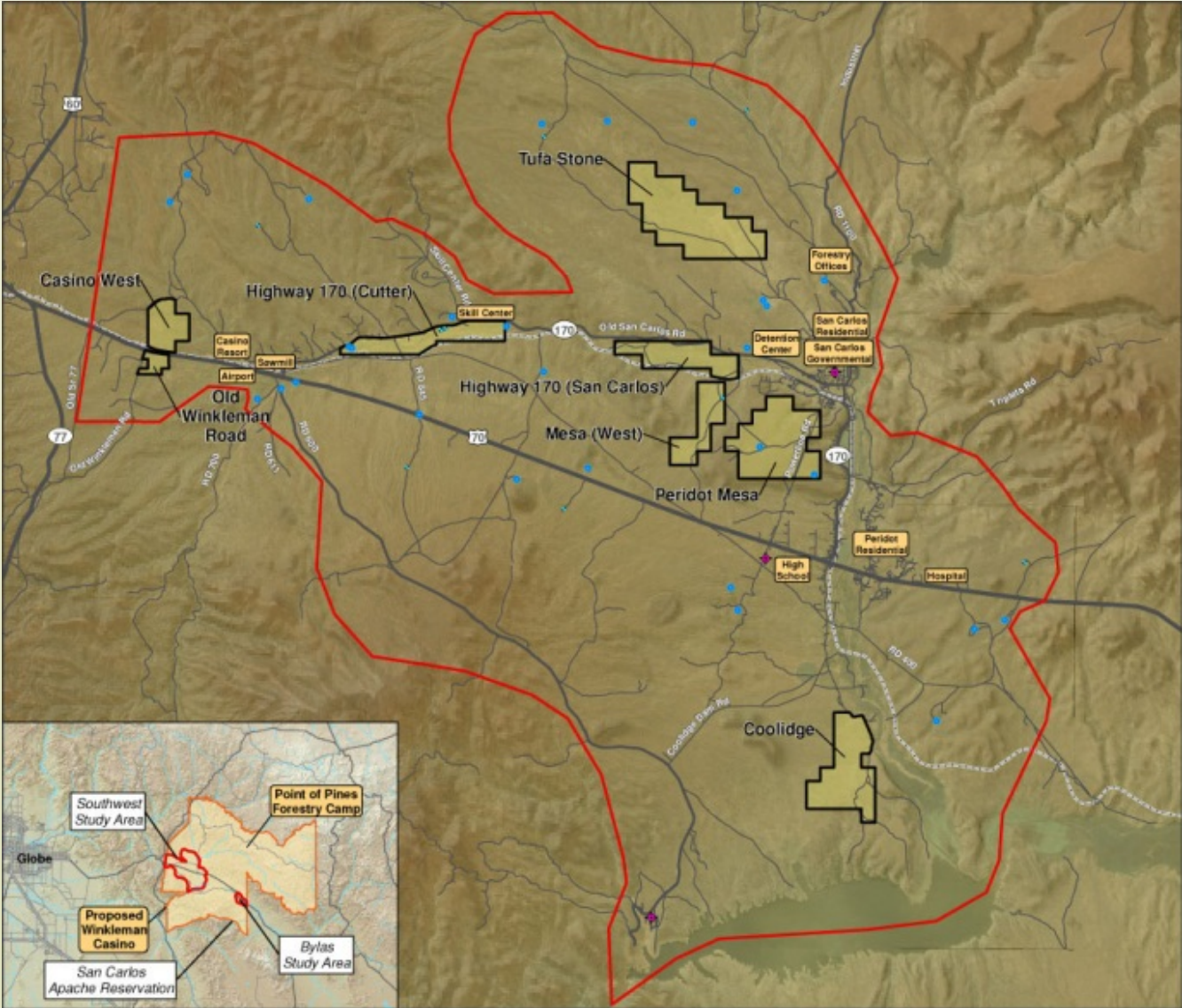
Constraints & Opportunities – Slope/Aspect



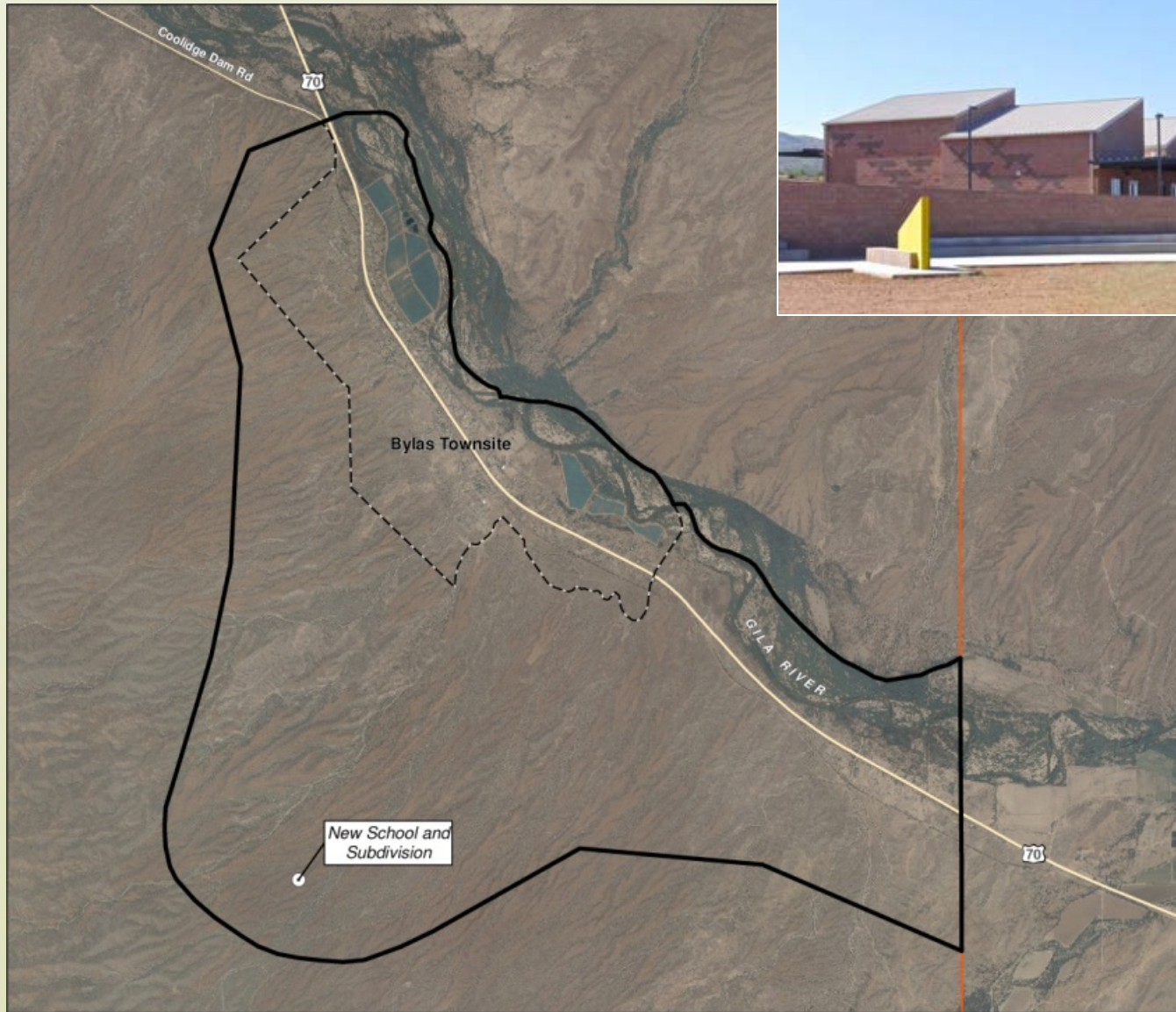
Constraints & Opportunities – Land Uses/Environmental



Southwestern Reservation Sites



Bylas (Southeast Reservation)

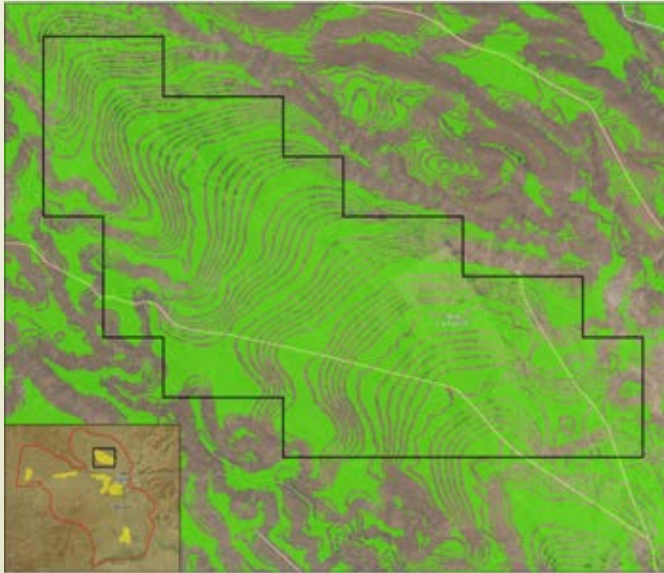


Commercial-scale findings

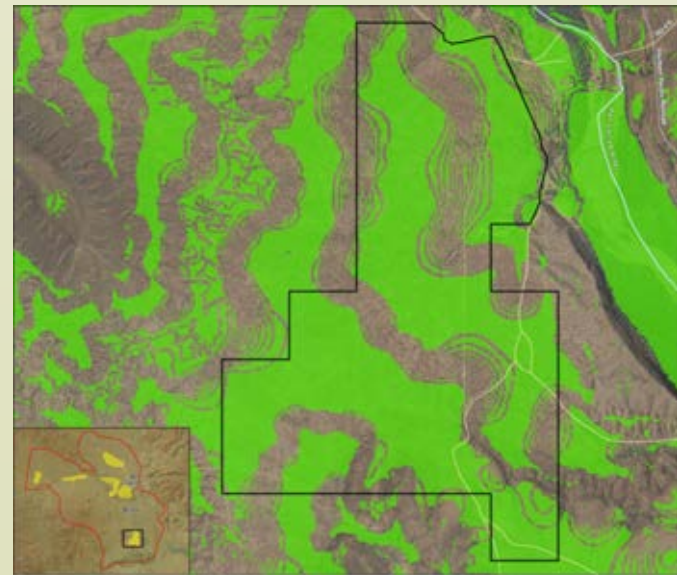
- Slope (less than 4%) - *LOTS of suitable land.*
- Aspect (southerly facing) - *ditto!*
- Climate - *highly suitable ... no surprise here!*
- Environmental - *preferred sites avoid problems*
- Development - *preferred sites avoid conflicts*
- Cultural limitations - *none identified*
- Road access - *highly variable conditions*
- Power utilities - *support programs vary greatly*
- ***Transmission - NONE for commercial-scale***

Possible Commercial Solar Sites: Tufa Stone and Coolidge

Tufa Stone 1,950 acres



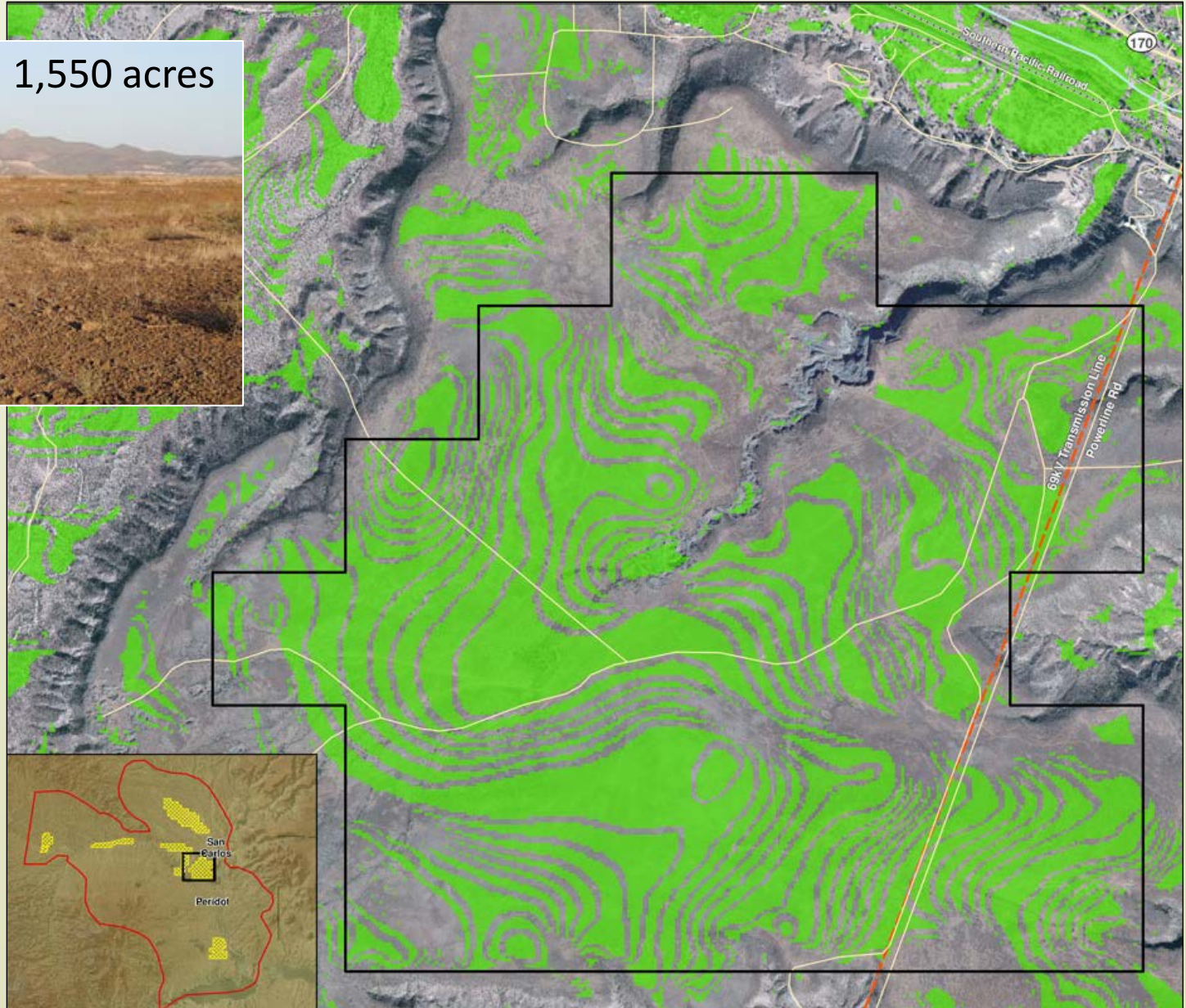
Coolidge 1,218 acres



"BEST" Commercial Solar Site: Peridot Mesa



1,550 acres



What do we think for Phase 2?

- Cost of commercial-scale transmission may be ***PROHIBITIVE*** for the foreseeable future.
- Shortest new T-line to Peridot Mesa = 18 miles and \$50 million.
- Reserve best commercial-scale site(s) for future commercial-scale development.
- Accordingly, spend more time in Phase 2 assessing nearer-term community-scale sites.
- Need to examine solar energy possibilities in Bylas area on southeast side of Reservation.
- Incorporate tribal energy utility business plan.

Solar Feasibility Study Schedule

	Month											
	1	2	3	4	5	6	7	8	9	10	11	
Phase 1: Identification and Preliminary Assessment of Sites in Southwestern Reservation												
Activity 1: Study Baselines												
Activity 2: Conduct Site-Specific and Technical Analysis												
Activity 3: Select Finalist Sites												
Phase 2: Detailed Assessment of Selected Sites												
Activity 1: Power Load-Transmission-Market Analysis												
Activity 2: Environmental Analysis												
Activity 3: Re-assess Phase 1 Finalist Site Recommendations												
Activity 4: Financial and Business Plan												
Activity 5: Benefit Analysis (Economic, Social/Cultural)												
Activity 6: Finalize Solar Feasibility Study												



Contact Us

Come to our

Tribal Energy Summit

December 10-11, 2012

Apache Gold Casino/Resort

San Carlos, Arizona



Gail Haozous

Planning & Economic Development Director

P.O. Box 0, San Carlos, Arizona 85550

gail.haozous@ped.scapachepanning.org

www.scapachepanning.org

928.475.2331