



ACC BTA Workshop

June 2010

BLACK FOREST PARTNERS, LP

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Black Forest

- **Goal: accelerate the use of renewable energy through opportunities in electricity transmission, energy storage, and efficiency**
- Principals are experienced investors, entrepreneurs and operators (Google and Goldman alums) from the Southwest
- Firm has access to institutional investors, renewable developers, technology providers, and major private regional landowners
- Advisors have deep sector knowledge, regulatory expertise and extensive development experience (USE, Stoel Rives, Fontana Energy, and others)
- Formed Western Renewable Transmission Development Company (WRTD) to access renewable resources in the Desert Southwest
- The Southline Transmission Project will enable development of solar energy in a **faster, cheaper, greener** way than alternatives

Project Principles

Principles:

- **Siting First:** minimize environmental disruption, development costs and public opposition
- Access the best resources
- Connect both ends to load areas for bi-directional benefits
- Get to the trading hub
- Right commercial size, with room to grow
- Partner with franchised utilities and find common solutions

The Southline

UPGRADE

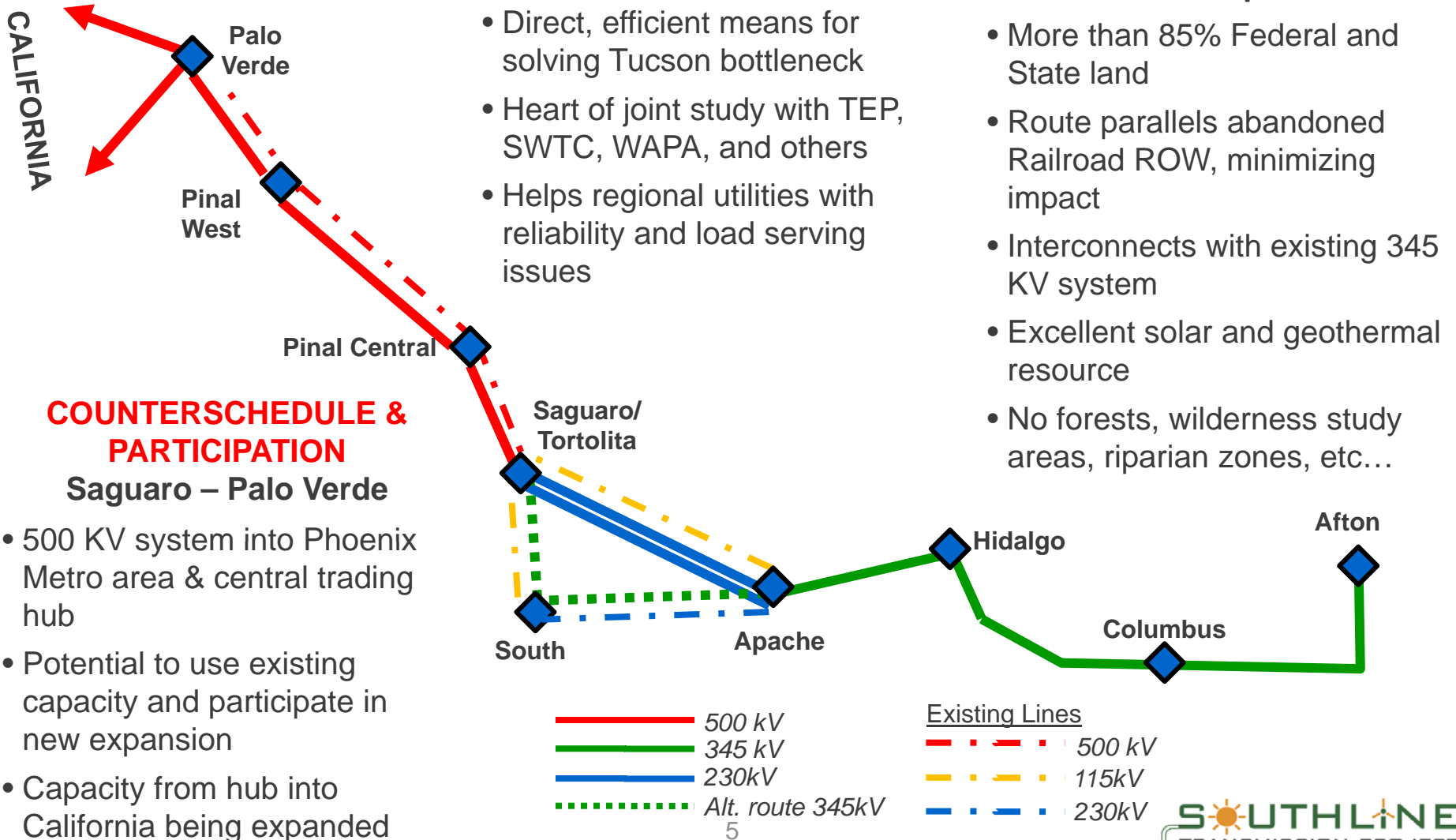
Western Saguaro-Apache

- Direct, efficient means for solving Tucson bottleneck
- Heart of joint study with TEP, SWTC, WAPA, and others
- Helps regional utilities with reliability and load serving issues

NEW BUILD

Afton-Apache

- More than 85% Federal and State land
- Route parallels abandoned Railroad ROW, minimizing impact
- Interconnects with existing 345 KV system
- Excellent solar and geothermal resource
- No forests, wilderness study areas, riparian zones, etc...



COUNTERSCHEDULE & PARTICIPATION

Saguaro – Palo Verde

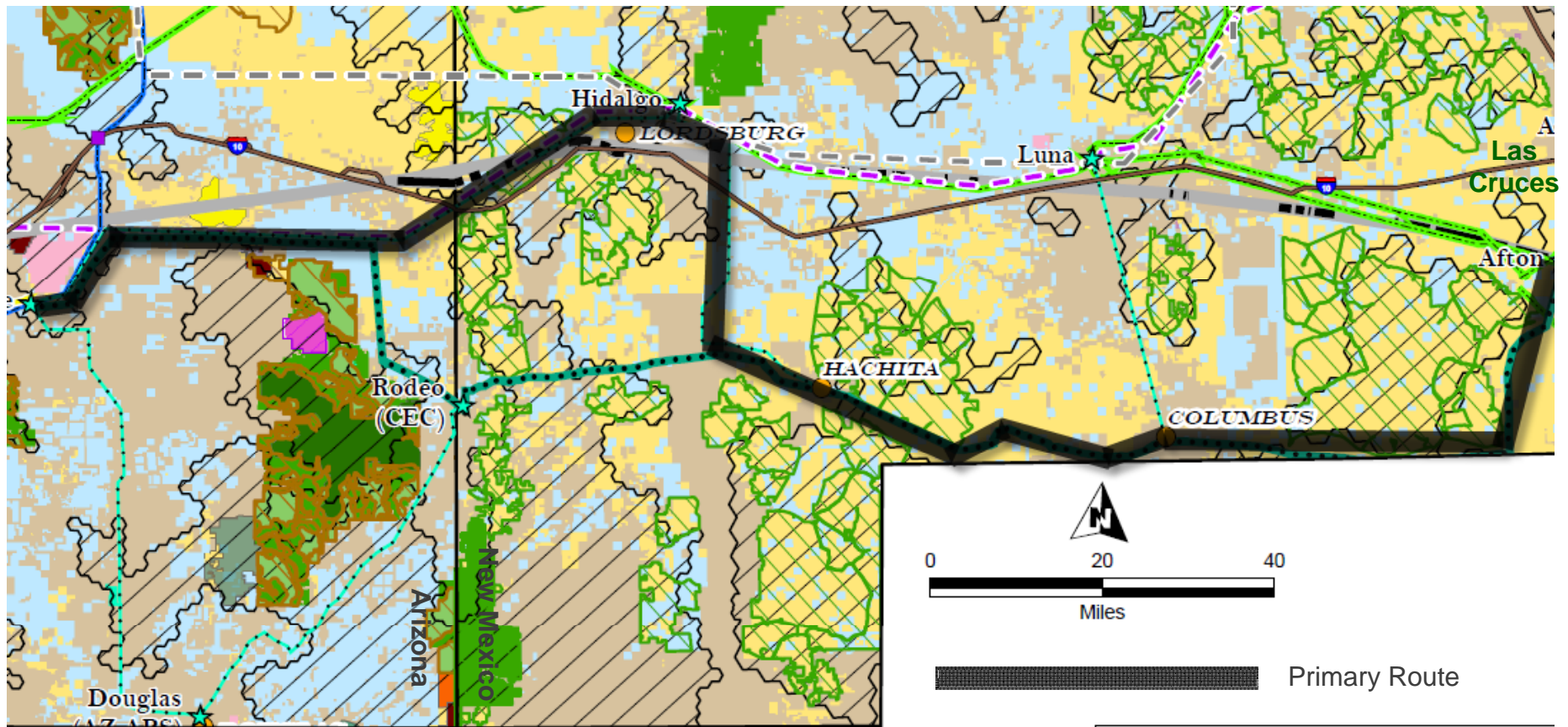
- 500 KV system into Phoenix Metro area & central trading hub
- Potential to use existing capacity and participate in new expansion
- Capacity from hub into California being expanded



New Build

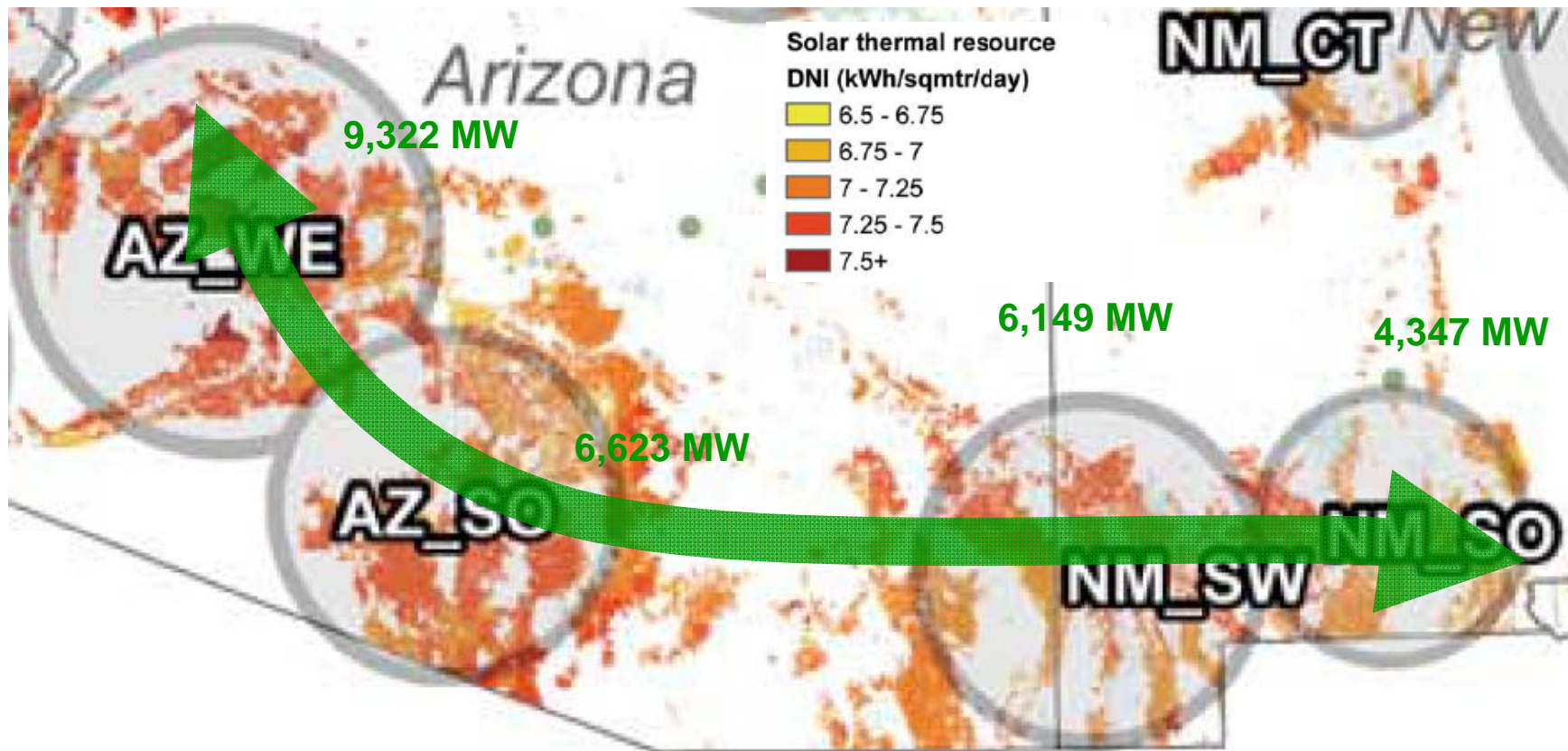
- Route is 85%+ on BLM and State lands
- Spares forest areas, riparian zones, wilderness study areas
- Recycles rail lines and other ROWs

- Bureau of Land Management (BLM)
- Private
- State Land
- US Forest Service (USFS)
- USFS Inventoried Roadless Areas
- USFS (Wilderness)



Resource - Solar

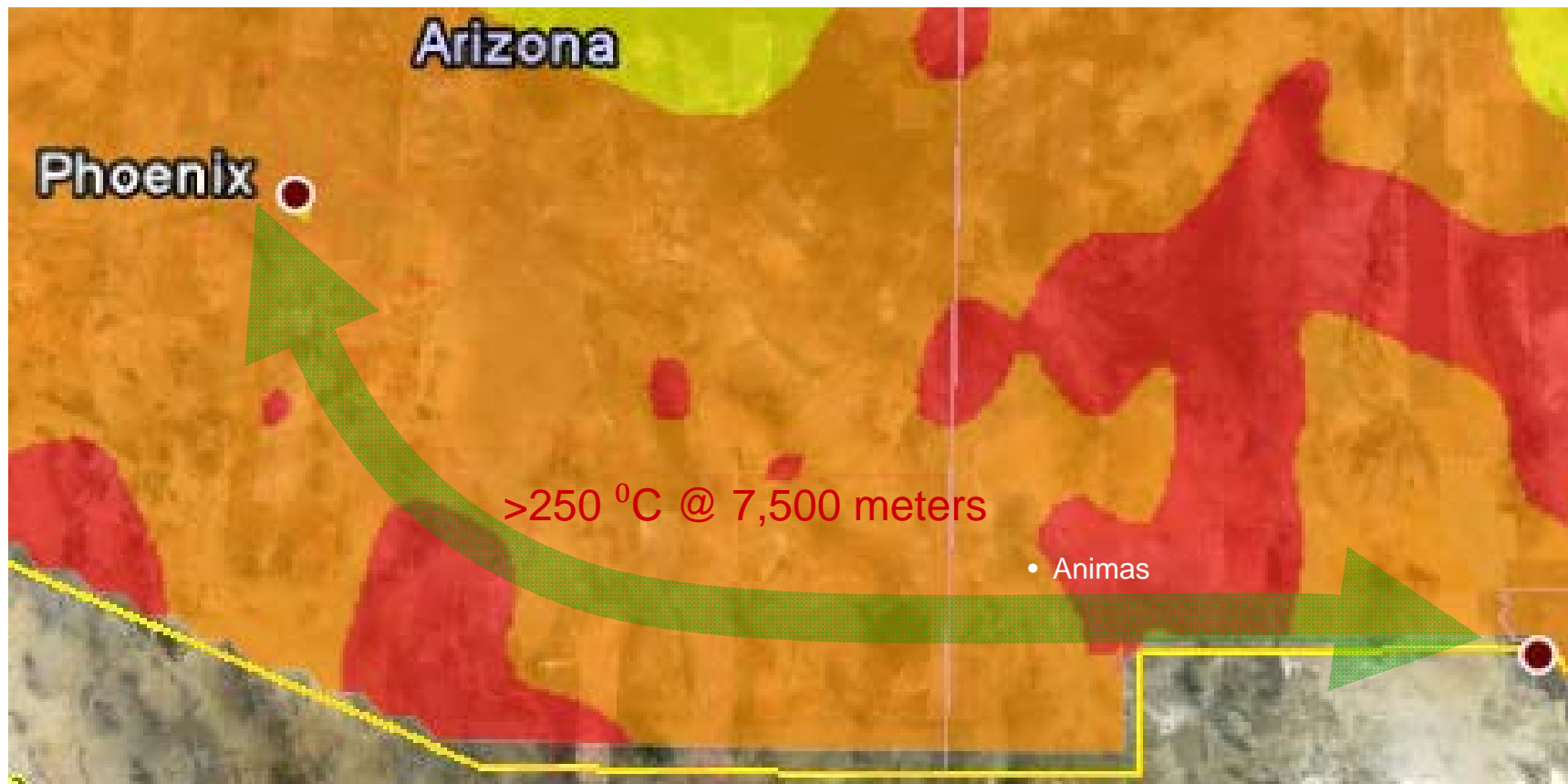
- Southline intersects four of the largest WREZ solar resource zones
- Solar resource potential exceeds 25,000 MW



Solar resource map: WestGov.org

Resource - Geothermal

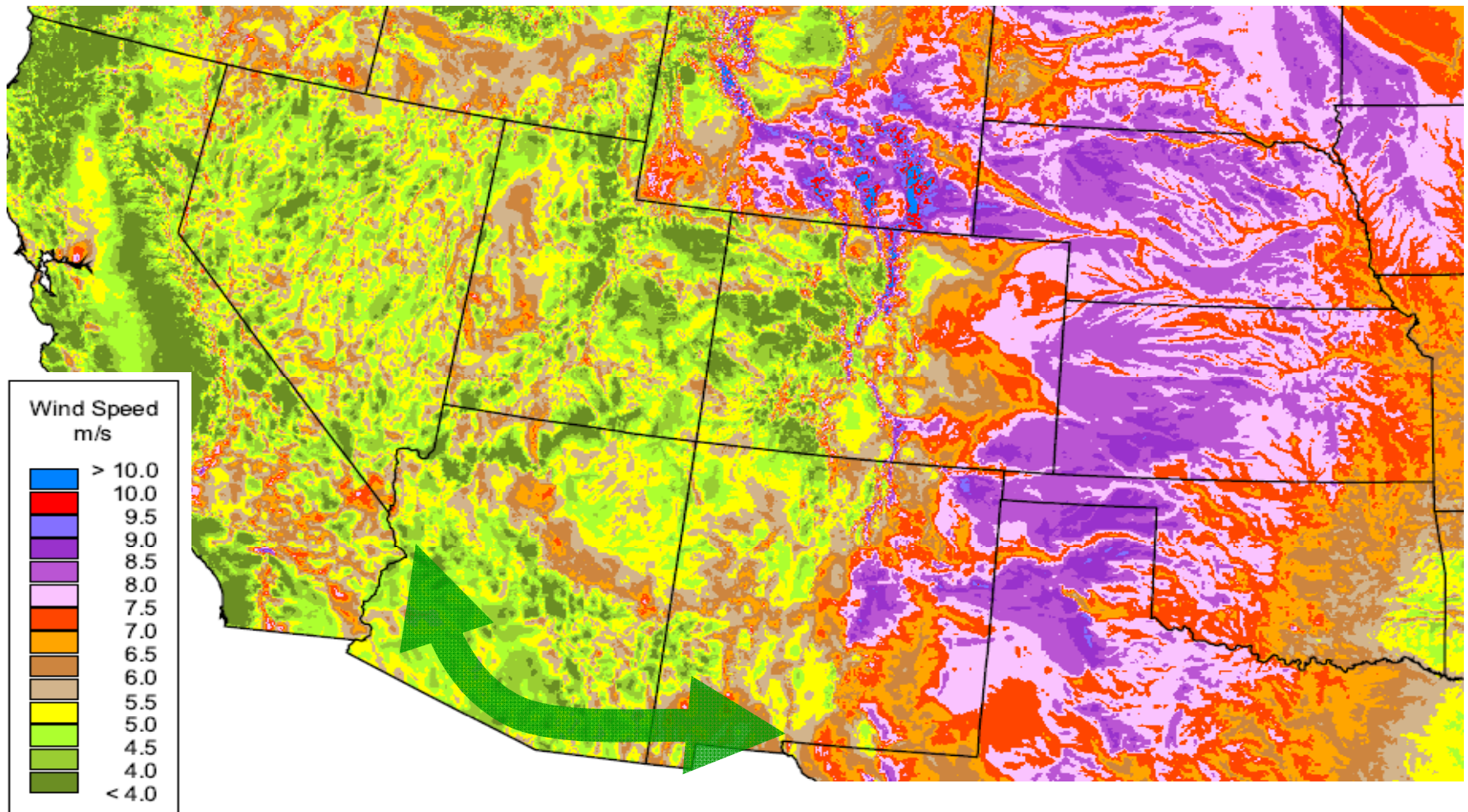
- Accesses large 'stranded' Geothermal resources
- Development stage projects in Hidalgo County and Southern AZ



Geothermal Resource Map: Google.org

Resource--Wind

- Southline represents a key link in delivering wind to Western loads
- Most feasible route

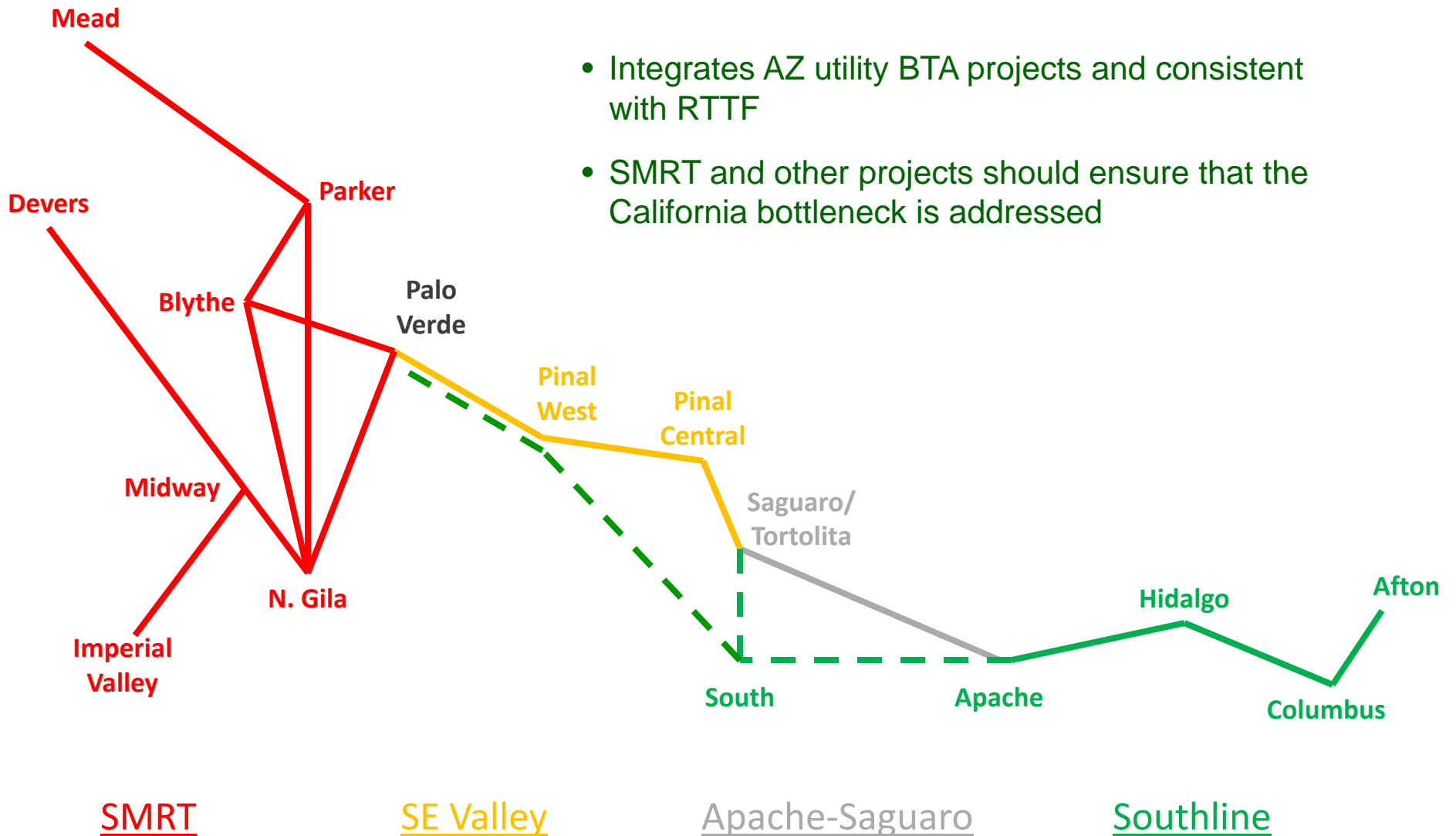


Source: NREL

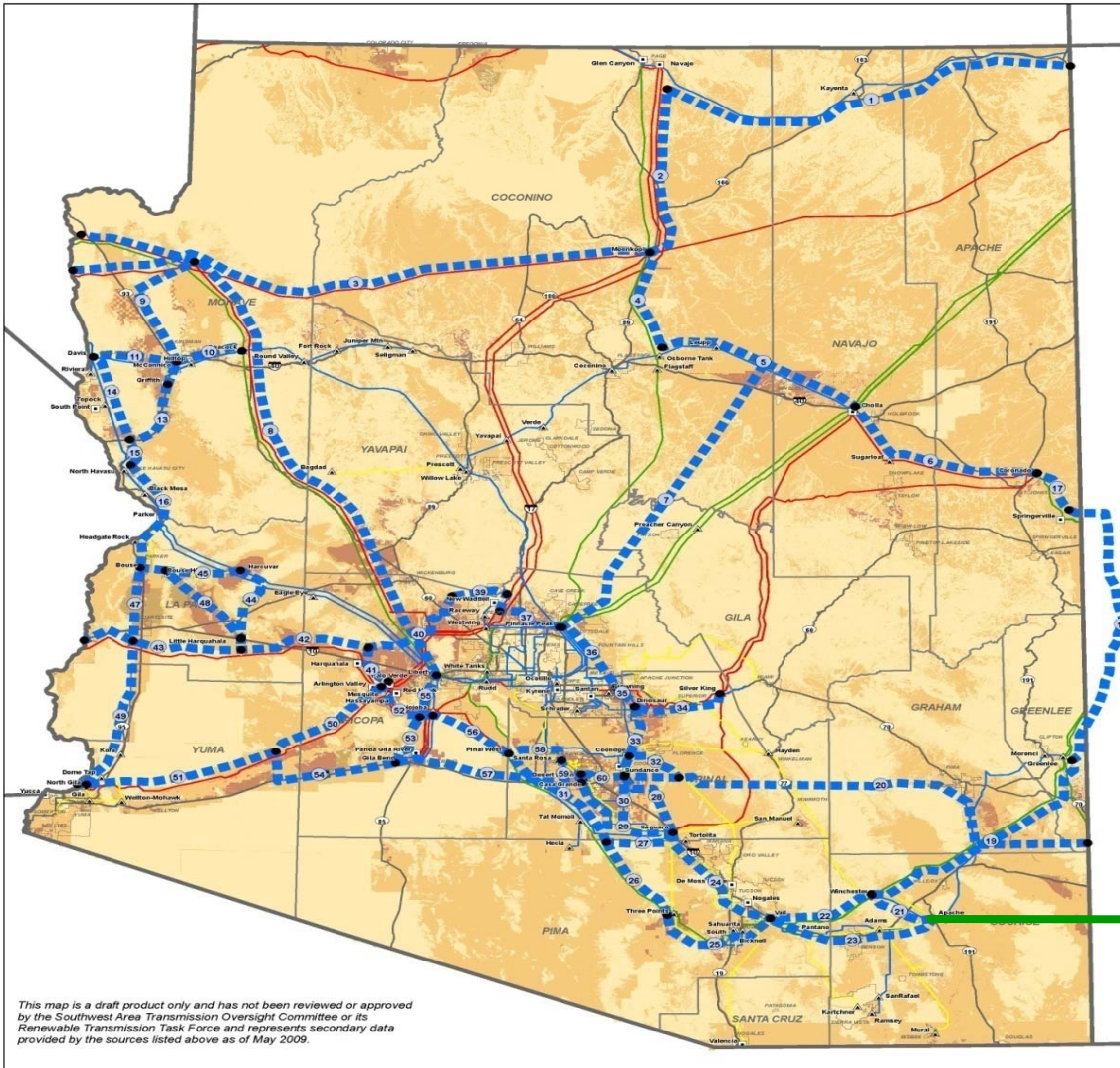
Overview of Benefits

- **Siting:** Utilizes recycled Rights of Way (abandoned rail lines and upgrade-ready existing transmission lines); primarily State & BLM land for new build
- **Resources:** transects some of the best solar and geothermal resources, and enables path for wind
- **Load Connecting:** bi-directional flows and markets in four states
- **Trading hub terminus:** Exploits new upgrades from Palo Verde to CA markets
- **Commercial:** proposed size is economic, can be phased and staged with room for growth
- **Ratepayers:** significantly improves reliability & load serving abilities while minimizing costs
- **Economic:** create local permanent jobs; make region center for renewable industry
- **Flexible:** generation, technology, sizing, timing
- **Advances renewables:** enables timely development of utility scale projects with ecologically- and economically-sensitive facility siting

Emerging Renewables Corridor



Southline Consistent with RTTF



UTILITY FACILITIES

- RTTF Proposed New Transmission/Upgrades
- 500kV Transmission Line
- 345kV Transmission Line
- 230kV Transmission Line
- 161kV Transmission Line
- 138kV Transmission Line
- 115kV Transmission Line
- Power Plant
- Pumping Plant
- Substation

This map is a draft product only and has not been reviewed or approved by the Southwest Area Transmission Oversight Committee or its Renewable Transmission Task Force and represents secondary data provided by the sources listed above as of May 2009.

ENVIRONMENTAL EXCLUSION AND SENSITIVITY AREAS

- Exclusion - Includes areas greater than 5% Slope
- High Sensitivity
- Moderate Sensitivity
- Low Sensitivity

GENERAL REFERENCE

- Interstate/Highway
- Major Road
- City Boundary
- County Boundary
- State Boundary

UTILITY FACILITIES

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SOURCES

ASLD, AGFD, BLM, NREL, USFS, USFWS, USGS, WREZ, 2009

ENVIRONMENTAL RESOURCE EXCLUSION AND SENSITIVITY AREAS (SOLAR)

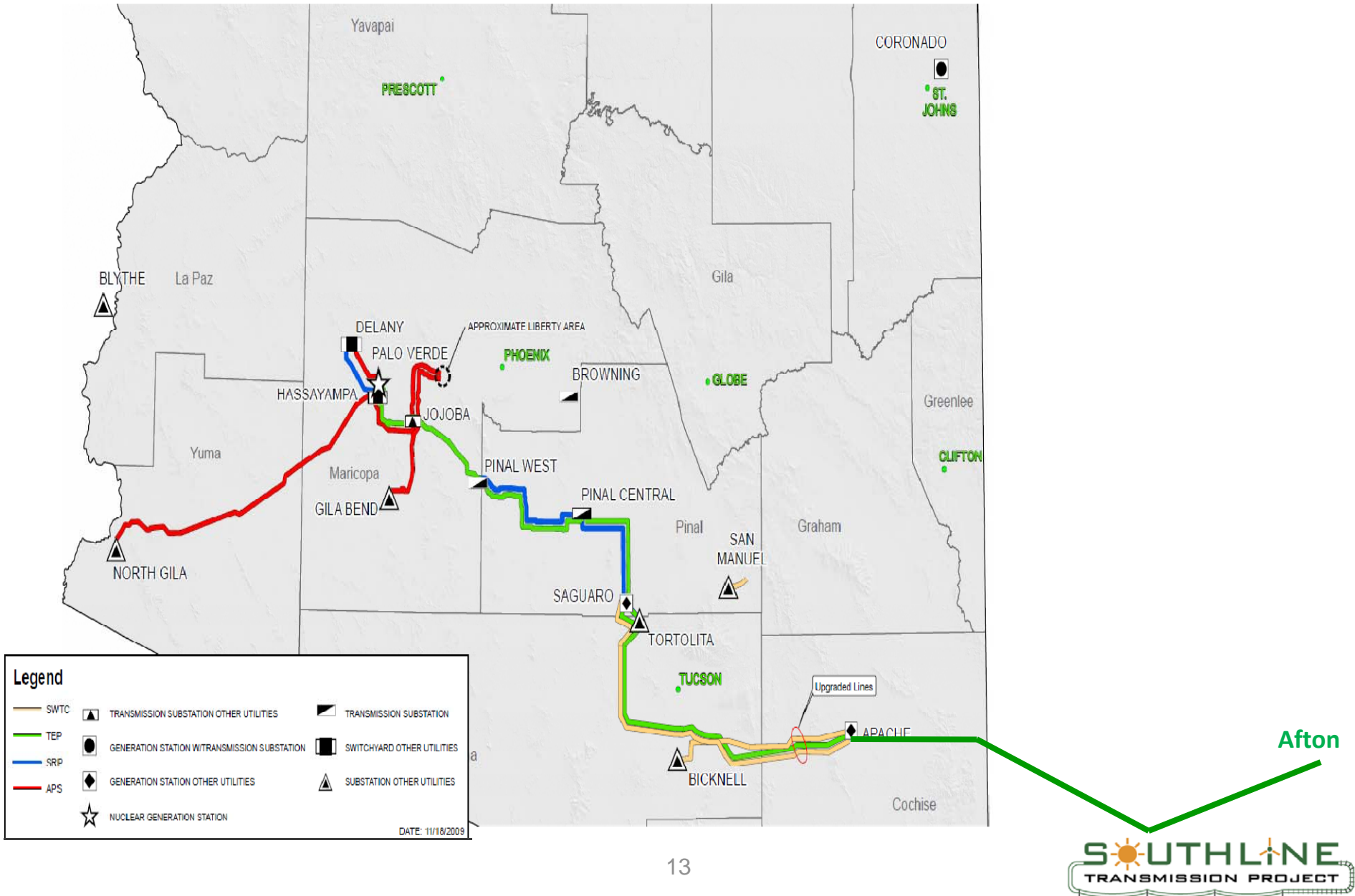
ARRTIS - ARIZONA RENEWABLE RESOURCE AND TRANSMISSION IDENTIFICATION SUBCOMMITTEE

DRAFT: JUNE 18, 2009



Afton

Integrates with AZ Utilities BTA Projects



Planning: Progress and Next Steps

- 2008/2009 — internal siting & market studies
- Fall 2009 — introduced Southline concept to WestConnect
 - New Build Afton-Apache
 - Sought guidance on upgrade options to Palo Verde
- Dec 2009 — initial technical studies
 - Afton-Apache-Bicknell-PW-PV
- Jan 2010 – initial study results presented to SATS
- Feb/Mar 2010 – individual transmission owner meetings
 - Coordinate with other upgrade plans
 - Afton-Apache-Saguaro-PC-PW-PV
- Apr 2010 – proposed SATS Southline Study Group (Project Coordination Review Group).
 - Open access. Information on WestConnect SATS website, invitations to SATS and SWAT members.
- May 13, 2010 – SATS Southline Study Group kickoff. www.southline-pcrg.com
- June 3-4, 2010 – ACC BTA Workshop
- June 9-11, 2010 – WECC PCC overview
- Mid/End July – Preliminary Joint Study Results & Group Review Meeting

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Southline Project Coordination Review Group

SATS Joint Study
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