NEW APPLICATION

ORIGINAL

0000079401

# Application for a Certificate of Environmental Compatibility

## Sundance to Pinal South
## 230kV Transmission Project

**L-00000D-07-0682-00136**

Arizona Corporation Commission
DOCKETED
DEC 11 2007
DOCKETED BY mn

Prepared For:

**Arizona Corporation Commission**
**Arizona Power Plant and Transmission Line Siting Committee**

Prepared By:

**APS**

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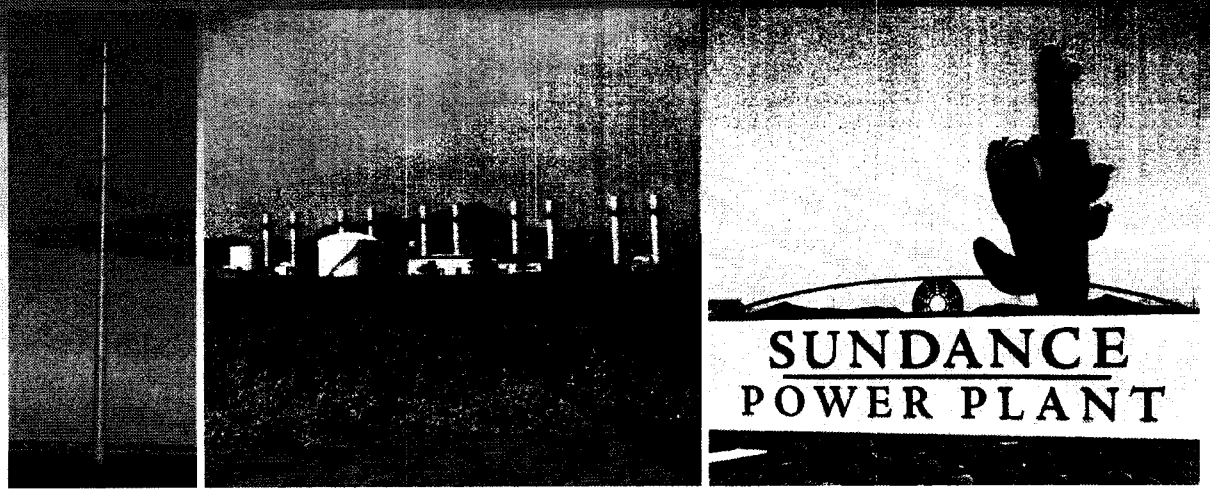
**Volume 1 of 1**

**Filed:** December 10, 2007
**Case No.: 136**

# Sundance to Pinal South 230kV Transmission Project

## Application for a Certificate of Environmental Compatibility




**Prepared For:**
**Arizona Corporation Commission**
**Arizona Power Plant and Transmission Line Siting Committee**

**Prepared By:**
**APS**

**Case Number:** 136

**Docket Number:**

L-00000D-07-0682-00136

**December 2007**

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DOCKETED BY

Arizona Corporation Commission
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Sundance to Pinal South 230kV Transmission Project
Application for a Certificate of Environmental Compatibility

SUNDANCE POWER PLANT

Prepared For:
Arizona Corporation Commission

Arizona Power Plant and Transmission Line Siting Committee

Prepared By:
APS

NEW APPLICATION

# TABLE OF CONTENTS

# TABLE OF CONTENTS

**INTRODUCTION**

**APPLICATION**

| | |
|---|---|
| FIGURE 1 | Regional Project Area |
| FIGURE 2 | Preferred Route |
| FIGURE 3 | Preferred and Alternate Routes |
| FIGURE 4 | Proposed Routes |

**EXHIBIT A: PROJECT LOCATION AND LAND USE**

| | |
|---|---|
| FIGURE A-1 | Project Study Area |
| FIGURE A-2 | Project Study Area |
| FIGURE A-3 | Existing Land Use |
| FIGURE A-4 | Pinal County General Plan Land Use |
| FIGURE A-5 | Coolidge General Plan Land Use |
| FIGURE A-6 | Casa Grande General Plan Land Use |
| FIGURE A-7 | Eloy General Plan Land Use |

**EXHIBIT B: ENVIRONMENTAL REPORTS**

| | |
|---|---|
| EXHIBIT B-1 | Phase I Siting Study report |
| FIGURE 1 | Project Study Area |
| FIGURE 2 | Existing Land Use |
| FIGURE 3 | Future Land Use Plans |
| FIGURE 4 | Coolidge General Plan Land Use |
| FIGURE 5 | Casa Grande General Plan Land Use |
| FIGURE 6 | Eloy General Plan Land Use |
| FIGURE 7 | Pinal County General Plan Land Use |
| FIGURE 8 | Biological Features |
| FIGURE 9 | Soils |
| FIGURE 10 | Opportunities |
| FIGURE 11 | Sensitivities |
| FIGURE 12 | Opportunities and Sensitivities |
| FIGURE 13 | Initial Alternative Alignments |

**EXHIBIT C: AREAS OF BIOLOGICAL WEALTH**

| | |
|---|---|
| EXHIBIT C-1 | Agency Letters |

**EXHIBIT D: BIOLOGICAL RESOURCES**

**EXHIBIT E: SCENIC AREAS, HISTORIC SITES AND STRUCTURES, ARCHAEOLOGICAL SITES**

| | |
|---|---|
| FIGURE E-1 | Key Observation Points |
| FIGURE E-2 | Existing Condition Key Observation Point 1 |
| FIGURE E-3 | Existing Condition Key Observation Point 2 |
| FIGURE E-4 | Existing Condition Key Observation Point 3 |
| FIGURE E-5 | Existing Condition Key Observation Point 4 |
| FIGURE E-6 | Existing Condition Key Observation Point 4 |
| FIGURE E-7 | Existing Condition Key Observation Point 5 |
| FIGURE E-8 | Existing Condition Key Observation Point 6 |
| FIGURE E-9 | Existing Condition Key Observation Point 6 |
| FIGURE E-10 | Existing Condition Key Observation Point 7 |
| FIGURE E-11 | Existing Condition Key Observation Point 7 |
| FIGURE E-12 | Existing Condition Key Observation Point 6 |

FIGURE E-13 Existing Condition Key Observation Point 6
EXHIBIT E-1 Class I Cultural Resources Inventory

**EXHIBIT F: RECREATIONAL PURPOSES AND ASPECTS**
FIGURE F-1 Recreational Opportunities

**EXHIBIT G: CONCEPTS OF TYPICAL FACILITIES**
FIGURE G-1 Single-circuit 230kV with Double-circuit 69kV Underbuild
FIGURE G-2 Double-circuit 230kV with Double-circuit 69kV Underbuild
FIGURE G-3 Double-circuit 230kV Single Pole Turning Structure with Double-circuit 69kV Underbuild
FIGURE G-5 Single-circuit 230kV H-Frame Structure

**EXHIBIT H: EXISTING PLANS**
FIGURE H-1 Future Plans
FIGURE H-2 Planned Area Developments

**EXHIBIT I: ANTICIPATED NOISE/INTERFERENCE WITH COMMUNICATION SIGNALS**

**EXHIBIT J: SPECIAL FACTORS**
EXHIBIT J-1 List of Briefings, Meetings, Presentations
EXHIBIT J-2 Planning Workshop Materials
EXHIBIT J-3 Open House Materials
EXHIBIT J-4 Other Information

**APPENDIX A**

# INTRODUCTION

# INTRODUCTION

## Project Overview

Arizona Public Service Company (APS or Applicant) is seeking a Certificate of Environmental Compatibility (CEC) for the proposed Sundance to Pinal South 230 kilovolt (kV) Transmission Project (Project). The Project would cross land within the jurisdiction of Pinal County, near the communities of Coolidge, Eloy, and Casa Grande as illustrated on **Figure 1** in the Application.

## Project Purpose and Need

The Applicant is proposing the development of new electrical facilities that will allow for a new interconnection of the Sundance Generating Station (Sundance) to the regional electrical grid. The development of the Project will accomplish the following primary goals:

- **Allow the Applicant to schedule the full output capability of Sundance, currently estimated at 420 megawatts (MW) during peak conditions.** The ability to fully deliver the power capable of being produced at Sundance is constrained by the existing transmission system to which the plant is interconnected.

- **Provide the Applicant with an economically viable alternative to the existing Western Area Power Administration (Western) transmission system that currently serves the Sundance plant.** A new 230kV line owned and operated by the Applicant would reduce the need for wheeling Sundance-generated power on the Western system and associated costs.

- **Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area.** Additionally, a separate 230kV transmission path from Sundance increases the reliability of the local system and increases the reliability of Sundance in the event of an outage involving the corridor of the Western 230kV transmission lines currently serving Sundance.

System studies have shown that new facilities would support the continued growth in the area of the Project and enhance the reliability of the existing electrical system. Further benefit would be derived from this Project should additional generating units be added at the Sundance facility as this line could accommodate additional capacity required to support projected growth in Pinal County and the Phoenix metropolitan area.

The Project was initially proposed by the Applicant through the regional planning process within the Central Arizona Transmission High Voltage (CATS-HV) planning group. The 2006 CATS-HV Study identified future electrical needs of Pinal County and this Project was identified as an important component of the future transmission infrastructure in the Study (K.R. Saline & Associates, 2006). After studies and review of the Project from the CATS-HV group, the Applicant identified the need for the 230kV transmission line in its 2007 Ten Year Plan. The projected in-service date for the proposed 230kV line is 2011, and construction is anticipated to commence in 2009.

## Siting Process

The Applicant conducted a comprehensive siting process from April through November 2007. The goal of the siting process was to identify suitable transmission line routes that meet the Project purpose and need. Potential routes were identified by minimizing siting options in constrained areas, such as near schools and existing residences, and maximizing siting opportunities that take advantage of existing linear features, such as utility corridors, roads, and other infrastructure. The siting process considered several factors including engineering design, right-of-way (ROW) availability, constructability, costs, regulatory approvals, public and agency input, and potential environmental impacts. The route identified as the Preferred Route had the least amount of environmental impact when compared to the other potential routes, while still meeting purpose, need, and technical considerations.

## Proposed Facilities

The Project will include the construction of approximately 7 miles of 230kV transmission line on tubular steel structures originating from a new substation located on the Sundance property and interconnecting with the future Pinal South transmission substation (Pinal South Substation). **Figure 2** in the Application illustrates the proposed transmission line and substation site.

The proposed transmission line and substation site at the Sundance facility satisfies the Project purpose and need while providing a balance between the public and agency input, potential environmental impacts, and engineering and construction criteria.

### *Preferred Route*

The Applicant's Preferred Route, identified on **Figure 3** in the Application, originates at a new 10-acre substation proposed to be located on property owned by APS associated with Sundance. A single-circuit 230kV tie-line would be built from the new substation to interconnect with the existing substation located on the north side of the Sundance facility. The Preferred Route would proceed west, south of the existing and future planned natural gas lines north of Randolph Road. The route then turns south along the Curry Road alignment to the half-section between State Route (SR) 287/Florence Boulevard and Earley Road. The Applicant is requesting a 500-foot corridor centered on Curry Road in this area. From this point, the Preferred Route heads east along the half-section between SR 287 and Earley Road to the future Pinal South Substation, approved as part of Arizona Corporation Commission (ACC) Decision #68093 (Line Siting Case #126). The portion of the Preferred Route along the half-section between SR 287 and Earley Road would be immediately adjacent and parallel to the location in which Salt River Project (SRP) received approval for a future double-circuit 500/230kV transmission line in ACC Decision #68093.

### *Alternate Route*

The Applicant identified an Alternate Route to the Preferred Route that would also satisfy Project purpose and need. This route also provides a balance between the public and agency input, potential environmental impacts, and engineering and construction criteria.

The Alternate Route, identified on **Figure 3** in the Application, would originate at the same location as the Preferred Route and would proceed west along the same corridor, south of the

existing and future planned natural gas pipelines north of Randolph Road. The Alternate Route would turn south at the half-section between Curry and Tweedy Roads and would continue south to the Earley Road alignment. The Applicant is requesting a 500-foot corridor centered on the half-section line between Curry and Tweedy Roads. At this point, the route would turn to the east and parallel the Earley Road alignment north of the Casa Grande Canal to Eleven Mile Corner Road. The route would then proceed north on the east side of Eleven Mile Corner Road, terminating at the future Pinal South Substation.

### *Northern Corridor Area*

The Applicant is requesting a Northern Corridor Area as identified on **Figure 4** in the Application. The Applicant requests a 2,700-foot corridor north of Randolph Road, from 250 feet east of Tweedy Road to the half-section line between Curry and Tweedy Roads. This portion of the Northern Corridor Area is located on property owned by the Applicant. The Applicant also requests a 1,380-foot corridor north of Randolph Road, from the half-section line between Curry and Tweedy Roads to 250 feet west of Curry Road. The location of the Project within this corridor will be based on land acquisition and site-specific design and engineering requirements.

### *Southern Corridor Area*

The Applicant is requesting a Southern Corridor Area as identified on **Figure 4** in the application. The Applicant requests a 3,000-foot corridor south of the half-section line between Earley Road and SR 287, beginning 250 feet west of Curry Road to 1,000 feet east of Eleven Mile Corner Road. The location of the Project within this corridor will be based on land acquisition and site-specific design and engineering requirements.

## REFERENCE

K.R. Saline & Associates. 2006. CATS-HV Saturate Load and Transmission Study. A Transmission Option to Serve Saturated Loads in Pinal County. Prepared for Central Arizona Transmission System – High Voltage "CATS HV", a subcommittee of Southwest Area Transmission. September 21.

# APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

# APPLICATION

(Pursuant to Arizona Revised Statues (A.R.S.) Sections 40-360.03 and 40-360.06)

1. ***Name and address of the Applicant, or in the case of a joint project, the Applicants.***

   Arizona Public Service Company
   PO Box 53933
   Phoenix, AZ 85072-3933

2. ***Name, address and telephone number of a representative of the Applicant who has access to technical knowledge and background information concerning the application in question, and who will be available to answer questions or furnish additional information.***

   Gregory (Greg) L. Bernosky
   Project Manager
   Transmission and Facility Siting Group
   Arizona Public Service
   P.O. Box 53933, Mail Station 4030
   Phoenix, AZ 85072-3933
   (602) 493-4448

3. ***State each date on which the Applicant has filed a Ten Year Plan in compliance with A.R.S. Sections 40-360.02 and designate each such filing in which the facilities for which this Application is made were described. If they have not been previously described in a ten-year plan, state the reasons therefore.***

   In accordance with A.R.S. Section 40-360.02, Arizona Public Service Company (APS or Applicant) filed a Ten Year Plan with the Arizona Corporation Commission (ACC) on January 31, 2007, that described the Sundance to Pinal South 230 kilovolt (kV) Transmission Project (Project).

4. ***Description of the proposed facilities, including:***

   ***4.1 Description of electric generating plant.***

   Not Applicable.

   ***4.2 Description of the proposed transmission lines.***

   ***4.2.1 General Description.***

   ***4.2.1.1 Nominal voltage for which the lines are designed.***

   The Project is designed for a nominal voltage of 230kV alternating current (AC) double-circuit, and includes a tie-line which will be 230kV single-circuit.

#### *4.2.1.2 Description of proposed structures.*

The Project would be constructed using tubular steel structures designed to accommodate double-circuit 230kV and 69kV circuits underbuilt. The tie-line would be constructed using tubular steel structures designed to accommodate a single 230 kV circuit.

The structures would be approximately 120 to 160 feet above ground, depending on the span length required, with a maximum height of 195 feet. The span length between structures would typically range from 700 to 1,000 feet, and will be based on existing conditions, engineering requirements, and site-specific mitigation objectives, such as matching structure locations with the Salt River Project (SRP) future double-circuit 500/230kV transmission line. Final design characteristics will be determined in the detailed design phase of the Project. The tubular steel supporting structures would have a low-reflective (non-specular), dulled finish to reduce visibility.

In addition to the transmission line, ancillary equipment may be needed to support this Project. This ancillary equipment could include, but not be limited to, the following: aerial marker balls or lights, fiber optic splice cases, supporting electrical distribution lines for the fiber optic system, safety signs, and location signs.

Typical structure diagrams anticipated for this Project are provided in **Exhibit G**.

#### *4.2.1.3 Description of proposed switchyards and substations.*

The Project will originate from a new substation to be located south of the Sundance Generating Station (Sundance) (ACC Decision #63863, Line Siting Case #107) on approximately 10 acres of land owned by APS. The Project will be interconnected to the existing Sundance substation owned and operated by Western Area Power Administration (Western) on the north side of Sundance via a new single-circuit 230kV tie line. If additional generation is developed at Sundance, the future generation units would likely be interconnected to the new substation. When fully developed, the substation will include electrical equipment such as transformers, breakers, and switches. The substation also will include structural steel that is necessary to support the equipment and terminate the line (referred to as a dead-end). All equipment and steel will be within a perimeter barrier.

The structures and equipment in the switchyard/substation will have a dulled finish similar to the transmission line structures, as described in **Section 4.2.1.2**. The site will be graded for water retention and will be covered in gravel. Substation facilities are typically surrounded by a perimeter wall or fence, security gates, and landscaping. Final architectural characteristics, including landscaping (type and density), setbacks, and visual screening will be determined per jurisdictional code.

The Project will terminate at the future Pinal South Substation, which was approved in ACC Decision #68093, (Line Siting Case #126). **Exhibit G** contains conceptual illustrations of the substation layouts proposed for the Project.

#### *4.2.1.4 Purpose for constructing proposed transmission lines.*

The Project will accomplish the following primary goals:

**Allow the applicant to schedule the full output capability of Sundance, currently estimated at 420 megawatts (MW) during peak conditions.** The ability to fully deliver the power capable of being produced by Sundance is constrained by the existing transmission system to which the plant is interconnected.

**Provide the applicant with an economically viable alternative to the existing Western transmission system that currently serves the plant.** A new 230kV line owned and operated by the applicant would reduce the need for wheeling Sundance-generated power on the Western system and other associated costs.

**Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area.** A separate 230kV transmission path from Sundance increases the reliability of the local system and increases the reliability of Sundance in the event of an outage involving the Western 230kV transmission line corridor currently serving Sundance.

System studies have shown that the Project would support continued growth in the Project area and enhance the reliability of the existing system. Further benefit would be derived from this Project should additional generating units be added at Sundance, as this Project could accommodate additional capacity required to support projected growth in Pinal County and the Phoenix metropolitan area.

### *4.2.2 General Location.*

#### *4.2.2.1 Description of the geographic points between which the transmission line will run.*

**Figure 1** identifies the regional Project area. **Figure 2** identifies the Project Study Area (PSA) and the Preferred Route. The Project will begin at Sundance located in Section 2, Township 6 South (T6S), Range 7 East (R7E) of Pinal County, just north of the intersection of Randolph and Tweedy Roads in Pinal County.

The Project will terminate at the future Pinal South Substation, which will be located in Section 30, T6S, R8E of Pinal County.

#### *4.2.2.2 Straight-line distance between such geographic points.*

The straight-line distance between Sundance and the Pinal South Substation is approximately 4.1 miles.

#### *4.2.2.3 Length of the transmission line for each alternative route.*

**Figure 3** identifies the Preferred and Alternate Routes.

Preferred Route: 7.2 miles

Alternate Route: 6.8 miles

A single-circuit 230kV tie-line connecting the new substation to the existing substation at Sundance will be constructed as part of this Project and adds approximately 0.6 mile of length to both the Preferred and Alternate Routes. This length is included in the totals listed above.

### *4.2.3 Detailed Dimensions.*

#### *4.2.3.1 Nominal width of ROW required.*

The Applicant is requesting approval of a total right-of-way (ROW) width of up to 130 feet within a general corridor that is 500 feet wide, except in the areas identified as the Northern Corridor Area and Southern Corridor Area on **Figure 4**, which shows the corridors requested.

In the Northern Corridor Area, the Applicant requests a 2,700-foot corridor north of Randolph Road, from 250 feet of Tweedy Road to the half-section line between Curry and Tweedy Roads. This portion of the Northern Corridor Area is located on the Applicant's property. The Applicant requests a 1,380-foot corridor north of Randolph Road, from the half-section line between Curry and Tweedy Roads to 250 feet west of Curry Road.

In the Southern Corridor Area, the Applicant requests a 3,000-foot corridor south of the half-section line between Earley Road and State Route (SR) 287, from 250 feet west of Curry Road to 1,000 feet east of Eleven Mile Corner Road. The location of the Project within these corridors will be based on land acquisition and site-specific design and engineering requirements.

#### *4.2.3.2 Nominal length of span.*

The nominal length of span varies from 700 to 1,000 feet.

*4.2.3.3* ***Maximum height of supporting structures.***

The typical height of the supporting structures will vary from 120 to 160 feet. The maximum height of supporting structures will not exceed 195 feet.

*4.2.3.4* ***Minimum height of conductor above ground.***

The minimum height of the 230kV conductor above existing grade will be 25 feet 6 inches.

*4.2.4* ***To the extent available, estimate costs of proposed transmission line and route, stated separately. (If Application contains alternative routes, furnish an estimate for each route and a brief description of the reasons for any variations in such estimates.)***

| | Total Length of Transmission Line (distance in miles) | Right-of-Way Costs ($ million) | Construction Costs ($ million) | Total of Right-of-Way and Construction Costs ($ million) |
|---|---|---|---|---|
| **Preferred Route** | 7.2 | 2.9 | 15.9 | 18.8 |
| **Alternate Route** | 6.8 | 2.7 | 15.1 | 17.8 |

*4.2.5* ***Description of the proposed and alternate routes.***

The Applicant's Preferred Route, identified on **Figure 3**, originates at a new 10-acre substation proposed to be located on property owned by APS associated with Sundance. A single-circuit 230kV tie-line would be built from the new substation to interconnect with the existing substation owned and operated by Western, and located immediately north of Sundance. The Preferred Route would proceed west, south of existing and future planned natural gas lines north of Randolph Road. The route then turns south along the Curry Road alignment to the half-section between SR 287 and Earley Road. From this point, the Preferred Route heads east along the half-section between SR 287 and Earley Road to the future Pinal South Substation, approved as part of ACC Decision #68093 (Line Siting Case #126). The portion of the Preferred Route along the half-section between SR 287 and Earley Road would be immediately adjacent and parallel to the location in which SRP has received approval for a future planned double-circuit 500/230kV transmission line in ACC Decision #68093.

The Alternate Route, identified on **Figure 3**, would originate at the same location as the Preferred Route and would proceed west along the same corridor south of the existing and future planned natural gas pipelines north of Randolph Road. The Alternate Route would turn south at the half-section between Curry and Tweedy Roads and would continue south to the Earley Road alignment. At this point, the route would turn to the east and parallel the Earley Road alignment on the north

side of the Casa Grande Canal to Eleven Mile Corner Road. The route would then proceed north on the east side of Eleven Mile Corner Road, terminating at the future Pinal South Substation.

#### *4.2.6 Land Ownership*

The Proposed Route crosses 6.6 miles of private land and 0.6 mile of State Trust Land.

The Alternate Route crosses 6.8 miles of private land.

### *5. Jurisdiction.*

#### *5.1 Areas of jurisdiction (as defined in A.R.S. Section 40-360) affected by this route.*

Both the Preferred and Alternate Routes are located entirely within unincorporated Pinal County.

#### *5.2 Designation for proposed sites or routes, if any, which are contrary to the zoning ordinances or master plans of affected areas of jurisdiction.*

No portions of the Preferred Route or the Alternate Route are contrary to zoning ordinances or master plans of any affected areas of jurisdiction.

### *6. Description of the environmental studies the Applicant has performed or intends to perform.*

ARCADIS, an environmental consulting firm located in Phoenix, Arizona, has conducted extensive environmental studies to support this Application including the following:

- Exhibit A includes a land use planning study.
- Exhibit B includes a Phase I Siting Study.
- Exhibits C and D include biological studies. Prior to construction, the Applicant will conduct resource surveys (including biological and cultural surveys) for disturbed areas of the certificated alignment not previously surveyed.
- Exhibit E includes a Class I Cultural Resources Inventory.
- Exhibit F includes a recreational resources study.
- Exhibit H summarizes future land use plans.
- Exhibit J summarizes the public participation program.

During the environmental studies, a public participation program was implemented to disseminate information, receive feedback, evaluate preferences for alternative routes, and identify issues raised by the general public. The public participation process has continued up to the filing date of this Application. Methods to achieve these objectives included public open house meetings, newsletters, jurisdictional meetings, Planning Workshops, maintenance of a website, and a toll-free telephone

number to contact the Applicant's Project Manager. More information regarding the public participation program is provided in **Exhibit J** of this Application.

The Applicant also performed the following two studies:

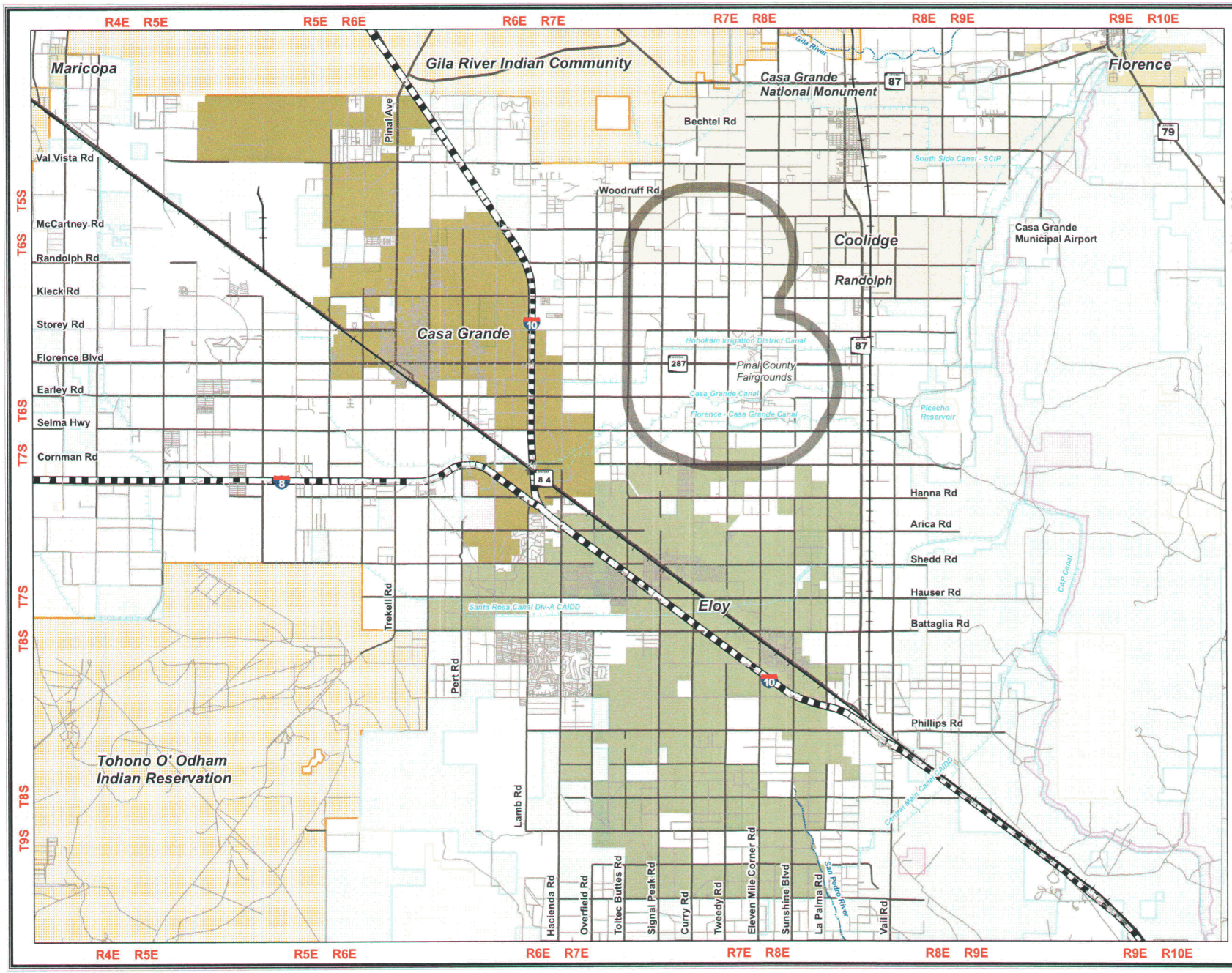
- Exhibit G includes visual simulations of typical facility structures.
- Exhibit I includes a noise and interference analysis.

7. ***Rationale for route selection/preference.***

The Applicant would accept and build either the Preferred Route or the Alternate Route described in this Application. The Preferred Route was selected based on environmental studies and electrical system planning. In particular, the following study findings were taken into consideration:

- No long-term or adverse effects to special status species or unique habitats are anticipated to occur from the construction and operation of the Project.
- No unmitigated effects to archaeological or historic sites are anticipated to occur from the construction and operation of the Project.
- The Project would be constructed to parallel existing environmental routing opportunities to the extent feasible.
- Effects related to audible noise, communication signals, and electric and magnetic fields associated with the construction and operation of the Project are anticipated to be minimal.
- The Project meets electrical and technical considerations for delivering power from Sundance to Pinal South Substation.

Based on the information provided above, the Applicant hereby affirms, upon thorough expert scientific environmental evaluation and analysis, that the Project is environmentally compatible and respectfully requests the Siting Committee issue a CEC, with a term of approximately 18 years, to be consistent with Decision #68093 and #69647, the Desert Basin 230kV Power Line Project, proposed by SRP.




# Figure 1

## Regional Project Area

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

## December 2007

### Legend

- Project Study Area
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad
- River
- Canal
- City of Casa Grande Municipal Boundary
- City of Coolidge Municipal Boundary
- City of Florence Municipal Boundary
- City of Eloy Municipal Boundary
- Town of Maricopa Municipal Boundary
- Arizona State Trust
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Indian Land
- National Park Service

Data Sources
City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007

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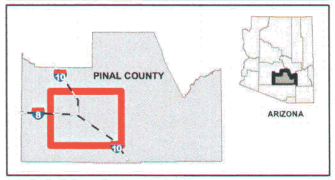


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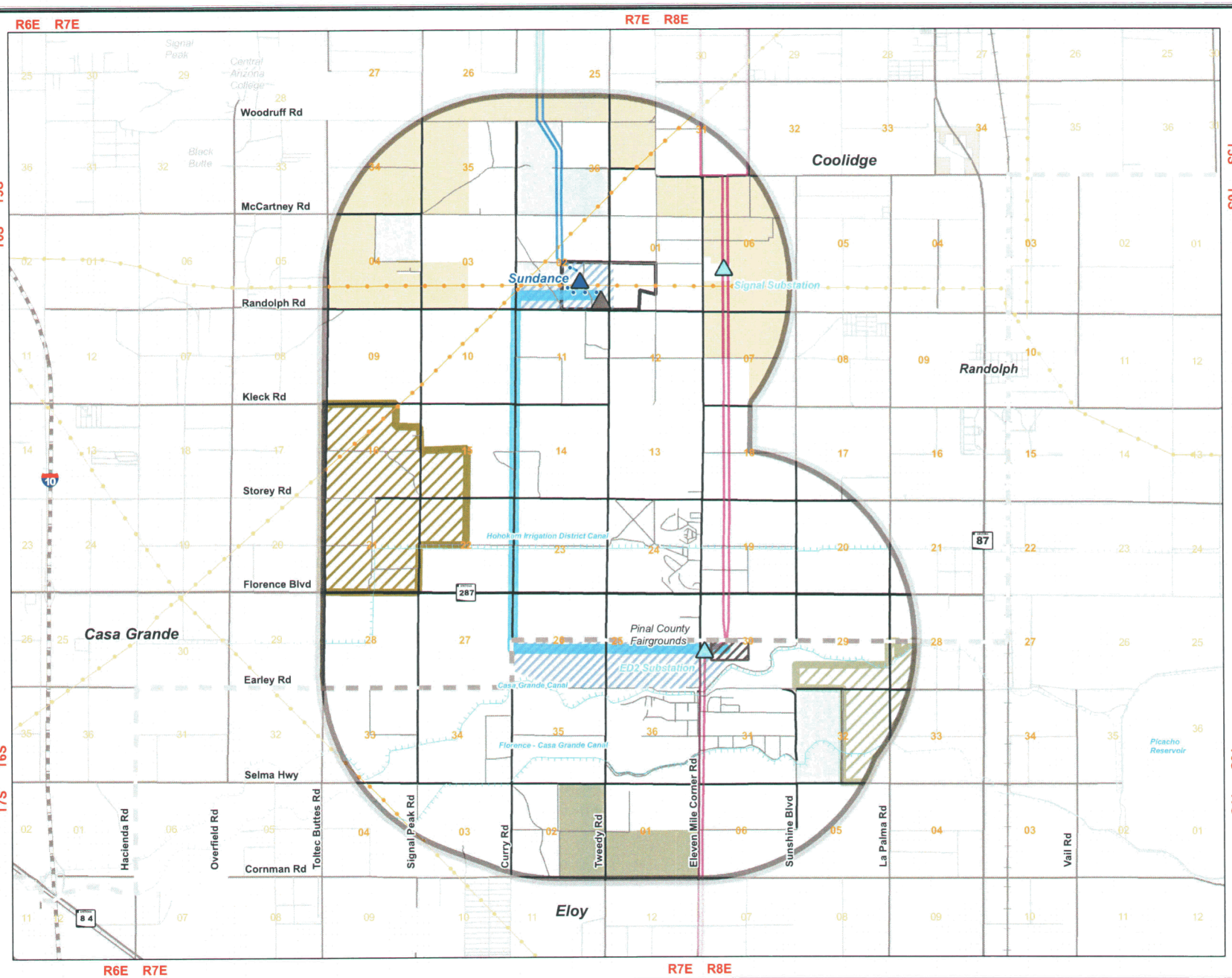



# Figure 2

## Preferred Route

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

## December 2007

### Legend

- Preferred Route
- Tie Line
- New Substation at Sundance
- Requested Corridor for Potential Sub-Routes

**City of Coolidge**
- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**
- Municipal Boundary
- Proposed Annexation

**City of Eloy**
- Municipal Boundary
- Proposed Annexation

**Land Ownership**
- Bureau of Land Management
- Arizona State Trust

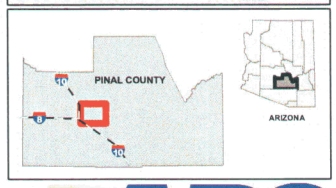
**Reference Features**
- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Sundance Generating Facility
- Interstate
- Future SRP 500/230kV Corridor
- State Highway
- Generating Station
- Major Arterial
- Electrical Substation
- Street
- 230kV Line
- Railroad
- 115kV Line

Data Sources

City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - May, 2007

N

0 0.25 0.5 0.75 1
Miles

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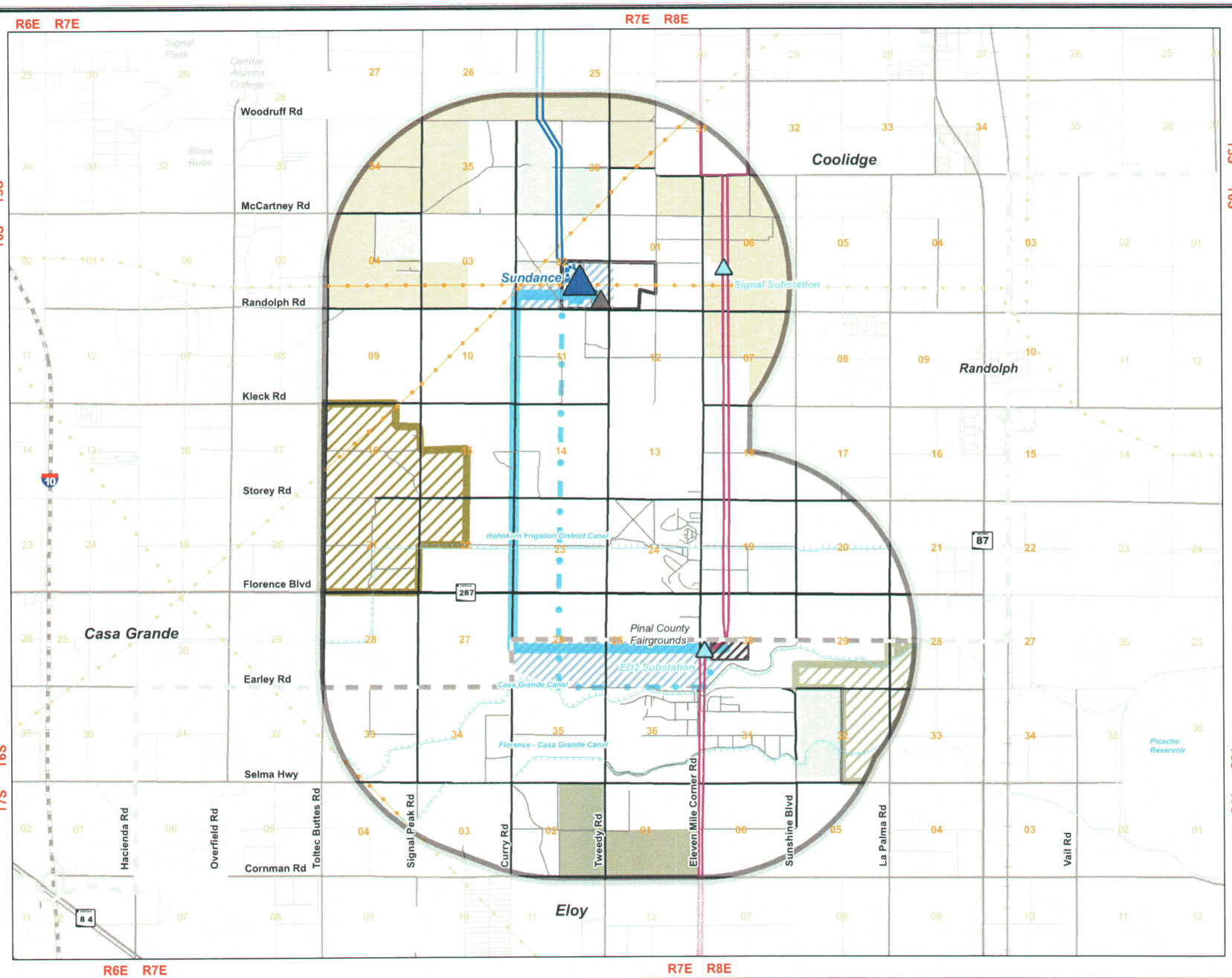


# Figure 3

## Preferred and Alternate Routes

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

## December 2007

### Legend

- Preferred Route
- Tie Line
- Alternate Route
- Requested Corridor for Potential Sub-Routes
- New Substation at Sundance

**City of Coolidge**
- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**
- Municipal Boundary
- Proposed Annexation

**City of Eloy**
- Municipal Boundary
- Proposed Annexation

**Land Ownership**
- Bureau of Land Management
- Arizona State Trust

**Reference Features**
- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Sundance Generating Facility
- Interstate
- Future SRP 500/230kV Corridor
- State Highway
- Generating Station
- Major Arterial
- Electrical Substation
- Street
- 230kV Line
- Railroad
- 115kV Line

Data Sources

City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - May, 2007

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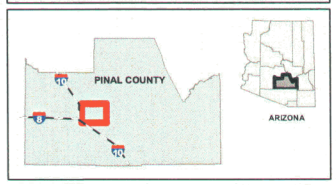



APS

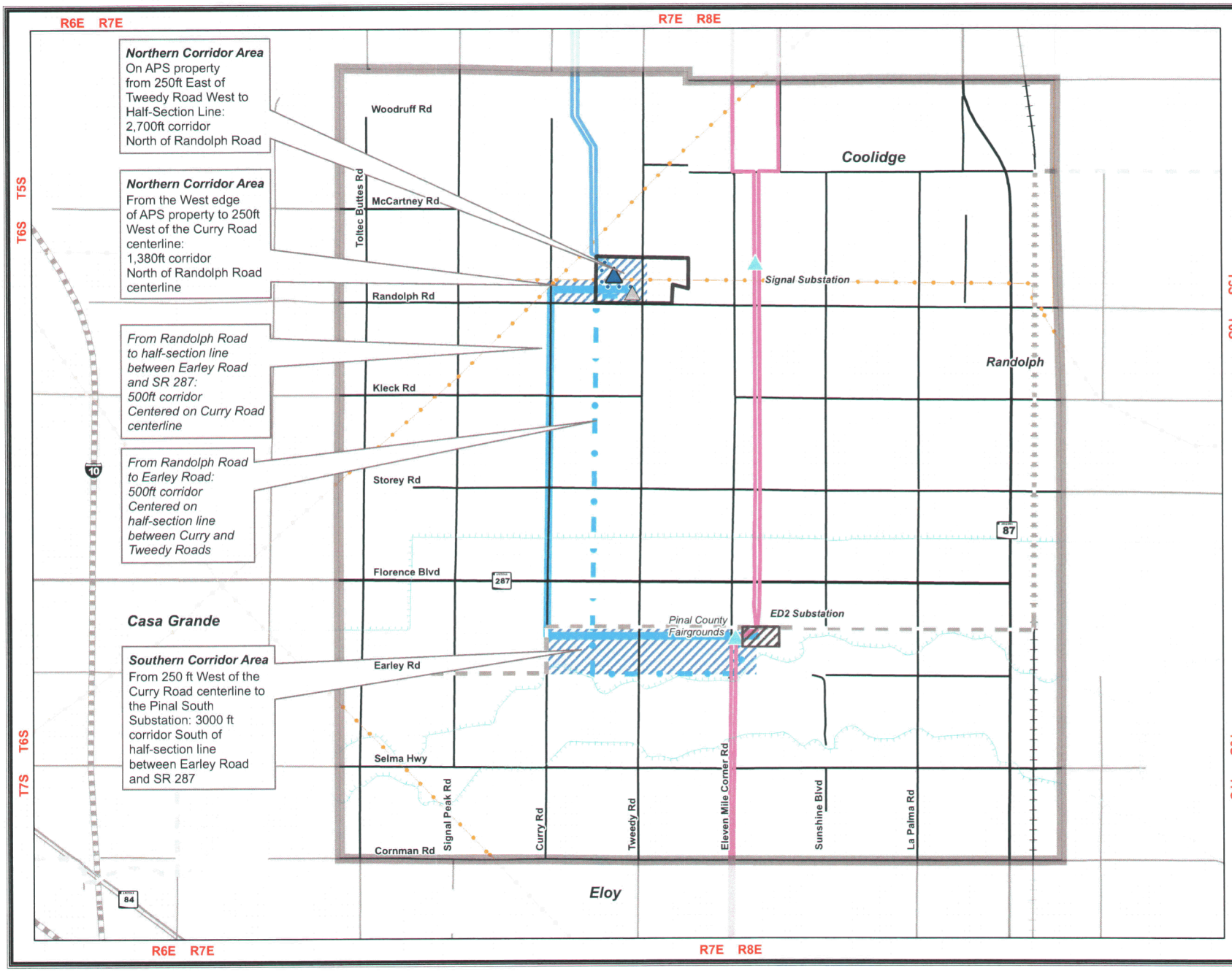
# Figure 4

## Proposed Routes

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

**December 2007**




### Legend

- Preferred Route
- Alternate Route
- Tie Line
- Requested Corridor for Potential Sub-Routes
- New Substation at Sundance

### Reference Features

- Project Study Area
- Future Pinal South Substation
- Sundance Generating Facility
- Future SRP 500/230kV Corridor
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

Data Sources

City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - SRP, April 2006

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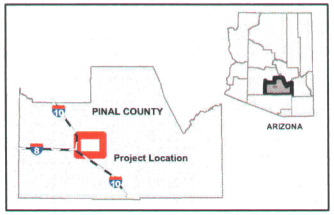
Miles

Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters




APS

# EXHIBIT A
# PROJECT LOCATION AND LAND USE

# EXHIBIT A
# PROJECT LOCATION AND LAND USE

As stated in Arizona Administrative Code R14-3-219:

> *"Where commercially available, a topographic map, 1:250,000 scale, showing any proposed transmission line route of more than 50 miles in length and the adjacent area. For routes less than 50 miles, use a scale of 1:62,500. If application is made for alternative transmission line routes, all routes may be shown on the same map, if practicable, designated by the Applicant's order of preference."*
>
> *"Where commercially available, a topographic map, 1:62,500 scale, of each proposed transmission line route of more than 50 miles in length showing that portion of the route within two miles of any subdivided area. The general land use plan within the area shall be shown on a 1:62,500 map, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of on an overlay."*

## Project Location

**Figure A-1** depicts the Project Study Area (PSA), proposed routes, jurisdictions, and the adjacent area.

**Figure A-2** depicts the PSA on a topographic map (1:62,500 scale).

**Figure A-3** depicts the field-verified existing land use (1:62,500 scale).

**Figure A-4** depicts Pinal County land use plans within the PSA (1:62,500 scale).

**Figure A-5** depicts the City of Coolidge land use plans within the PSA (1:62,500 scale

**Figure A-6** depicts the City of Casa Grande land use plans within the PSA (1:62,500 scale).

**Figure A-7** depicts the City of Eloy land use plans within the PSA (1:62,500 scale).

The PSA is defined by a 2-mile buffer of the proposed routes (**Figures A-1 and A-2**), which encompasses a total of 27,200 acres. Lands within the PSA are dominated by agricultural uses, both inactive and active, and scattered low-density residential. There are isolated areas of industrial and commercial uses including the Sundance Generating Station (Sundance), existing electrical substations, cotton gins, and other similar facilities. The Mary C O'Brien Elementary School and a Pinal County Special Education Program facility are located along Eleven Mile Corner Road north of State Route (SR) 87.

The Pinal County Fairgrounds are located on approximately 120 acres in Section 25, T6S R7E and are primarily used for race events, concerts, exhibits, meetings, and Recreational Vehicle (RV) hook-ups. The Tierra Grande Golf Course is located within the Tierra Grande development

south of Earley Road and the Casa Grande Canal. Recreational resources are further described in **Exhibit F**.

Major transportation corridors within the PSA are SR 287, Randolph Road, and Eleven Mile Corner Road. SR 87 is between one and two miles to the east of the PSA and Interstate 10 (I-10) is three miles to the west. Other roads in the PSA can be characterized as paved and unpaved that are primarily arterial and collector roads.

Western Area Power Administration (Western) owns and operates several major utility lines in the PSA, including the 230 kilovolt (kV) transmission lines (one single-circuit and one double-circuit) that connect to the Sundance facility, and exit Sundance to the north along the half-section between Curry and Tweedy Roads. Western also owns the two 115kV transmission lines that run north and south approximately ¼ mile east of Eleven Mile Corner Road from the Signal Substation to the Electrical District 2 (ED2) Substation. ED2 is the primary electrical provider in the PSA and operates the Signal and ED2 substations as well as a network of 12kV and 69kV distribution lines throughout the PSA.

Salt River Project (SRP) has received a Certificate of Environmental Compatibility (CEC) from the Arizona Corporation Commission (ACC) (Decision #68093) for a future double-circuit 500/230kV transmission line, a portion of which is located in the PSA. Within the PSA, this line will follow Earley Road to Curry Road, turn north along Curry Road, and turn east along the half-section line between Earley Road and SR 287. The line then travels east across the Pinal County Fairgrounds to the future Pinal South Substation and continues east along the half-section line to the Union Pacific railroad.

El Paso Natural Gas Company (EPNG) owns and operates three natural gas pipelines in the PSA. These are generally located in the northern portion of the PSA, and all three of the existing pipelines are within close proximity and/or serve the Sundance facility. Transwestern Pipeline Company, LLC (Transwestern) has proposed an additional natural gas pipeline in the northern portion of the PSA that would generally parallel the EPNG corridor in the area of Sundance.

Other features within the PSA include the Hohokam Irrigation District Canal, the Casa Grande Canal, and the Florence – Casa Grand Canal along with numerous wells.

**Exhibit H** includes descriptions and illustrations of Planned Area Developments (PADs), and other future plans that are located within the PSA.

## Jurisdictions and Land Ownership

Jurisdictions regulating land use within the PSA include Pinal County and the Cities of Coolidge, Casa Grande, and Eloy. All lands crossed by the Preferred and Alternate Routes are within unincorporated areas of Pinal County. The PSA is almost entirely comprised of private land, with 2.6 square miles of Arizona State Trust land.

## Existing Land Use

As part of the environmental analysis for the Project, ARCADIS field-verified existing land uses within 2 miles of the proposed routes prior to filing this Application. Field-verified existing land uses identified in the PSA consist of Active and Inactive Agriculture, Residential, Educational, Commercial, Industrial, and Parks and Recreation uses, as well as Vacant land, transportation corridors, and utilities. Additionally, the location of all known existing residences were identified and mapped.

**Figure A-3** depicts the existing land use and residences within the PSA. Descriptions for the existing land use designations depicted on **Figure A-3** are as follows:

- Residential – Includes subdivided areas with existing residences at a density generally greater than 1 dwelling unit per 5 acres (du/5ac). The approximate location of existing dwelling units are also located on **Figure A-3.**

- Educational – Includes schools and day care centers.

- Commercial – Includes businesses, shopping areas, animal feeding operations, and RV resorts.

- Industrial – Includes primarily utility properties (Sundance and substations) and cotton gins.

- Parks and Recreation – Includes the Pinal County Fairgrounds as well as the existing Tierra Grande Golf Course located within Tierra Grande development south of the Casa Grande Canal.

- Active Agriculture – Includes lands that have been cleared of native vegetation and are utilized for crop production. This designation includes areas that are not currently under production, but have been cultivated within the past several years as evidenced by the absence of perennial vegetation. The primary crops grown in the PSA are soybeans and cotton.

- Inactive Agriculture – Includes lands that were cleared of native vegetation and were formerly utilized for crop production, as evidenced by visible furrows, but have gone fallow. Inactive Agricultural areas may support intermittent re-colonization of native desert plants.

- Vacant – Includes areas that have not been developed or cleared.

## Future Land Use

Land use information was gathered from the county general plan and three city general plans within the PSA. The following summarizes the general plan land use designations traversed by the Preferred and Alternate Routes for each affected jurisdiction. This discussion includes the land use designations as reflected in the most current available land use plans from each affected jurisdiction.

In addition to the general plan land uses identified by the jurisdictions in the PSA and described in this section, **Exhibit F** provides information on future recreation plans. **Exhibit H** also includes detailed information on known planned developments within the PSA. Several utility upgrades and developments have been proposed in the PSA. SRP has received a CEC from the ACC (Decision #68093) for a future double-circuit 500/230kV transmission line. Transwestern has proposed a new natural gas pipeline in the northern portion of the PSA that would generally parallel the EPNG corridor near Sundance. ED2 intends to construct new facilities to serve their load throughout the PSA and beyond.

### *Pinal County*

Land use guidelines for private lands within the unincorporated portions of the PSA are included in the Pinal County Comprehensive Plan (Pinal County, 2001). As depicted on **Figure A-4**, the land use elements traversed by the proposed routes in areas administered by Pinal County are Rural Community and Transitional. Other land use designations within the PSA include Rural and Urban (Pinal County, 2006). The following descriptions for the land use designations depicted on **Figure A-4** are taken from the Pinal County 2006 Land Use Plan:

- Rural Community Area – The Rural Community Area designation is a growth area that currently maintains a rural lifestyle which will provide goods, services and increased residential uses. Growth of these areas tends to be slow to moderate, and should be based on the availability and capacity of public services, facilities, and infrastructure.

- Transitional Area – The Transitional Area designation is for those areas currently rural in character but which are anticipated for growth in the future. These areas could sustain uses consistent with the Urban, Industrial, Rural, Foothills, or Rural Community designations. The purpose of the Transitional Area designation is to encourage the retention of existing parcels of land in large tracts for potential development. Until further development, these areas will retain their rural lifestyle. Current activity may include farming, grazing or vacant land.

- Rural Area – The Rural Area designation is for lands that are non-urban. Areas within this classification are suitable for lower density development and may include agriculture, grazing, mining, sand and gravel operations, large acreage homesites, small farms, open space and selected industrial uses, meaning those industrial uses not requiring an Industrial Use Permit. Areas not suitable for urban development are also included in this classification. Public services are minimal to non-existent.

- Urban Area – The Urban Area designation is associated with higher and medium density residential development where services are available to support the higher residential development. Urban areas include towns and cities and contain most of the county's population. In addition to residential land uses, the Urban Area designation should support commercial, business, governmental activity, health and educational facilities, industrial uses, parks and recreation areas. An objective of the Urban Area designation is to provide high quality, efficient public services, environmental quality, plentiful housing and job opportunities.

## *City of Coolidge*

Land use guidelines for lands within the incorporated and planning area boundaries of Coolidge are included in the Coolidge General Plan Update (City of Coolidge, 2003). As of June 2007, approximately 4,600 acres of the PSA are within the City of Coolidge. An additional 9 acres within the PSA are proposed for annexation into Coolidge. Approximately 14,540 acres, or 53 percent of the PSA, are within the Coolidge planning boundary (City of Coolidge, 2006).

As depicted on **Figure A-5**, the land use elements traversed by the proposed routes in areas administered by Coolidge are Very Low Density Single-Family Residential, Low Density Single-Family Residential, Medium Density Single-Family Residential, Community Commercial, General Office, Industrial, and Parks/Open Space. Other land use designations within the PSA are Master Planned Community, Regional Mixed Use, Neighborhood Commercial, and Regional Commercial (City of Coolidge, 2006). The following descriptions for the land use designations depicted on **Figure A-5** are taken from the City of Coolidge General Plan Update (2005) or are from information obtained directly from the City of Coolidge Planning Department (ARCADIS, 2007a):

- Very Low Density Single-Family Residential – Denotes areas where very large lot single-family residential development is suitable, based upon location, improved access and existence of man-made and natural features. Gross residential densities will be limited from zero to one du/ac, with the desired average density of 0.5 du/ac.

- Low Density Single-Family Residential – Denotes areas where large lot single family residential development is suitable, based upon location, improved access and available infrastructure. Gross residential densities will be limited from 1 to 4 du/ac, with the desired average density of 2.5 du/ac.

- Medium Density Single-Family Residential – Denotes areas where smaller lot single-family and townhouse development is suitable. These districts are located in proximity to schools, shopping and employment. Gross residential densities will range from 4 to 8 du/ac, with the desired average density of 6 du/ac.

- Community Commercial – Community Commercial areas provide the commercial and service needs of residents in the surrounding area. These parcels are typically located along arterials, range in size between 5 and 20 acres, and a single user or stand-alone building of no greater than 60,000 square feet (s.f.) is permitted.

- General Office – Designates areas for large scale, single or multi-story medical, professional, general or service-type office uses.

- Industrial – Denotes areas that may include service, office, manufacturing, distribution, wholesale or commercial and utility employment centers. Limited retail is allowed as an accessory use. Industrial land use districts are generally located along railroad alignments or arterial streets along regional transportation routes.

- Parks/Open Space – Denotes areas for parks, golf courses, open spaces or any other type of recreational facility.

- Master Planned Community – Denotes areas that are appropriate for development as a master planned community. Master planned community areas have the potential to provide mixed land use opportunities, a range of housing choices and densities, open space and recreational opportunities and an appropriate transportation system connected to schools, parks, and retail and employment areas. Residential development within a master planned community area will promote a variety of residential densities to promote a diversity of housing choices for residents of the community. Master planned communities should also provide commercial and employment land uses to provide for residents of the area.

- Regional Mixed Use – Denotes areas that are appropriate for development as Regional Mixed Use (RMU). RMU areas typically comprise 200 acres or more and are located outside of the traditional central business district. The intent of RMU is to allow for large scale projects that will attract Coolidge residents, residents within Pinal County and the entire region between the Phoenix and Tucson metropolitan areas. The designation is intended to accommodate a wide range of developments and uses including, but not limited to, those department stores or other uses commonly referred to as Power Center/Big Box retail users of a type and size typically located within a regional commercial shopping area, retail outlets and other complementary and ancillary uses.

- Neighborhood Commercial – Designates areas for limited shopping and basic services for the immediate neighborhood, and are generally no larger than 5 acres. Neighborhood Commercial uses are typically, but not always, located along minor or major arterials. Small scale retail and service uses, under 25,000 square feet per user or stand-alone buildings, are permitted.

- Regional Commercial – Designates areas for a broad range of high intensity uses, emphasizing retail commercial uses. There is no maximum size for any use. The designation includes uses permitted in all other commercial categories, plus regional shopping centers, hospital/medical centers, and hotels and motels. Regional Commercial serves a broad market area larger than the City. Regional Commercial designations are located at freeway/arterial intersections or at intersections of arterials with Roads of Regional Significance.

### *City of Casa Grande*

Land use guidelines for lands within the incorporated and planning area boundaries of Casa Grande are included in the Casa Grande General Plan 2010 (City of Casa Grande, 2001). As of May 2007, approximately 25 acres within the PSA are within the Casa Grande municipal boundary. An additional 1,630 acres in the PSA are proposed for annexation. Approximately 5,810 acres, or 21 percent of the PSA, is within the Casa Grande planning boundary.

As depicted on **Figure A-6**, the land use elements traversed by the proposed routes within areas administered by Casa Grande are Low Density Residential and Commercial. Other land use elements within the PSA include Medium Density Residential #1, High Density Residential, Office/Business Park, and Public/Semi-Public Facilities. The following descriptions for the land use designations depicted on **Figure A-6** are taken from the Casa Grande General Plan (City of Casa Grande, 2006):

- Low Density Residential – One or two-story single family detached homes on large to medium lots, 1.0 to 4.0 du/ac.

- Commercial – Typically considered for neighborhood or community commercial, may include major tenants and smaller stores or services.

- Medium Density Residential #1 – One or two-story single family detached or attached homes on medium to small lots, 4.0 to 8.0 du/ac.

- High Density Residential – Condominiums, town homes, or apartments with open space, 12.0 to 16.0 du/ac.

- Office/Business Park – Designated for medical or general office use, non-industrial business activities, and research park uses.

- Public/Semi-Public Facilities – Acreage dedicated for public or semi-public uses that may include regional medical centers, police/fire substations, schools, libraries, city or county government buildings, community centers, and wastewater treatment plants.

### *City of Eloy*

Land use guidelines for lands within the incorporated and planning area boundaries of Eloy are included in the City of Eloy General Plan 2010 (City of Eloy, 2004). As of May 2007, approximately 640 acres of the PSA are located within the Eloy municipal boundary and an additional 570 acres is proposed for annexation (ARCADIS, 2007b). Eloy is currently in the process of updating their General Plan. As part of this process, they have increased the area within their planning boundary; however, land use classifications have not been finalized for this area. Approximately 40 percent of the PSA is within the Eloy planning boundary. Land use elements within the PSA are Rural Residential and Estate Density Residential.

The following land use classifications depicted on **Figure A-7** are taken from the City of Eloy General Plan (2004):

- Rural Residential – Identifies appropriate locations for agriculture activities, single family ranch, and farm homes. The density range, 0.05 to 0.20 du/ac, (1 du/20ac to 1du/5ac) is intended to provide a pastoral character and homesites that create an open environment. Private water supply and conveyance and wastewater collection and treatment systems are permitted. This category also identifies locations where open areas are desired based on the presence of cultivated land or isolation from municipal support services.

- Estate Density Residential - Identifies appropriate locations for large lot, single family residential development. The density range 0.20 du/ac to 1.0 du/ac (1 du/1ac to 1 du/5ac), is intended to provide a pastoral character and home sites that create an open environment. Municipal water and sewer connections are required when densities exceed 1.0 du/ac. Estate Density Residential uses may serve as a transitional land use buffer between rural residential and low density residential uses with densities higher than 1 du/ac.

## Potential Effects

The following section describes the potential effects on land use from the proposed routes within each jurisdiction. A discussion of effects within the requested Northern and Southern Corridor Areas is also included.

Generally, the Project would be consistent with the existing and future land use designations that are traversed by the routes. The Project is an allowable use in all future land use designations crossed and therefore consistent with the future land uses described above. Additionally, the Project will be constructed using tubular steel structures, which will minimize ground disturbance and land use curtailment in and around these facilities. Direct impacts to land use would be limited to the footprint of the structures, access roads and pull sites. No property takes or direct impacts to existing dwelling units are anticipated as a result of this Project.

The effects of the transmission line on land use would be reduced by locating the proposed routes parallel to existing or planned linear facilities to the greatest extent possible without inhibiting the safe operation of any facility. When parallel to the future SRP double-circuit 500/230kV transmission line, the Project would match spans and have similar structure heights, thereby reducing limitations to the types of activity that could occur in the vicinity of the Project. Additionally, existing access will be used to the extent possible, reducing the need for additional areas of disturbance associated with the construction and operation of the line.

## Preferred Route

### *Existing Land Use*

As depicted on **Figure A-3,** the Preferred Route crosses almost entirely Active Agriculture (over 5 miles). The remaining portions of the route cross Inactive Agriculture, Vacant, Industrial and Recreation (approximately ½ mile). The Preferred Route will have minimal impacts to Active Agriculture by locating the right-of-way (ROW) adjacent to Curry Road and using Curry Road for construction access. Existing industrial areas crossed by the Preferred Route are associated with the Sundance facility.

The Recreation land crossed by the Preferred Route is associated with the Pinal County Fairgrounds. Based on discussions with Pinal County officials, the portion of the Fairgrounds that would be crossed by the Preferred Route is currently used for parking and informal event staging (ARCADIS, 2007c). In this area there would be incremental impacts to recreational land use; however the Preferred Route would parallel the future SRP double-circuit 500/230kV transmission line and would be designed to minimize the amount of ROW required to construct both projects and to match span locations.

### *Future Land Use*

#### *Pinal County*

As depicted on **Figure A-4**, the Preferred Route is located entirely on unincorporated lands administered by Pinal County. Approximately 5.5 of the 6 miles that the route crosses are designated for Transitional land use and the remaining ½ mile is designated for Rural Community use. Rural Community includes the lands in and around the Pinal County Fairgrounds. The Project would be an allowable use in these land use designations. The impacts to the Pinal County

Fairgrounds would be reduced by paralleling the future SRP double-circuit 500/230kV transmission line.

### *City of Coolidge*

As depicted on **Figure A-5**, approximately 3 miles of the Preferred Route cross the Coolidge planning boundary. The majority of the route (close to 2 miles) crosses areas designated for Very Low Density Single Family Residential Land Use, specifically along the western side of Curry Road between Randolph Road and Kleck Road, and on both sides of Curry Road south of Kleck Road. Most the remaining portion of the route within the Coolidge planning boundary crosses land designated for Medium Density Single Family Residential use (located on the east side of Curry Road north of Kleck Road). When the route leaves Sundance it crosses land designated for Industrial use.

While the majority of the Preferred Route located within the Coolidge planning boundary crosses land designated for residential uses, the route does not directly impact residential dwelling units (i.e., does not require any property takes).

### *City of Casa Grande*

The only land within the Casa Grande planning boundary that is crossed by the Preferred Route is designated for Low Density Residential. The route does not directly impact any residential dwelling units.

## Alternate Route

### *Existing Land Use*

The Alternate Route crosses land with similar land use designations as the Preferred Route. The Alternate Route would be located along a ½-section line and not along a road ROW. The Preferred Route would have lower impacts to Active Agriculture than the Alternate Route because of its adjacency to Curry Road.

### *Future Land Use*

The Alternate Route crosses land with similar future land use designations by Pinal County, City of Coolidge and the City of Casa Grande as the Preferred Route. The residential land crossed by the Alternate Route does not directly impact any residential dwelling units.

## Northern Corridor Area

### *Existing Land Use*

Existing land use within the Northern Corridor Area includes Active Agriculture, Inactive Agriculture, Industrial, and Vacant. The Northern Corridor Area is predominately Industrial land associated with the Sundance facility. The area along Randolph Road is Inactive and Active Agriculture.

### *Future Land Use*

All of the Northern Corridor Area is within Pinal County jurisdiction and designated as Transitional land use. It is also located within the Coolidge Planning Boundary and includes Industrial (east of the half section line) and Medium Density Single Family Residential (west of the half section line).

## Southern Corridor Area

### *Existing Land Use*

Existing land use in the Southern Corridor Area includes Active Agriculture, and Parks and Recreation. The Parks and Recreation land is the Pinal County Fairgrounds property as discussed as part of the Preferred Route. Routes sited within this area, not along the Preferred Route or the Alternate Route, would bifurcate existing land uses and have a greater impact to existing and future land.

### *Future Land Use*

All of the Southern Corridor Area is within Pinal County jurisdiction. Pinal County land use designations in this area include Transitional and Rural Community.

## LIST OF PREPARERS

| | | |
|---|---|---|
| Mrs. Kenda Pollio | 17 years of Experience | BS, MS, AICP |
| Mr. Tyler Rychener | 7 years of Experience | BS, MS |
| Ms. Susan Westhouse | 5 years of Experience | BS |
| Ms. Lindsay Willrick | 1 year of Experience | BS |

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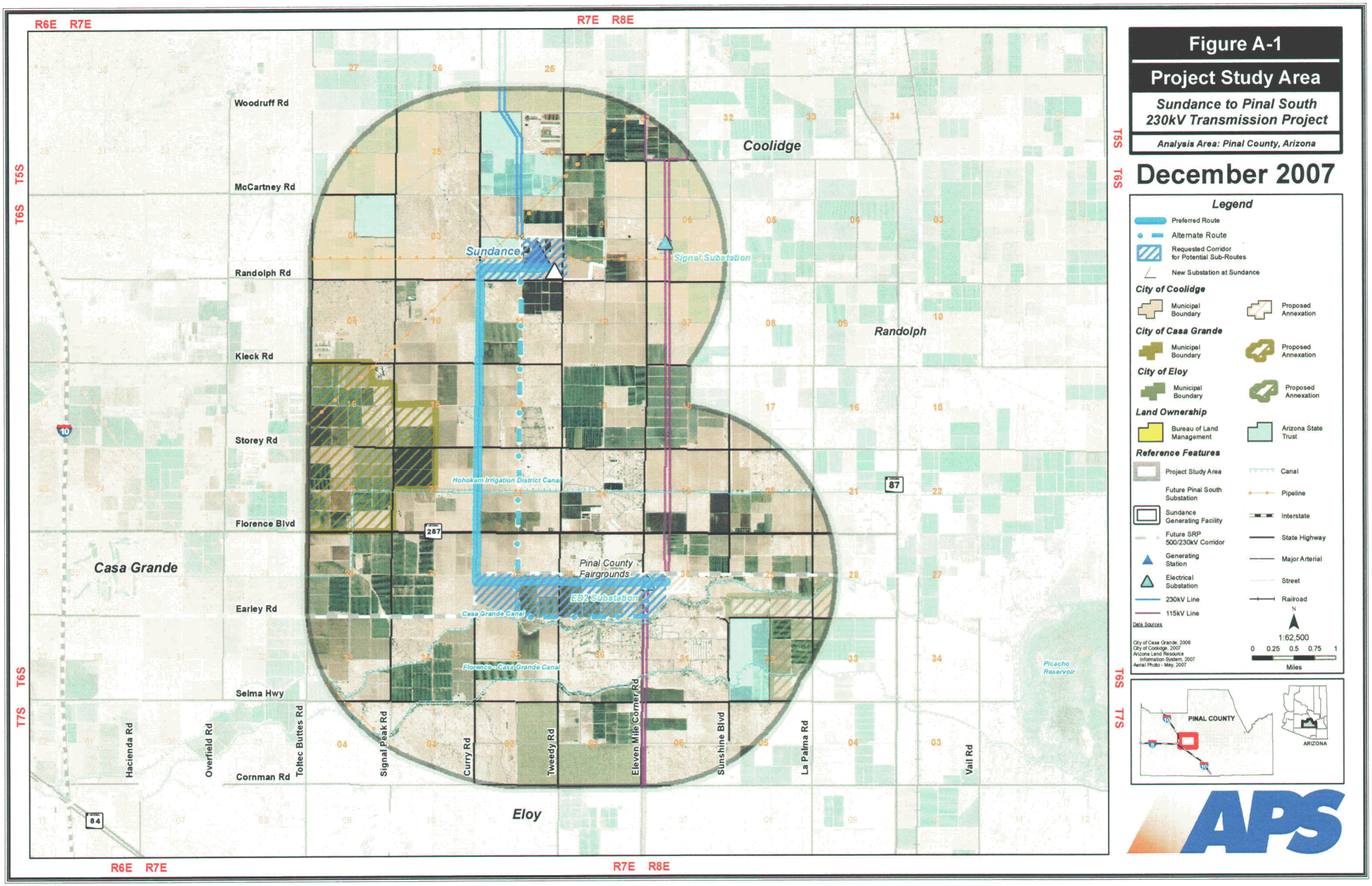
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Hacienda Rd
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Curry Rd
Tweedy Rd
Eleven Mile Corner Rd
Sunshine Blvd
La Palma Rd
Vail Rd
Coolidge
Randolph
Casa Grande
Eloy
Sundance
Signal Substation
Hohokam Irrigation District Canal
Pinal County Fairgrounds
EB2 Substation
Casa Grande Canal
Florence - Casa Grande Canal
Picacho Reservoir
10
87
287
84
Figure A-1
Project Study Area
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
December 2007
Legend
Preferred Route
Alternate Route
Requested Corridor for Potential Sub-Routes
New Substation at Sundance
City of Coolidge
Municipal Boundary
Proposed Annexation
City of Casa Grande
Municipal Boundary
Proposed Annexation
City of Eloy
Municipal Boundary
Proposed Annexation
Land Ownership
Bureau of Land Management
Arizona State Trust
Reference Features
Project Study Area
Canal
Future Pinal South Substation
Pipeline
Sundance Generating Facility
Interstate
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Major Arterial
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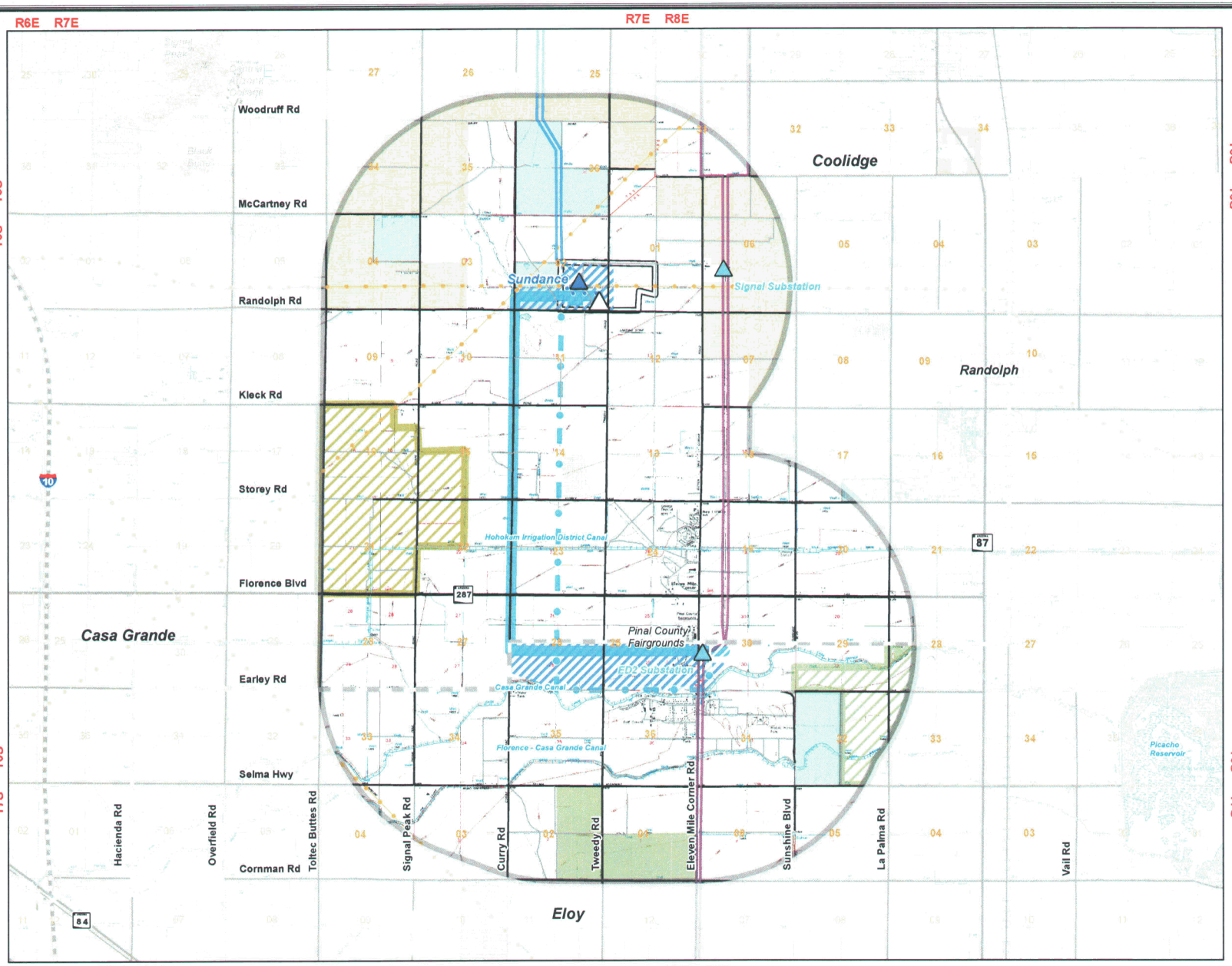


# Figure A-2

## Project Study Area

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

## December 2007

### Legend

- Preferred Route
- Tie Line
- Alternate Route
- Proposed Corridor for Potential Sub-Routes
- New Substation at Sundance

**City of Coolidge**

- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**

- Municipal Boundary
- Proposed Annexation

**City of Eloy**

- Municipal Boundary
- Proposed Annexation

**Land Ownership**

- Bureau of Land Management
- Arizona State Trust

**Reference Features**

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Sundance Generating Facility
- Interstate
- Future SRP 500/230kV Corridor
- State Highway
- Generating Station
- Major Arterial
- Electrical Substation
- Street
- 230kV Line
- Railroad
- 115kV Line

Data Sources

City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - May, 2007

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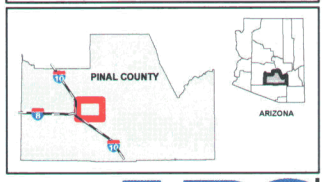
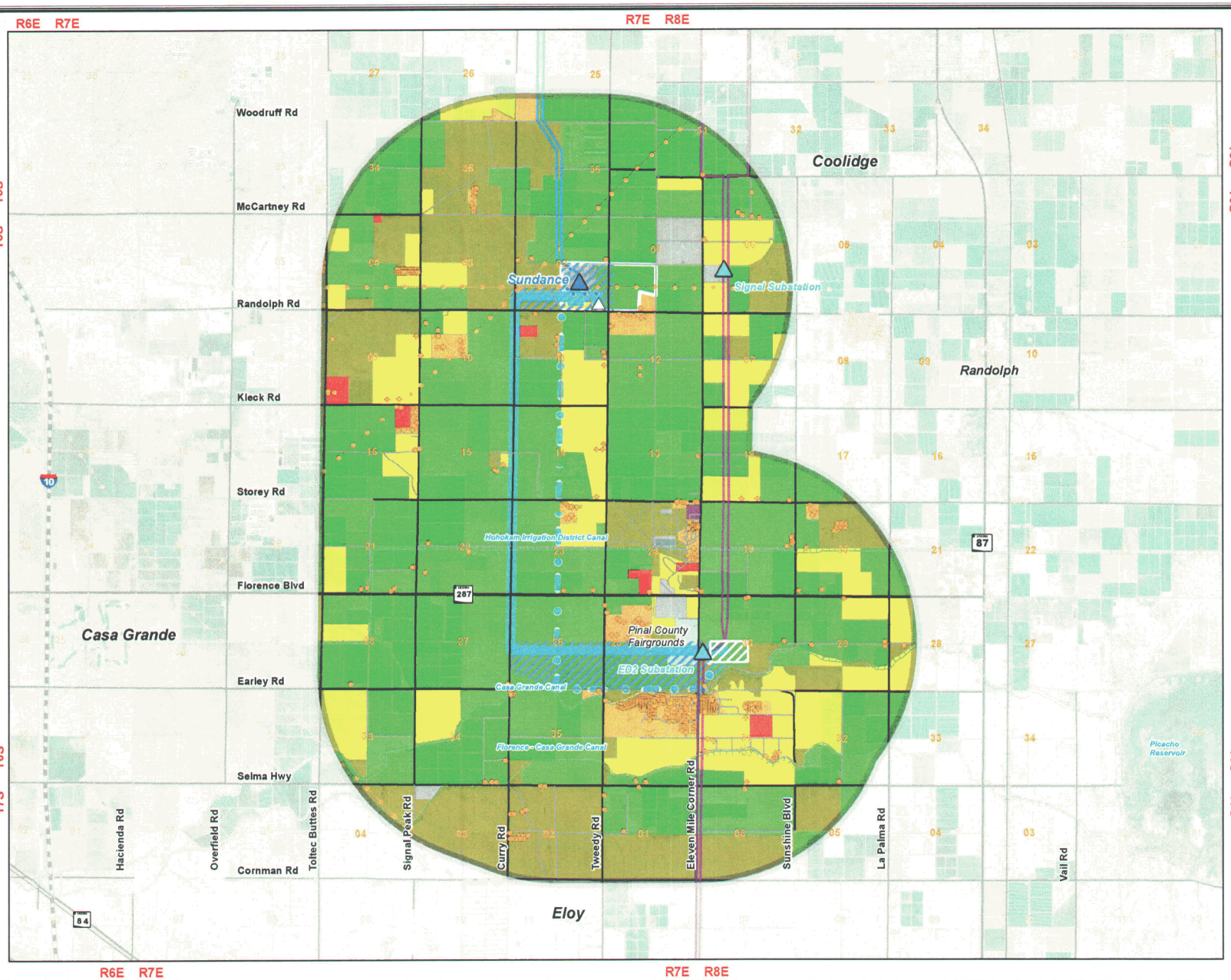



APS




# Figure A-3

## Existing Land Use

***Sundance to Pinal South 230kV Transmission Project***

***Analysis Area: Pinal County, Arizona***

## December 2007

### Legend

- Preferred Route
- Tie Line
- Alternate Route
- Requested Corridor for Potential Sub-Routes
- New Substation at Sundance
- Residence
- Residential
- Educational
- Commercial
- Industrial/Utility
- Parks and Recreation
- Active Agriculture
- Inactive Agriculture
- Vacant Land

### *Reference Features*

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Sundance Generating Facility
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

N

Scale: 1:62,500

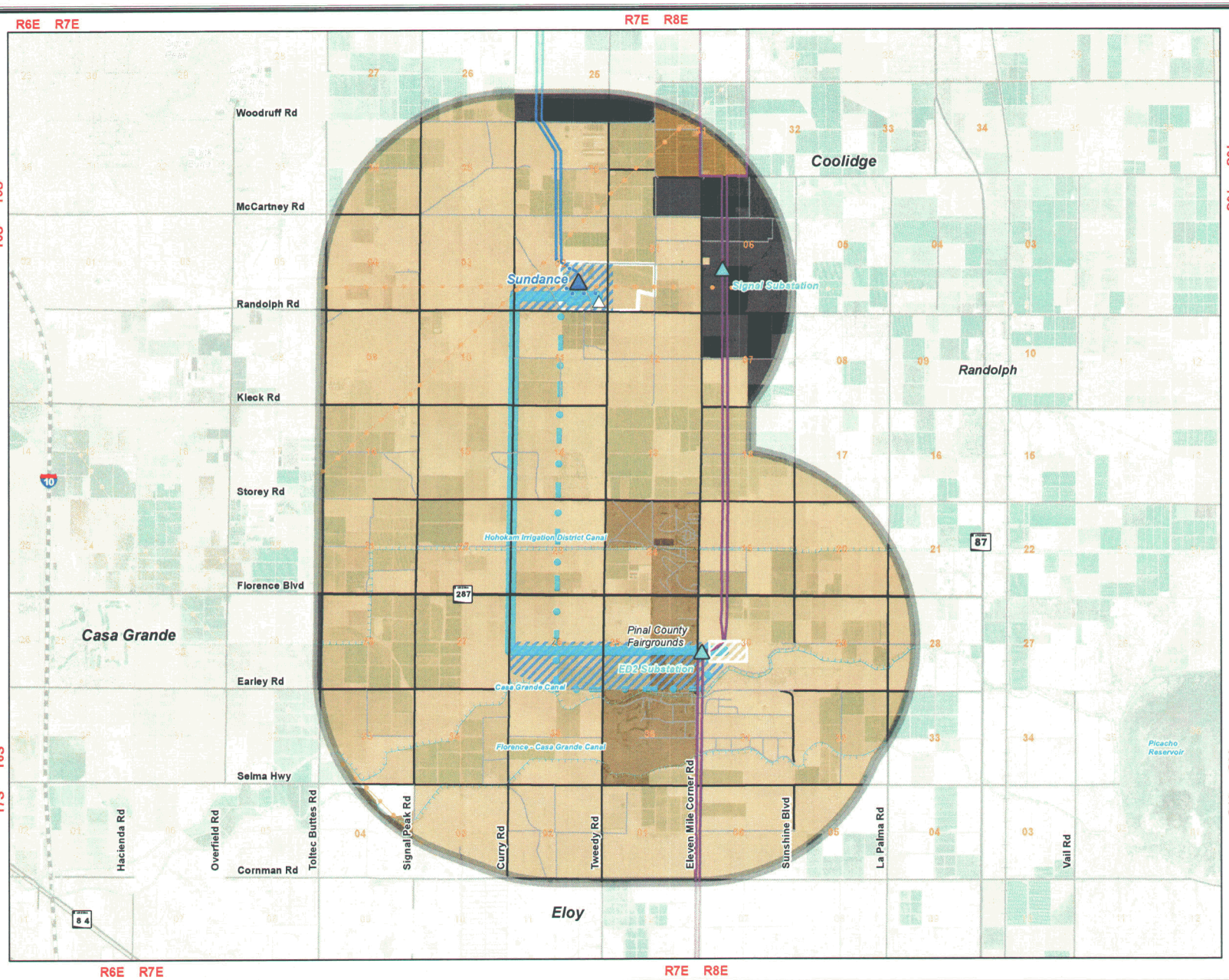
0 0.25 0.5 0.75 1 Miles

Data Sources

ARCADIS, July and September 2007

Aerial Photo - May, 2007

APS




# Figure A-4

## Pinal County General Plan Land Use

***Sundance to Pinal South 230kV Transmission Project***

***Analysis Area: Pinal County, Arizona***

## December 2007

### *Legend*

- Preferred Route
- Tie Line
- Alternate Route
- Requested Corridor for Potential Sub-Routes
- New Substaion at Sundance

### *Pinal County General Plan Land Use*

- Rural
- Rural Community
- Transitional
- Urban
- Incorporated Areas

### *Reference Features*

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Sundance Generating Facility
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

N

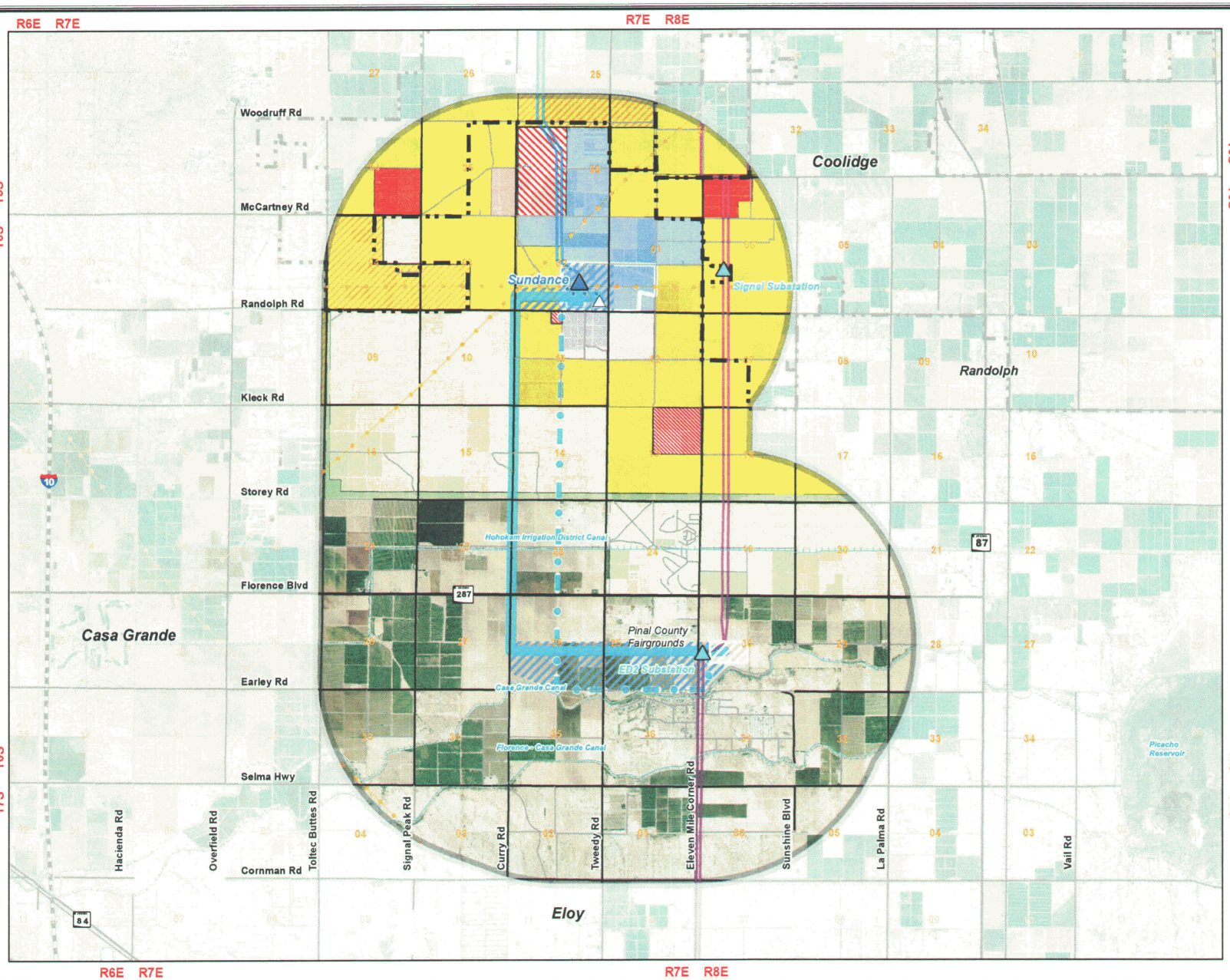
Scale: 1:62,500

0 0.25 0.5 0.75 1 Miles

Data Sources

Pinal County, 2006
Aerial Photo - May 2007

APS




# Figure A-5

## Coolidge General Plan Land Use

***Sundance to Pinal South 230kV Transmission Project***

***Analysis Area: Pinal County, Arizona***

## December 2007

### *Legend*

- Preferred Route
- Tie Line
- Alternate Route
- Requested Corridor for Potential Sub-Routes
- New Substation at Sundance

### *City of Coolidge General Plan Land Use*

- Current Municipal Boundary Line
- Very Low-Density Single-Family
- Low-Density Single-Family
- Medium-Density Single-Family
- Master Plan Community
- Park/Open Space
- Community Commercial
- Neighborhood Commercial
- Regional Commercial
- Regional Mixed Use
- General Office
- Industrial

### *Reference Features*

- Project Study Area
- Sundance Generating Facility
- Sundance Generating Facility
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

N

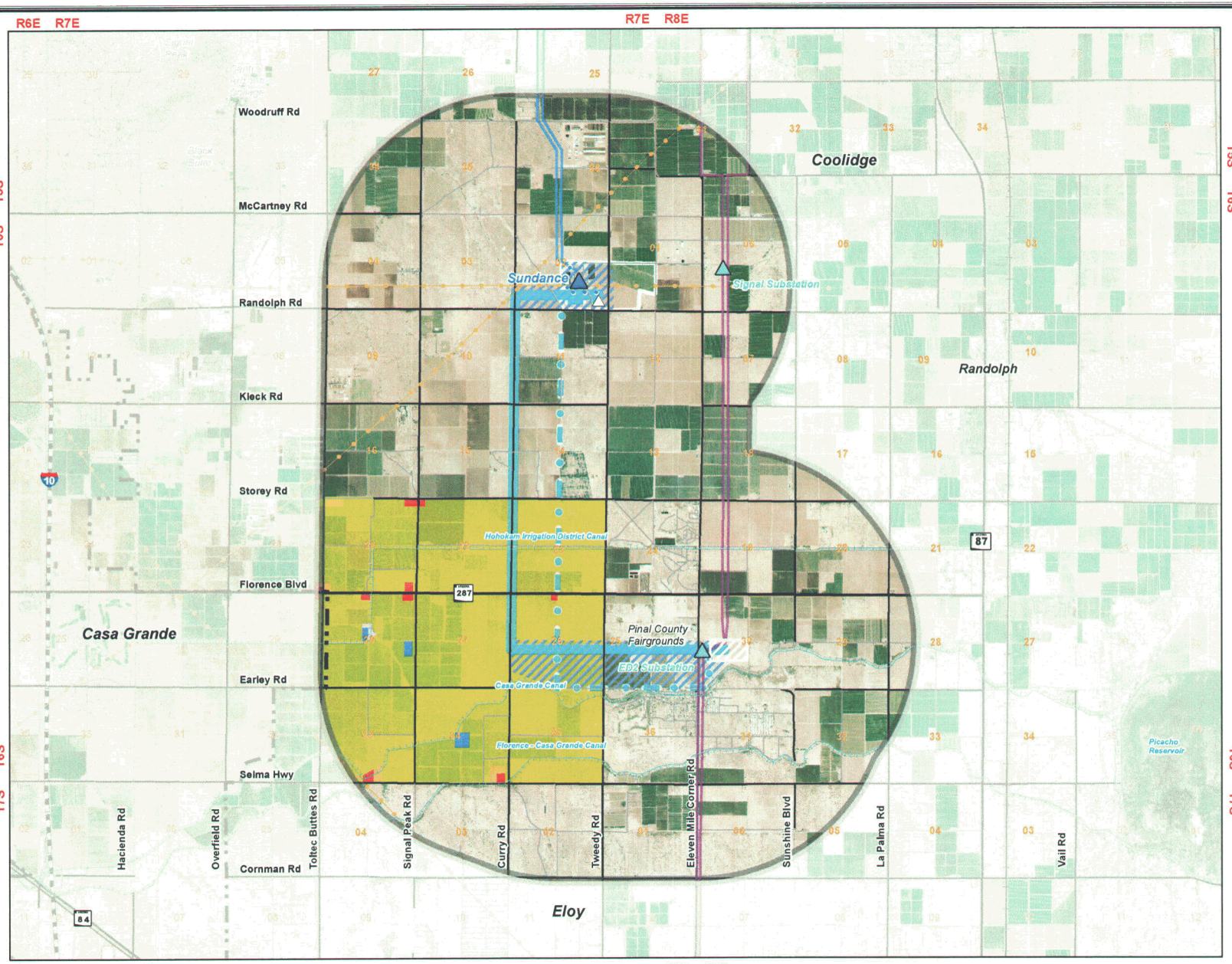
Scale: 1:62,500

0 0.25 0.5 0.75 1 Miles

Data Sources

City of Coolidge, 2007
Aerial Photo - May 2007

APS




# Figure A-6

## Casa Grande General Plan Land Use

***Sundance to Pinal South 230kV Transmission Project***

***Analysis Area: Pinal County, Arizona***

## December 2007

### *Legend*

- Preferred Route
- Tie Line
- Alternate Route
- Requested Corridor for Potential Sub-Routes
- New Substation at Sundance

### *City of Casa Grande General Plan Land Use*

- Municipal Boundary Line
- Low-Density Residential
- Medium-Density Residential #1
- High-Density Residential
- Commercial
- Office/Business Park
- Public/Semi-Public

### *Reference Features*

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Sundance Generating Facility
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

N

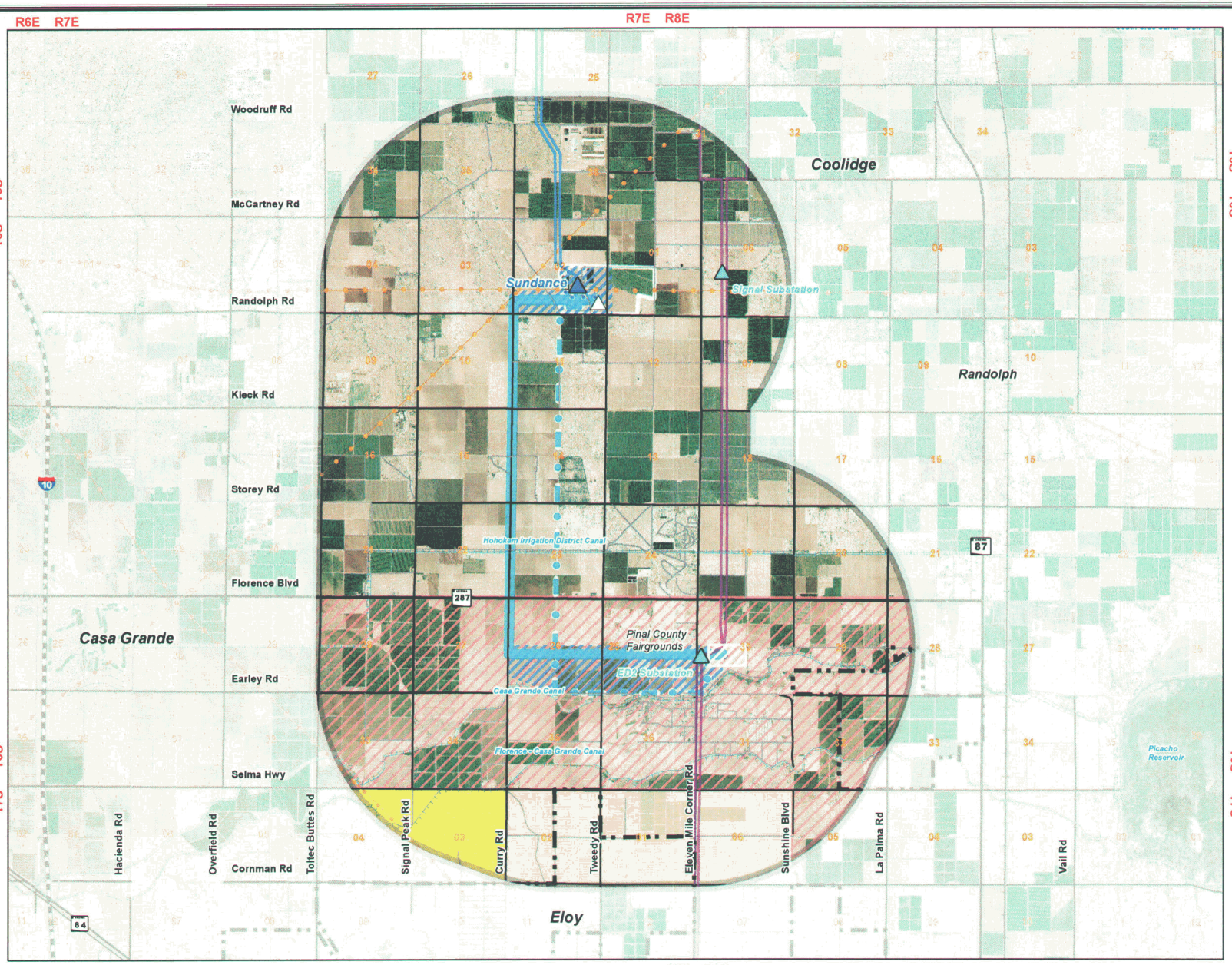
Scale: 1:62,500

0 0.25 0.5 0.75 1 Miles

Data Sources

City of Casa Grande, 2006
Aerial Photo - May 2007

APS




# Figure A-7

## Eloy General Plan Land Use

***Sundance to Pinal South 230kV Transmission Project***

***Analysis Area: Pinal County, Arizona***

## December 2007

### Legend

- Preferred Route
- Tie Line
- Alternative Route
- Requested Corridor for Potential Sub-Routes
- New Substation at Sundance

### City of Eloy General Plan Land Use

- Municipal Boundary Line
- Estate Density Residential
- Rural Residential
- Within Planning Boundary, Currently Unclassified

### Reference Features

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Sundance Generating Facility
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

N

Scale: 1:62,500

0 0.25 0.5 0.75 1 Miles

Data Sources

City of Eloy, 2007
Aerial Photo - May, 2007

APS

# EXHIBIT B
# ENVIRONMENTAL REPORTS

# EXHIBIT B
# ENVIRONMENTAL REPORTS

As stated in Arizona Administrative Code R14-3-219:

> *"Attach any environmental studies which Applicant has made or obtained in connection with the proposed site(s) or route(s). If an environmental report has been prepared for any federal agency or if a federal agency has prepared an environmental statement pursuant to Section 102 of the National Environmental Policy Act, a copy shall be included as part of this Exhibit."*

No proposed routes have been identified on federal lands; therefore, there is no associated environmental statement pursuant to Section 102 of the National Environmental Policy Act (NEPA).

A Phase I Siting Study Report prepared in September 2007 is included as **Exhibit B-1.** The Phase I Siting Study Report documents siting study activities conducted between April and August, 2007. This study was used to identify the project study area, siting criteria, and initial alternative alignments that were the basis for the work presented in this application.

Phase II environmental studies are documented in other portions of the Applicant's submittal including studies on the following:

- **Exhibit A** Land use plans
- **Exhibit C** Biological wealth
- **Exhibit D** Biological resources
- **Exhibit E** Scenic areas, historic sites and structures, archeological sites
- **Exhibit F** Recreational resources
- **Exhibit G** Visual simulations of typical facility structures
- **Exhibit H** Future land use plans
- **Exhibit I** Anticipated noise/interference with communication signals
- **Exhibit J** Public involvement

# EXHIBIT B-1
# PHASE I SITING STUDY REPORT

# Phase I
# Siting Study Report
# Sundance to Pinal South

230kV Transmission Project

September 2007

**Table of Contents**

**1.0 Introduction and Project Description** **1**

**2.0 Project Study Area Definition** **1**

2.1 Regional Project Area 1

2.2 Refined Project Study Area 2

**3.0 Base Line Data Collection** **2**

3.1 Existing Land Use and Future Plans 2

3.2 Coolidge General Plan Land Use 4

3.3 Casa Grande General Plan Land Use 6

3.4 Eloy General Plan Land Use 8

3.5 Pinal County General Plan Land Use 8

3.6 Baseline Natural Resource Data 10

**4.0 Siting Criteria** **11**

4.1 Opportunities 11

4.2 Sensitivities 11

4.3 Siting Criteria for Sundance to Pinal South 230kV Transmission Line 11

**5.0 Analysis** **15**

5.1 Constrained Transmission Corridors 15

5.2 Initial Alternatives Analysis 16

5.3 Initial Corridor Screening 16

**6.0 Public Involvement** **17**

6.1 Stakeholder Briefings 17

6.2 Planners Workshop 18

6.3 Public Open House 18

**7.0 Summary** **19**

**8.0 References** **20**

## Table of Contents

### Tables

| | | |
|---|---|---|
| Table 1: | Siting Opportunities | 13 |
| Table 2: | Siting Sensitivities | 14 |

### Figures

| | |
|---|---|
| Figure 1 | Project Study Area |
| Figure 2 | Existing Land use |
| Figure 3 | Future Land Use Plans |
| Figure 4 | Coolidge Land Use |
| Figure 5 | Casa Grande Land use |
| Figure 6 | Eloy Land Use |
| Figure 7 | Pinal County Land Use |
| Figure 8 | Biology |
| Figure 9 | Soils |
| Figure 10 | Opportunities |
| Figure 11 | Sensitivities |
| Figure 12 | Opportunities and Sensitivities |
| Figure 13 | Initial Alternative Alignments |

## 1.0 Introduction and Project Description

As part of Arizona Public Service Company's (APS') continuing effort to meet the increasing demand for electricity, the APS Transmission and Facility Siting Department initiated a siting study process to identify and evaluate possible alternative routes for a new 230 kilovolt (kV) transmission line. The APS Sundance to Pinal South 230kV Transmission Project (Project) will establish a new 230kV double-circuit transmission line that will originate at the Sundance Generating Station (Sundance) and terminate at the future Pinal South Substation, a straight line distance of approximately 4.1 miles.

Addition of this new line to the existing electrical grid will increase local capacity, and improve the reliability and continuity of service for the electrical load in the area. The new line will also provide additional transmission capability out of the Sundance facility. This will allow APS to schedule the full output of the plant, estimated at 420 megawatts (MW) during peak summer conditions, and establish an APS-owned and APS-operated path from the facility. Additionally, the capacity of the line will allow for potential future increases in generation capabilities at the Sundance facility. The Project is scheduled to be presented to the State of Arizona Power Plant and Transmission Line Siting Committee in the spring of 2008 and to be in service in 2011.

This Phase I Siting Study Report describes the siting process that APS and its environmental consultant, ARCADIS U.S., Inc. (ARCADIS), collectively referred to as the Project Team, developed to select routing options for the new line. It details the selection of a Project Study Area (PSA), the methodology for selecting and analyzing the siting criteria, the involvement of local stakeholders and the public, and the selection of potential routes presented to the public at the Open House on August 14, 2007.

## 2.0 Project Study Area Definition

### 2.1 Regional Project Area

Defining the PSA for a transmission line siting project includes an analysis of the regional area surrounding the two endpoints and areas in between. The goal is to strike a balance between selecting an area large enough to include all reasonable alternatives, but not so large as to overwhelm the process with routing options that are not feasible. Initially, ARCADIS conducted a broad-scale inventory of dominant features within the Project region. Nearby jurisdictions include the City of Coolidge, the City of Casa Grande, the City of Eloy, and Pinal County. Dominant features in the

landscape include Signal Peak, Black Butte and Picacho Reservoir. Land use in the region is predominantly agricultural lands transitioning into residential and commercial use as the region continues to experience rapid population growth. The Pinal County Fairground and the Central Arizona College are located in the region. Dominant linear features include the Interstate 10 (I-10) corridor, State Routes (SR) 87 and 287, major roads, canals, gas pipelines, the Union Pacific Railroad (UPRR), and existing and future transmission corridors.

### 2.2 Refined Project Study Area

As a general rule of thumb in transmission siting, it is best to identify the shortest, most direct routes because those tend to have the least impact to resources and the lowest construction and maintenance costs. However, because of numerous factors, including terrain and land uses, a simple straight line path between the two endpoints is typically not the most practical or desired path. It is, therefore, necessary that the PSA provide enough space to navigate around areas of potential impact to the greatest extent possible. The Project Team selected a PSA approximately 7.75 miles wide (east to west) and 8.5 miles long (north to south) in order to evaluate a wide range of reasonable alternatives. The PSA is bounded on the south by Cornman Road, on the east by the ¼ section line east of the UPRR, on the north by the Martin Road route, and on the west by the ¼ section line west of Toltec Buttes Road (**Figure 1**). This area provides sufficient room for routing options but also reduces potential impacts to resources that may be associated with Signal Peak, Black Butte, Picacho Reservoir, and other areas outside of the PSA.

## 3.0 Base Line Data Collection

The PSA encompasses approximately 66 square miles. Land within the PSA is divided among four planning entities: The City of Coolidge (60%), The City of Casa Grande (15%), the City of Eloy (8%), and Pinal County (17%). The PSA also contains 2.0 square miles of Arizona State Trust land and 0.9 square mile of Bureau of Land Management land. The most current general plans and future land use maps for Casa Grande, Coolidge, Eloy, and Pinal County were reviewed.

### 3.1 Existing Land Use and Future Plans

Existing land use data were collected by ARCADIS via aerial photograph reconnaissance and field trips conducted in June 2007. These data are presented on

**Figure 2**. Based on vehicular surveys and aerial photography, existing land use was classified as:

- Residential – Includes subdivided areas with existing residences at a density generally greater than 1 dwelling unit per 5 acres (du/5ac). The approximate location of existing residencies are also indicated on **Figure 2.**

- Educational –Includes schools and day care centers.

- Commercial – Includes businesses, shopping areas, animal feeding operations, and recreational vehicle (RV) resorts.

- Industrial – Includes utility properties (Sundance and substations) and cotton gins.

- Parks and Recreation – Includes the Pinal County Fairgrounds as well as the existing Tierra Grande Golf Course located within Tierra Grande development south of Earley Road.

- Active Agriculture – Includes lands that have been cleared of native vegetation and are utilized for crop production. This designation includes areas that are not currently under production, but have been cultivated within the past several years as evidenced by the absence of perennial vegetation. The primary crops are soybean and cotton.

- Inactive Agriculture – Includes lands that were cleared of native vegetation and were formerly utilized for crop production, as evidenced by visible furrows, but have gone fallow. Inactive Agricultural areas may support intermittent re-colonization of native desert plants.

- Vacant – The vacant designation includes areas that have not been developed or cleared.

Future land use plans, including Planned Area Developments (PADs), planned utility corridors, and transportation plans, are presented on **Figure 3**.

### 3.2 Coolidge General Plan Land Use

Future land use classifications in the PSA within the Coolidge Planning Boundary are presented in **Figure 4** (City of Coolidge 2006). These areas consist of the following future land uses:

- Very Low-Density Single-Family Residential - Denotes areas where very large lot single-family residential development is suitable based on location, improved access and existence of man-made and natural features. Gross residential densities will be limited from 0 to 1 dwelling unit/acre (0 to 1 du/ac), with the desired average density of 0.5 du/ac.

- Low Density Single-Family Residential - Denotes areas where large-lot single family residential development is suitable based on location, improved access and available infrastructure. Gross residential densities will be limited from 1 to 4 dwelling units/acre (1 to 4 du/ac), with the desired average density of 2.5 du/ac.

- Low Density Multi-Family Residential - Denotes areas that are appropriate for apartments, condominiums and townhouses. These districts are located with respect to arterial street access, shopping opportunities and employment and recreation opportunities. Gross residential densities range from 8 to 15 dwelling units/acre (8 to 15 du/ac), with the desired average density of 11.5 du/ac.

- Medium Density Single-Family Residential - Denotes areas where smaller-lot single-family and townhouse development is suitable. These districts are located in proximity to schools, shopping and employment. Gross residential densities will range from 4 to 8 dwelling units/acre (4 to 8 du/ac), with the desired average density of 6 du/ac.

- Medium Density Multi-Family Residential - Denotes areas that are appropriate for apartments, condominiums and townhouses. Gross residential densities range from 15 to 20 dwelling units/acre (15 to 20 du/ac), with the desired average density of 17.5 du/ac.

- Master Planned Community - Denotes areas that are appropriate for development as a master planned community. Master planned community areas have the potential to provide mixed land use opportunities, a range of

housing choices and densities, open space and recreational opportunities and an appropriate transportation system connected to school, parks, retail and employment areas. Residential development within a master planned community area will promote a variety of residential densities to promote a diversity of housing choices for residents of the community. Master planned communities should also provide commercial and employment land uses to provide for residents of the area."

- Community Commercial – These areas provide the commercial and service needs of residents in the surrounding area. These parcels are typically located along arterials, range in size between 5 and 20 acres, and a single user or stand-alone building of no greater than 60,000 square feet is permitted.

- Neighborhood Commercial - category shall provide areas for small-scale retail businesses on sites ranging from 5 to 20 acres and serving the local and/or immediately surrounding market area, Designates areas for limited shopping and basic services for the immediate neighborhood, and are generally no larger than 5 acres. Neighborhood Commercial uses are typically, but not always, located along minor or major arterials. Small-scale retail and service uses, fewer than 25,000 square feet per user or stand-alone building, are permitted.

- Regional Commercial - Designates areas for a broad range of high-intensity uses, emphasizing retail commercial uses. There is no maximum size for any use. The designation includes uses permitted in all other commercial categories, plus regional shopping centers, hospital/medical centers, and hotels and motels. Regional Commercial serves a broad market area larger than the city. Regional Commercial designations are located at freeway/arterial intersections or at intersections of arterials with Roads of Regional Significance.

- Multi-Use - Represented by the traditional central business district, and includes a mix of retail, office, and higher density residential at more urban densities with an emphasis on pedestrian scale and walkability. In addition to a mix of uses within the district, the integration of at least two uses within individual structures is encouraged.

- Regional Mixed Use (RMU) - Designates areas typically comprised of 200 acres or more and are located outside of the traditional central business

district. The intent of RMU is to allow for large-scale projects that will attract Coolidge residents, residents within Pinal County and the entire region between the Phoenix and Tucson metropolitan areas. The designation is intended to accommodate a wide range of developments and uses including, but not limited to, those department stores or other uses commonly referred to as Power Center/Big Box retail users of a type and size typically located within a regional commercial shopping area, retail outlets and other complementary and ancillary uses.

- Commerce Park - Designates areas for office and light industrial uses including high technology and research and development firms. This classification encourages an attractive campus-style environment. Developments within this classification may include employee-oriented, on-site amenities and accessory uses.

- General Office - Designates areas for large-scale, single- or multi-story medical, professional, general or service-type office uses.

- Industrial - Denotes areas that may include service, office, manufacturing, distribution, wholesale or commercial and utility employment centers. Limited retail is allowed as an accessory use. Industrial land use districts are generally located along the Southern Pacific Railroad or arterial streets along regional transportation routes.

- Park/Open Space - Denotes areas for parks, golf courses, open spaces or any other type of recreational facility.

### 3.3 Casa Grande General Plan Land Use

Future land uses for portions of the PSA within the Casa Grande Planning Boundary are presented in **Figure 5** (City of Casa Grande 2006). These areas consist of the following future land uses:

- Low-Density Residential (LDR) - For LDR areas outside the designated Growth Area boundaries, the density standard shall range from 1 du/ac to 4 du/ac with a target density of 2.5 du/ac in LDR areas. Target densities in the LDR category in excess of 2.5 du/ac are permitted in several portions of the planning area (see Growth Area Element). The maximum density shall not exceed 4 du/ac. The LDR residential housing product shall be characterized by

one- to two-story, single-family detached homes on large- to medium-sized lots. Residential lots in this category may also be clustered. Appropriate locations for LDR uses include those areas of the community where there is existing capacity of public services and facilities, and areas where services and infrastructure can be extended in a systematic progression from existing facilities.

- Medium-Density Residential #1 - The density standard for this category shall range up to, but not exceed 4 to 8 du/ac with a target density of 5 du/ac. One- or two-story single-family detached or attached homes on medium- to small-sized lots.

- High-Density Residential (HDR) - The density standard for this category shall range up to, but not exceed 16 du/ac with a target density of 14 du/ac. The HDR product shall be characterized as condominiums, town homes, or apartments with integrated park and/or open space. Appropriate locations of HDR uses include where there are planned community facilities (e.g., schools, open space, parks, and recreation facilities), major vehicular circulation system access, appropriately sized utilities, support commercial services and employment uses are easily accessible, and where adjacent development is compatible.

- Commercial - These sites are typically considered for neighborhood or community commercial and may include major tenants and smaller stores or services. Commercial uses for a larger market area, but not those expected with regional commercial areas, may also be appropriate. These commercial uses are intended to have direct access to major roadways.

- Office/Business Park - Primarily professional office complexes and high-tech/research business parks. Typical tenants may include those uses involved in the medical, financial, insurance, and software development fields. Uses in the Office/Business Park category typically will not have outdoor storage or produce noise, vibrations, odors, or traffic that prohibit adjacent residential development. Most business activities will be confined to normal daytime business hours.

- Public/Semi-public Facilities - This designation denotes acreage dedicated for public or semi-public uses that may include regional medical centers, police/fire substations, schools, libraries, city or county government buildings, community centers, and wastewater treatment plants.

### 3.4 Eloy General Plan Land Use

Future land use classifications in the PSA within the Eloy Planning Boundary are presented in **Figure 6** (City of Eloy 2005). These areas consist of the following future land uses:

- Rural Residential - Identifies appropriate locations for agriculture activities, single family ranch, and farm homes. The density range, .05 to .20 du/ac, (1 du/20 acres to 1du/5 acres) is intended to provide a pastoral character and homesites that create an open environment. Private water supply and conveyance and wastewater collection and treatment systems are permitted. This category also identifies locations where open areas are desired based on the presence of cultivated land or isolation from municipal support services.

- Estate Density Residential - Identifies appropriate locations for large-lot, single-family residential development. The density range, .20 du/ac to 1 du/ac (1 du/1 acre to 1 du/5 acres), is intended to provide a pastoral character and homesites that create an open environment. Municipal water and sewer connections are required when densities exceed 1 du/ac. Estate Density Residential uses may serve as a transitional land use buffer between rural residential and low-density residential uses with densities higher than 1 du/ac.

### 3.5 Pinal County General Plan Land Use

Future land use classifications in the PSA within unincorporated areas in Pinal County are presented in **Figure 7** (Pinal County 2006). These areas consist of the following future land uses:

- Rural - The Rural Area designation is for lands that are non-urban. Areas within this classification are suitable for lower density development and may include agriculture, grazing, mining, sand and gravel operations, large acreage homesites, small farms, open space and selected industrial uses, meaning those industrial uses not requiring an Industrial Use Permit. Areas not suitable

for urban development are also included in this classification. Public services are minimal to non-existent.

- Density Guidelines: Single-family density in the Rural land use category shall not exceed 1 du/ac. Multi-Family development will be discouraged from locating in the Rural land use category until it is reclassified to another land use.

- Rural Community - The Rural Community Area designation is a growth area that currently maintains a rural lifestyle which will provide goods, services and increased residential uses. Growth of these areas tends to be slow to moderate.

  - Growth should be based on the availability and capacity of public services, facilities, and infrastructure. A rural activity center allowing for commercial, business, governmental activity, health and educational facilities, industrial uses, parks and recreation areas should be an integral part of the design.

  - Maximum Density Guidelines for Planned Area Development (PAD): Single Family 3.5 du/ac. Attached (town houses, patio homes, etc., apartments are not included) 5 du/ac. Multi family (apts.) 12 du/ac (with increased open space from the required 15%, the density may increase.)

- Transitional - The Transitional Area designation is for those areas currently rural in character but which are anticipated for growth in the future. These areas could sustain uses consistent with the Urban, Industrial, Rural, Foothills, or Rural Community designations. The purpose of the Transitional Area designation is to encourage the retention of existing parcels of land in large tracts for potential development. Until further development, these areas will retain their rural lifestyle. Current activity may include farming, grazing or vacant land.

  - Transitional Areas may remain rural with the level of existing support services and facilities being minimal or they may be transitional on an interim basis with growth being phased in as facilities and services are developed in these areas.

- Density Guidelines: Single-family density in the Transitional Area shall not exceed 1 du/ac. Multi-Family development will be discouraged from locating in the Transitional category. As the Transitional Area develops, densities shall be consistent with the final land use.

- Urban - The Urban Area designation is associated with higher- and medium-density residential development where services are available to support the higher residential development. Urban areas include towns and cities, and contain most of the county's population. Most of Pinal County's past growth has occurred in or contributed to the establishment of urban areas. Most of the future growth is expected and will be encouraged to occur in these areas.

  - In addition to residential land uses, the Urban Area designation should support commercial, business, governmental activity, health and educational facilities, industrial uses, parks and recreation areas. An objective of the Urban Area designation is to provide high-quality, efficient public services, environmental quality, plentiful housing and job opportunities.

  - Maximum Density Guidelines for PAD: Single Family 3.5 du/ac. Attached (town homes, patio homes, etc., apartments not included) 5 du/ac. Multi Family (apartments) 12 du/ac (with increased open space from the required 15%, the density may increase.)

- Industrial - The Industrial Area designation identifies areas specifically for industrial uses. Industries should be grouped with more intense uses which may have impacts that are more difficult to control (heavy truck traffic, noise, vibration, light, glare, and odors). Impact from these intense industries can best be controlled by separating them from residential and commercial uses. Policies of this Comprehensive Plan are applicable to both heavy and light industries.

### 3.6 Baseline Natural Resource Data

Baseline natural resource data were also collected for the PSA. These resources included biological (vegetation and sensitive species occurrences) and soils data. This information was incorporated into a Geographical Information System (GIS) database for use in future siting analysis. Maps of these resources within the PSA are presented

in **Figures 8** and **9.** No siting concerns were noted related to either biological or soil resources.

## 4.0 Siting Criteria

The siting process is driven by an analysis of typical siting opportunities and sensitivities. This section summarizes the siting criteria (opportunities and sensitivities) developed for this study.

### 4.1 Opportunities

Siting opportunities generally consist of existing linear features that provide an advantageous routing corridor which can be either paralleled or shared by the Project. These features include existing utilities, roads, railroads, canals, as well as section lines. These types of facilities are considered opportunities for the siting of transmission lines because they are existing linear facilities that have modified the setting and are typically compatible with transmission line corridors from a land use and visual perspective.

### 4.2 Sensitivities

Potential siting sensitivities are areas that have factors which require special consideration when evaluated as a siting corridor. These areas do not necessarily preclude the construction of a new line, but would require special construction methods, mitigation, and/or additional permitting or licensing procedures. Typical siting sensitivities include educational facilities, residential areas, proposed future residential areas, and special status species habitat. For example, within the PSA, agricultural areas can provide areas for burrowing owls. The goal of the siting process is to identify potential routes that follow the opportunities while attempting to minimize or mitigate the crossing of sensitivities and particularly highly sensitive areas.

### 4.3 Siting Criteria for Sundance to Pinal South 230kV Transmission Line

The siting criteria for the Project consists of a list of specific Opportunities and Sensitivities and their categorization based on the relative strength of Opportunity or level of Sensitivity. This list is generated on a project-by-project basis and is specific to the features of a particular study area. To develop this list for the Project, features were inventoried within the PSA and identified potential opportunities and sensitivities.

The following sensitivities were identified within the PSA:

- Educational Facilities – schools, day care centers
- Existing Residences – existing houses and houses under construction
- Viewshed of Existing Residences – areas within 0.5 mile of existing residences
- Regional Parks and Recreational Facilities – Pinal County Fairgrounds
- Constrained Transmission Corridors – areas where the addition of the proposed facilities could negatively impact system reliability
- Active Agricultural Areas – tilled lands that are currently being utilized for crop production
- Biologically Sensitive Areas – riparian zones, potential special status species habitat
- Visually Sensitive Areas – areas with high viewer exposure (such as primary transportation corridors) or high viewer concern (such as natural landscapes or places with recreational viewers)
- Commercial Land Uses – areas identified as Commercial Land Use in municipal or county general plans
- Park and Recreational Land Uses – areas identified as Parks or Recreational land use in municipal or county general plans
- Planned Area Developments – future residential developments that have filed with the relevant jurisdiction for changes in land use or zoning regulations
- General Plan Land Uses – areas classified as Commerce Park, General Office, Multi-use, Public/Semi-Public, or Transitional in municipal or county general plans
- Industrial Land Uses – areas classified as Industrial in municipal or county general plans
- Vacant Land or Inactive Agriculture – areas that have not been tilled or developed, or areas that were tilled for agriculture but have gone fallow as indicated by the presence of native perennial vegetation

Following review by the Project Team, this list was organized into Primary and Secondary Opportunities (**Table 1**), and Low, Moderate, High, and Exclusion Area Sensitivities (**Table 2**). This list was then presented to local officials and planners, who were asked to comment on the criteria. The criteria were also presented at a public Open House on August 14, 2007.

**Table 1: Siting Opportunities**

| | |
|---|---|
| Primary Opportunities | Designated Utility Corridors |
| | Existing Transmission Lines and Rights-of-Way |
| | Existing Canals |
| | Existing Railroads |
| | Existing Roads / Highways (county road level or higher) |
| | Existing Pipelines |
| | Future Approved Utilities (Transmission Lines, etc.) |
| | Developed Section Lines / Major Property Lines |
| Secondary Opportunities | Existing Small Canals |
| | Undeveloped Section Lines and Half-Section Lines |

| **Table 2: Siting Sensitivities** | |
|---|---|
| Exclusion Areas | Educational Facilities |
| High Sensitivities | Within 0.5 Mile from Existing Residences and Residential Developments |
| | Regional Parks and Recreational Facilities |
| | Constrained Transmission Line Corridors |
| Moderate Sensitivities | Agricultural Areas (Active) |
| | Biological Sensitive Areas |
| | Visually Sensitive Areas |
| | Commercial Land Uses |
| | Park / Recreational Land Uses |
| | Planned Area Developments |
| Low Sensitivities | General Plan Land Uses |
| | Industrial and Utility Land Uses<br>Vacant Land or Inactive Agricultural Area |

## 5.0 Analysis

A GIS database was developed and used to map and analyze the siting criteria for the Project. Data layers for each Opportunity and Sensitivity were created based on information from local planning offices, utilities, and field reconnaissance. A map of the Primary and Secondary Opportunities is presented on **Figure 10**. The Low, Moderate, High, and Exclusion Area Sensitivities are shown on **Figure 11**. **Figure 12** presents a combination of Opportunities and Sensitivities identified in the PSA.

### 5.1 Constrained Transmission Corridors

Typically corridors containing one or more existing transmission lines are considered strong siting opportunities. However, under certain electrical system conditions, the addition of another transmission line can create a condition that negatively impacts system reliability. Under these conditions, the transmission corridor would be considered constrained. System reliability refers to the ability of the electrical network to effectively function following the loss of a single or multiple transmission lines. Reliability is increased with the availability of multiple electrical routes between two points, such that the loss of one route does not result in a total loss of transmission capability between the points.

There are currently two corridors within the PSA that would be considered constrained if the proposed project were to be developed in proximity to the existing lines. The first is the corridor exiting the Sundance facility to the north. Within this corridor, there are three 230kV circuits operated by the Western Area Power Administration (Western). The second corridor is located 0.25 mile east of Eleven Mile Corner Road and runs between the Signal Substation and the future Pinal South Substation. Currently, this corridor contains two 115kV circuits, also operated by Western. These circuits are planned to be upgraded to 230kV in Western's Ten Year Plan.

Electrical models run by APS show that construction of the Project in either of these two corridors would result in a reduction of reliability to the overall system. This would create a condition that would negatively impact the regional electrical system and the ability to serve load in the event of an outage or loss of the lines in these corridors. Electrical system planners and operators are required to study the potential effects of these corridor outages and factor the results into system and line siting plans. In the case of this Project, both of the corridors mentioned above were eliminated as viable line siting options based on the results of the corridor outage analysis.

### 5.2 Initial Alternatives Analysis

Based on the siting criteria described in Section 4, 60 routes were identified for analysis that follows the Primary Opportunities and half-section lines. These routes were buffered by 250 feet to generate a 500-foot potential corridor centered on each Opportunity. (Note: the final 100- to 130-foot right-of-way [ROW] would be within the 500-foot corridor.) The corridors were then overlaid with the Sensitivity data and the total acreage of each Sensitivity located within each potential corridor was calculated.

### 5.3 Initial Corridor Screening

Based on this analysis, several potential corridors were removed from further consideration. A summary of the potential corridor options removed from further consideration, and the reasons for their removal are as follows:

- **SR 287, SR 87** and **Eleven Mile Corner Road** were removed due to the high volume of traffic on these corridors, which would result in more impacted viewers. In addition, construction along Eleven Mile Corner Road would create a 0.25 mile strip of land bounded by the new line on the west and the existing 115kV lines on the east, limiting land use options in this area.

- **The Western 230kV and 115kV Transmission Corridors** were removed for reasons described in Section 5.1.

- **Kleck Road** and **Storey Road** were removed because use of these corridors did not provide tangible benefits when compared to other options. Other opportunities including the Salt River Project (SRP) canal, the Hohokam Canal, and the Earley Road routes provide better options for East – West travel.

- **Florence – Casa Grand Canal, Selma Highway, and Cornman Road** were removed because use of these corridors could not provide tangible benefits when compared to other options. Other opportunities including the SRP canal, the Hohokam Canal, and the Earley Road alignment routes provide better options for East – West travel. In addition, these routes would require traveling back to the north. This additional distance would result in additional impacts and cost for no tangible benefit.

The remaining eight North – South routes and seven East – West routes were carried forward to the first public Open House as Initial Alternative Alignments (**Figure 13**). The North – South routes included:

- Signal Peak Road
- Curry Road
- Tweedy Road
- Sunshine Boulevard
- La Palma Road
- half-section line between Toltec Buttes Road and Signal Peak Road
- half-section line between Signal Peak Road and Curry Road
- half-section line between Curry Road and Tweedy Road

The East – West routes included:

- gas line running east and west out of the Sundance facility
- Randolph Road
- Hohokam Irrigation District Canal
- Casa Grande Canal
- future SRP double-circuit 500kV transmission line route
- Earley Road

All of the intersections (nodes) of North – South and East – West routes were numbered and placed on a map with the Initial Alternative Routes. This map was then presented to the public in an Open House forum on August 14, 2007. Open House attendees were asked to provide comments to the Project Team regarding favored or un-favored node-to-node segment options.

## 6.0 Public Involvement

### 6.1 Stakeholder Briefings

As part of the siting process, APS initiated an extensive public outreach program aimed at distributing information and gathering comments from local officials and interested

stakeholders. Early in the process, APS conducted a series of Stakeholder Briefings. The Project Team met with the Pinal County Government Alliance (June 22, 2007) and the Central Arizona Economic Development Council (July 12, 2007) to present an introduction to the Project. Information presented at these meetings included a Project description, a summary of the need and benefit for the Project, the anticipated schedule for obtaining the Certificate of Environmental Compatibility (CEC) from the Arizona Corporation Commission (ACC), the expected start of construction, and the expected start of service date. Contact information was also provided so that meeting attendees could provide any comments they might have, or provide contact information to their constituents. APS also offered to brief other officials in these municipalities. In addition, APS is participating as a member of the Technical Advisor Group that is providing input on the update of the Pinal County Comprehensive Plan.

On July 25, 2007, Project representatives met individually with the mayors of Coolidge, Casa Grande, and Eloy. APS described the benefits of the Project and specific siting constraints associated with the Western 115kV and 230kV corridors. The Mayors were then presented maps of the study area and asked for feedback regarding potential routing options. APS offered to brief other officials from these municipalities.

### 6.2 Planners Workshop

On July 10, 2007, APS hosted a Planning Workshop for planners from jurisdictions potentially affected by the Project. Officials from the Central Arizona Association of Governments, Pinal County, Coolidge, Eloy, and Casa Grande were in attendance. APS presented attendees with information relating to the need for the Project and Project benefits. Attendees were then presented with the siting criteria for the Project and maps of the Opportunities and Sensitivities that had been identified. At this venue, the Project Team was able to gather information from planning officials concerning the siting criteria and potential routing alternatives.

### 6.3 Public Open House

On August 14, 2007 APS hosted an Open House to provide information on the Project to the general public. The Open House was held in the Residence Life classroom at the Central Arizona College from 5:30 pm to 7:30 pm. The format consisted of seven stations: Project Need and Regional Information, Project Description and Design Considerations, Study Area and Data Collected, Route Identification and Screening, Technical Data, Project Contact Information, and an interactive GIS station. At each

station, Project representatives from APS and ARCADIS were available to answer questions and collect comments.

At the interactive GIS station, Open House attendees were able to locate points of interest on a projected map, zoom in to these areas, and measure the distance to potential routes. Members of the public were also able to provide feedback regarding the accuracy of the data collected by the Project. These comments could then immediately be entered into the GIS database. Comments regarding potential routes were also solicited at this station.

## 7.0 Summary

Initial siting activities for the Project took place from April through August 2007. During this time, the PSA was defined and Opportunities and Sensitivities specific to the PSA were identified. Primary Opportunities in the PSA include roads, canals, existing and planned transmission corridors, gas pipelines, railroads, and developed section lines. Sensitivities having the greatest impact on the routing process include educational facilities, existing residential developments, constrained transmission corridors, and planned area developments. Following a comprehensive analysis of the siting criteria and communication with local jurisdictions, stakeholders, and the public, the routes depicted on **Figure 13** were presented at the Phase I Open House.

Phase II will include a detailed analysis of Sensitivities along the Initial Route Alternatives. The Applicant will continue to meet with jurisdictional stakeholders, planners, and will host a second Open House. Based on the results of the analysis and public comment, a Preferred and Alternate Route will be identified. A detailed account of the results of Phase II and will be included in Exhibits A, C, D, E, F, H, and J in the Applicant's Application for a Certificate of Environmental Compatibility, which will be filed with the Arizona Corporation Commission.

## 8.0 References

Casa Grande, City of. 2006. City of Casa Grande General Plan 2010 and Amendments. Casa Grande, Arizona.

Coolidge, City of. 2006. Coolidge General Plan, October 2006. GIS data acquired from Alton Bruce, Coolidge Planning Department on April 15, 2007.

Eloy, City of. 2005. Eloy General Plan. Eloy, Arizona.

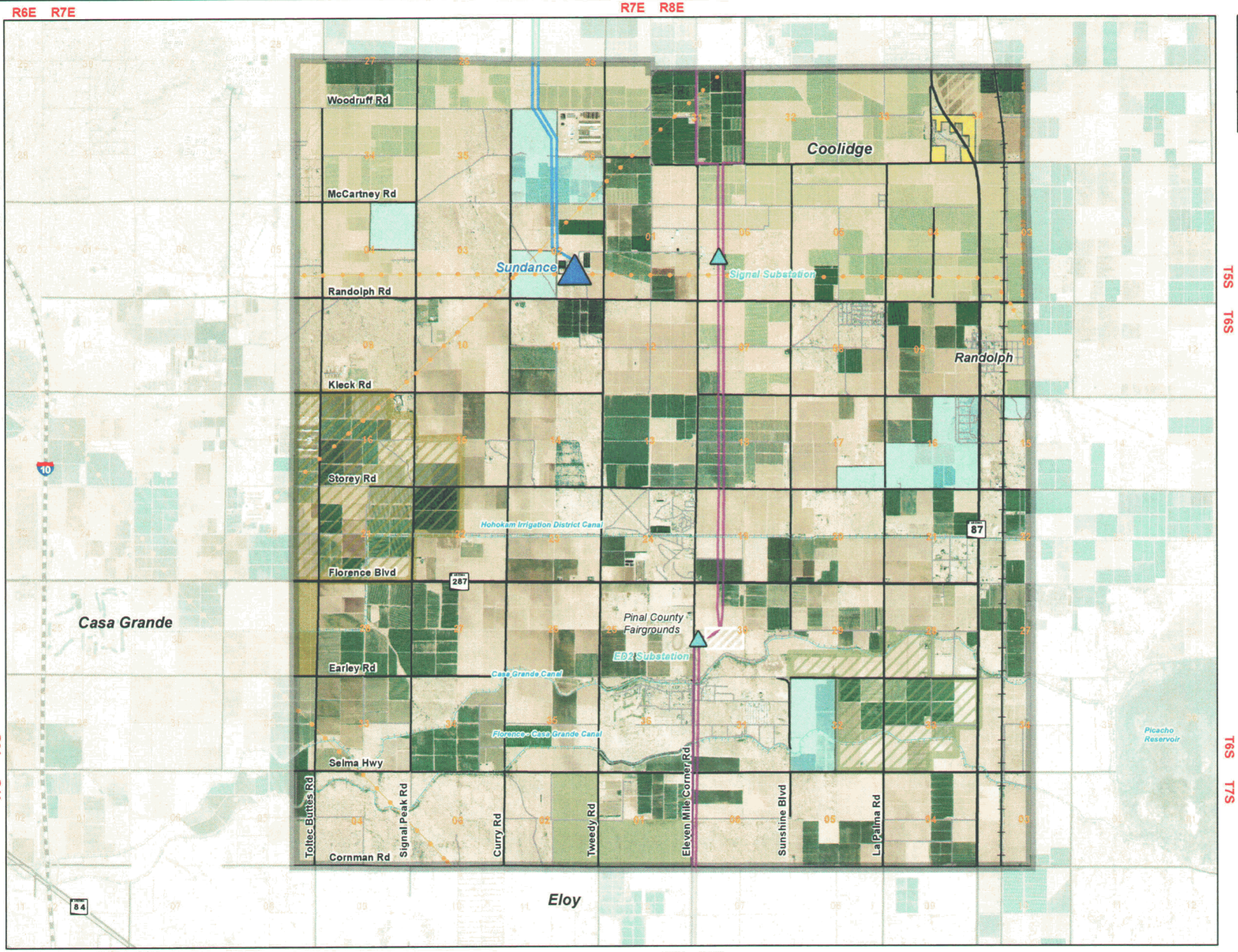
Pinal, County of. 2006. Land Use Plan [Online] Located at: http://www.co.pinal.az.us/PlanDev/PDCP/files/CompPlanFinal2006.pdf Accessed January 11, 2007.

# Project Study Area

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

| September 2007 | Figure 1 | Author: TJR |
|---|---|---|




## Legend

**City of Coolidge**
- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**
- Municipal Boundary
- Proposed Annexation

**City of Eloy**
- Municipal Boundary
- Proposed Annexation

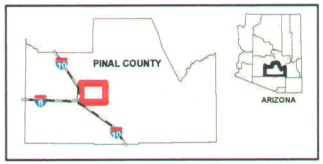
**Land Ownership**
- Bureau of Land Management
- Arizona State Trust

**Reference Features**
- Project Study Area
- Pipeline
- Future Pinal South Substation
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad
- Canal

N

0 0.25 0.5 0.75 1
Miles
Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters

Data Sources
ARCADIS, 2007
Aerial Photo - SRP, April 2006



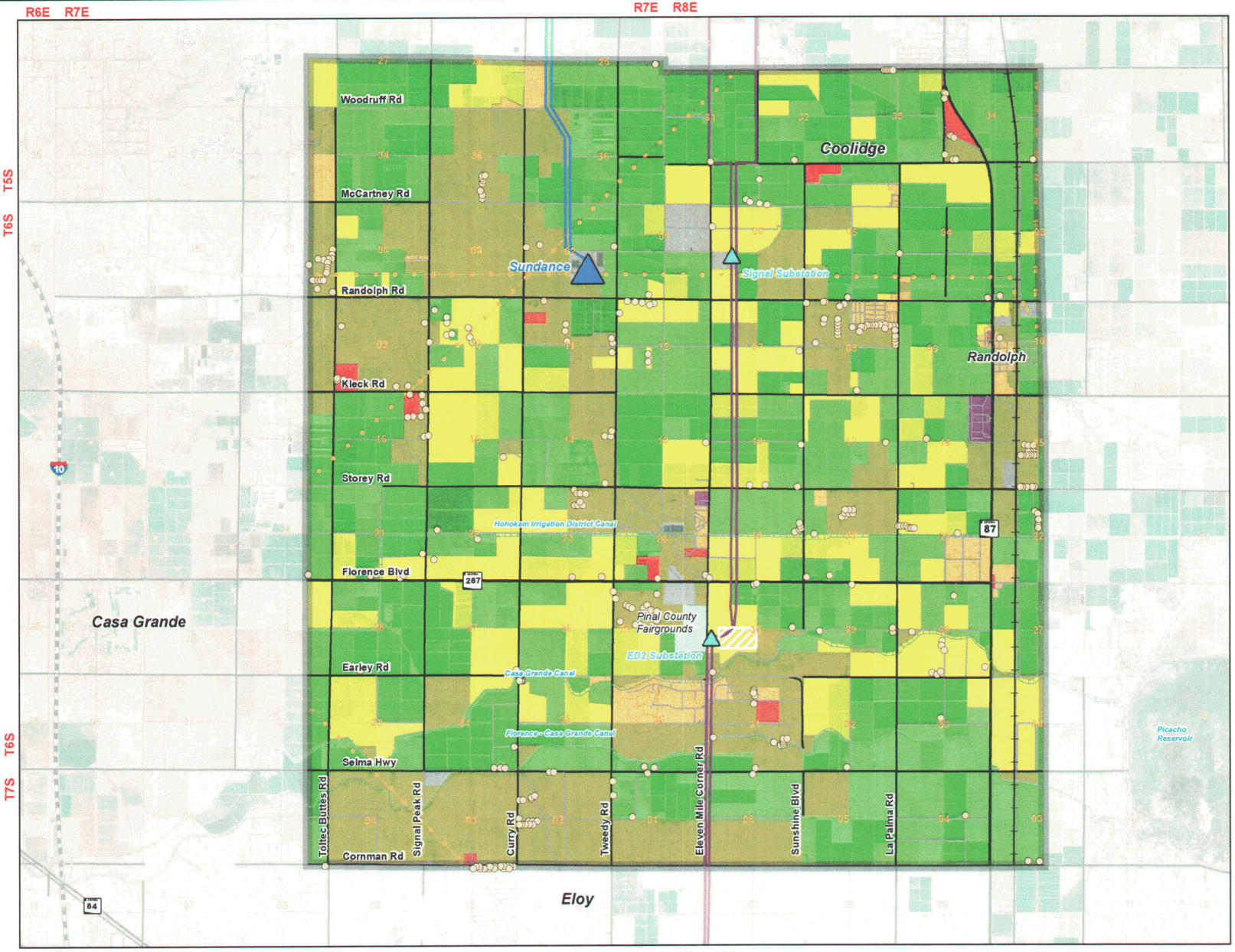

APS

# Existing Land Use

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

September 2007 | **Figure 2** | Author: TJR




## Legend

- Individual Residence
- Developed/Residential
- Educational
- Commercial
- Industrial/Uitlity
- Parks and Recreation
- Active Agriculture
- Inactive Agriculture
- Vacant Land

## Reference Features

- Project Study Area
- Future Pinal South Substation
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

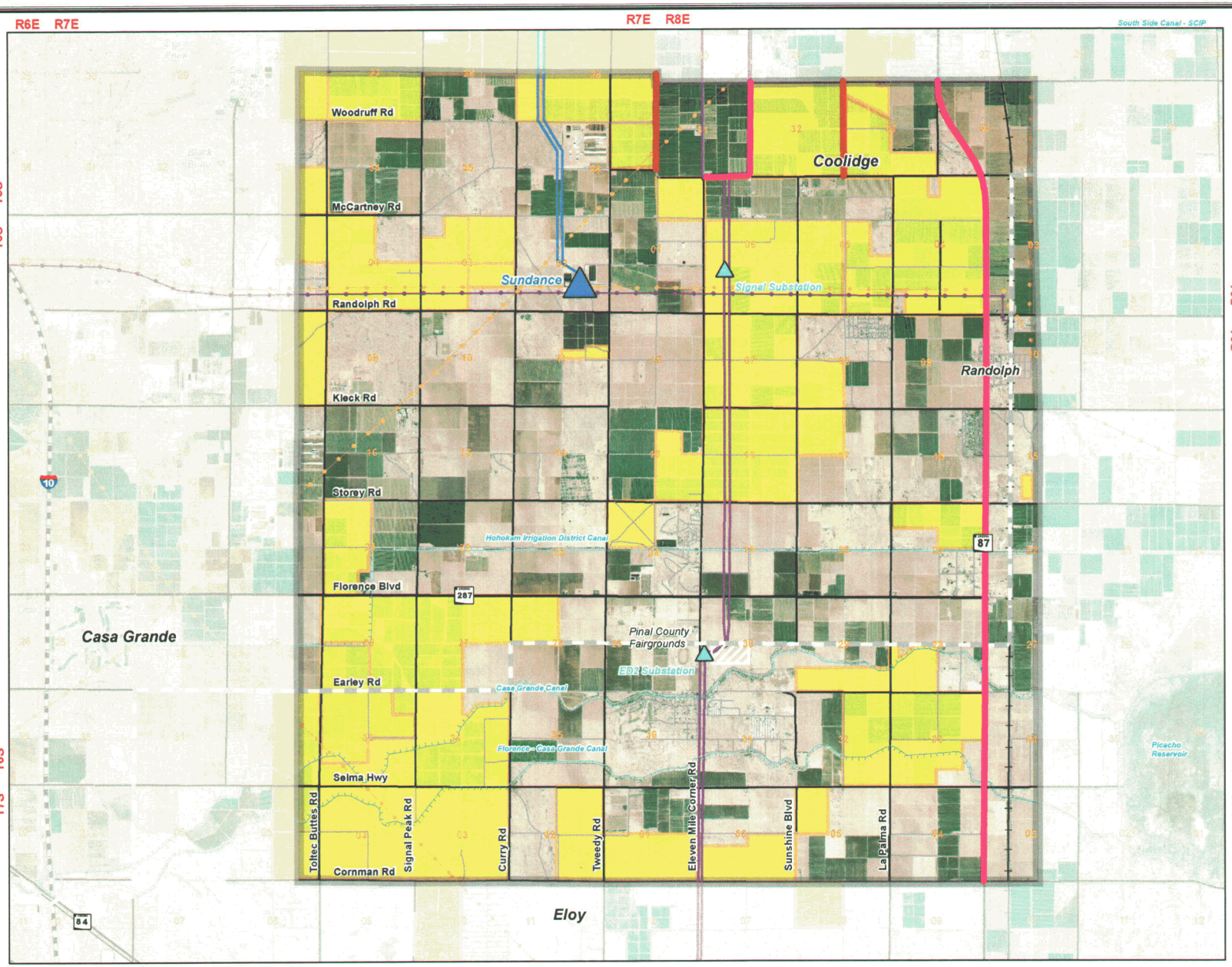
N

0 0.25 0.5 0.75 1
Miles

Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters

Data Sources
ARCADIS, 2007
Aerial Photo - SRP, April 2006

APS




# Future Plans

**Sundance to Pinal South 230kV Transmission Project**

**Analysis Area: Pinal County, Arizona**

| September 2007 | Figure 3 | Author: TJR |
|---|---|---|

## Legend

- Planned Area Development
- Proposed Transwestern Pipeline
- Planned Arterial Widening
- Planned New Arterial
- Future SRP 500/230kV Corridor

## Reference Features

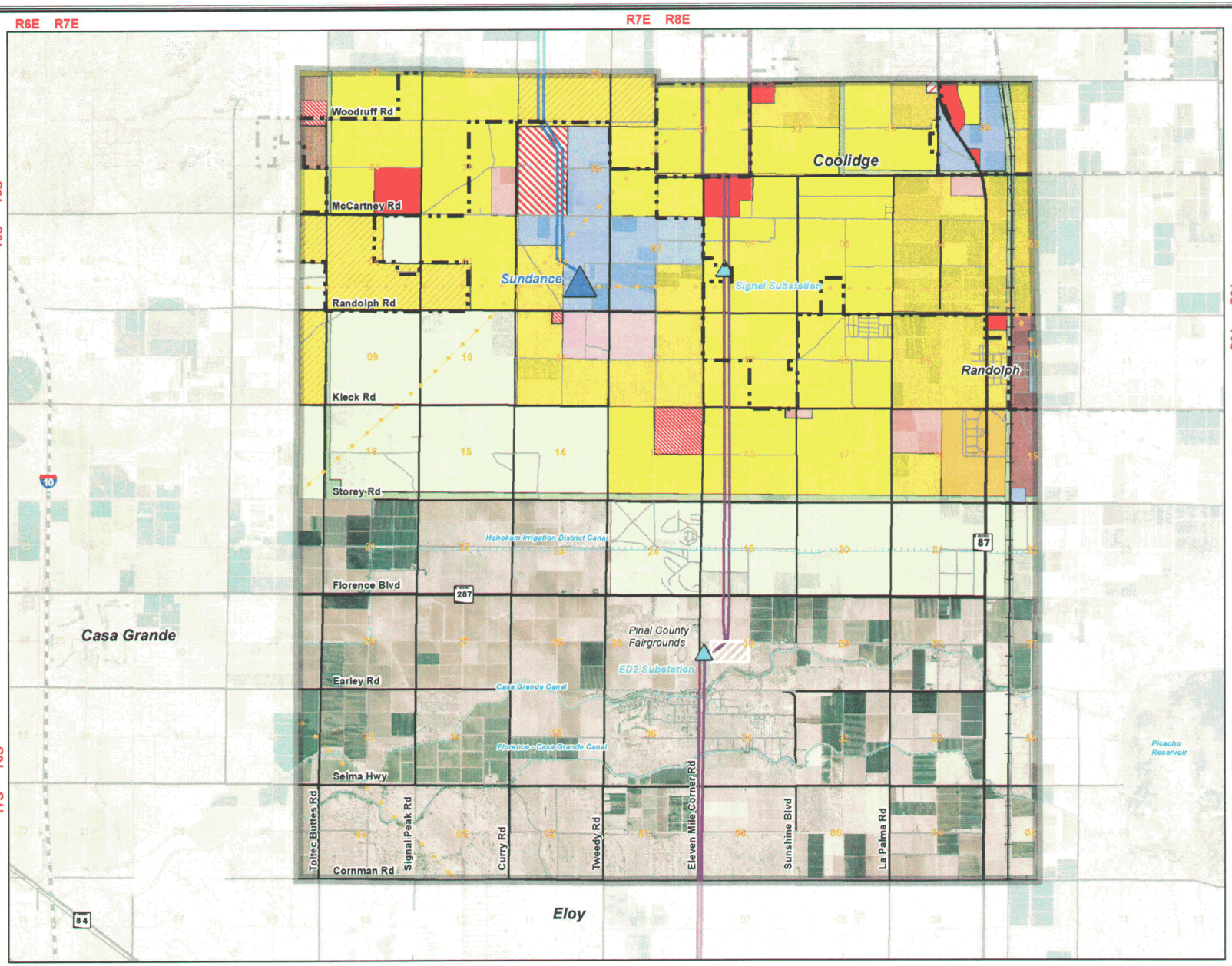
- Project Study Area
- Pipeline
- Future Pinal South Substation
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad
- Canal

Data Sources
ARCADIS, 2007
Pinal County, 2007
City of Eloy, 2007
Central Arizona Association of Governments, 2003
Aerial Photo - SRP, April 2006

N

0 0.25 0.5 0.75 1
Miles

APS




# Coolidge General Plan Land Use

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

September 2007 | Figure 4 | Author: TJR

## Legend
### City of Coolidge General Plan Land Use

- Current Municipal Boundary Line
- Very Low-Density Single-Family Residential
- Low-Density Single-Family Residential
- Low-Density Multi-Family Residential
- Medium-Density Single-Family Residential
- Medium-Density Multi-Family Residential
- Master Plan Community
- Community Commercial
- Neighborhood Commercial
- Regional Commercial
- Multi-Use
- Multi-Use High-Density Community Commercial
- Commerce Park
- General Office
- Industrial
- Park/Open Space

### Reference Features

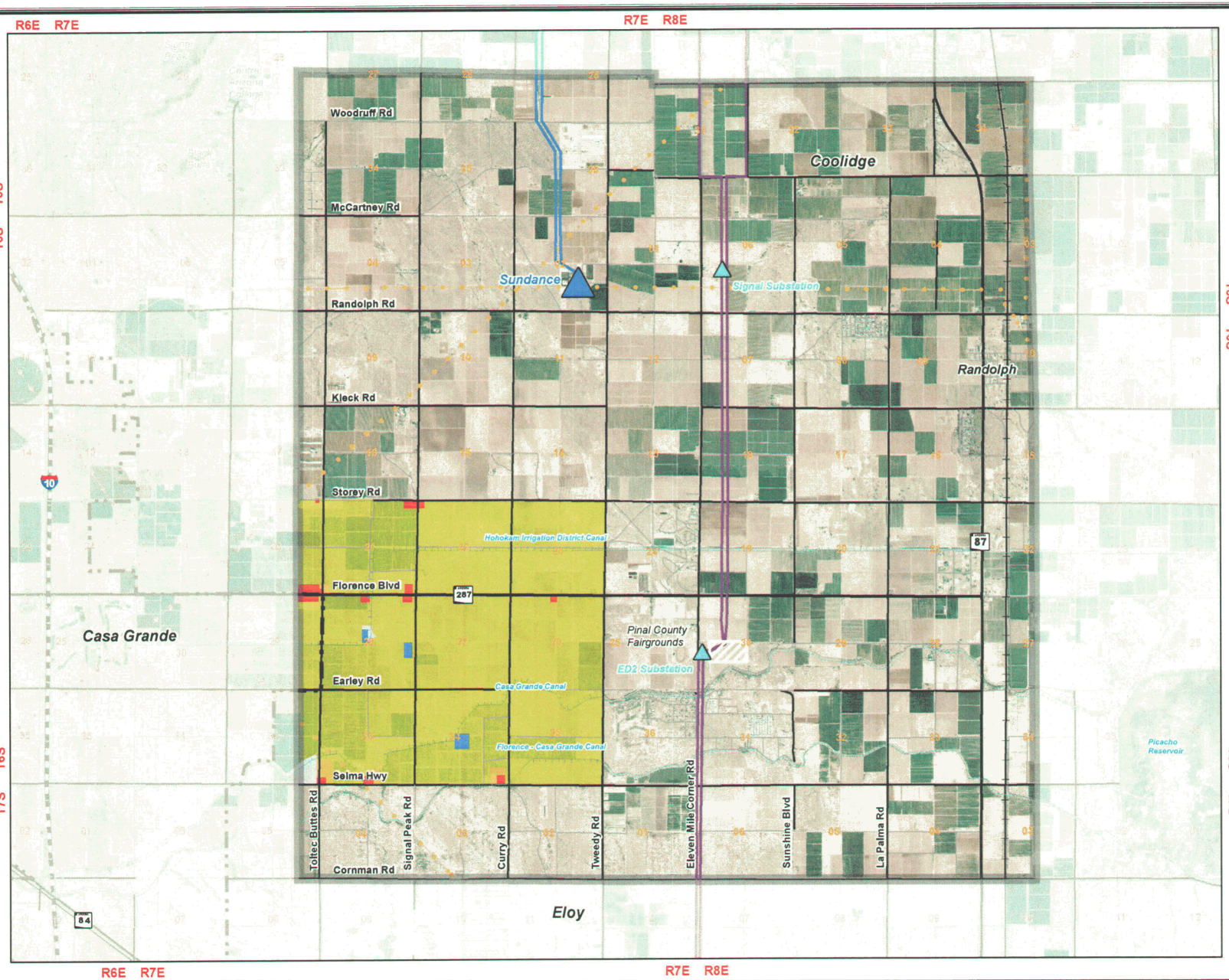
- Project Study Area
- Pipeline
- Future Pinal South Substation
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad
- Canal

N

0 0.25 0.5 0.75 1 Miles

Data Sources
City of Coolidge, 2007
Aerial Photo - SRP, April 2006

APS




# Casa Grande General Plan Land Use

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

September 2007 | **Figure 5** | Author: TJR

## Legend

### City of Casa Grande General Plan Land Use

- Municipal Boundary Line
- Low-Density Residential
- Medium-Density Residential #1
- High-Density Residential
- Commercial
- Office/Business Park
- Public/Semi-Public

### Reference Features

- Project Study Area
- Future Pinal South Substation
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

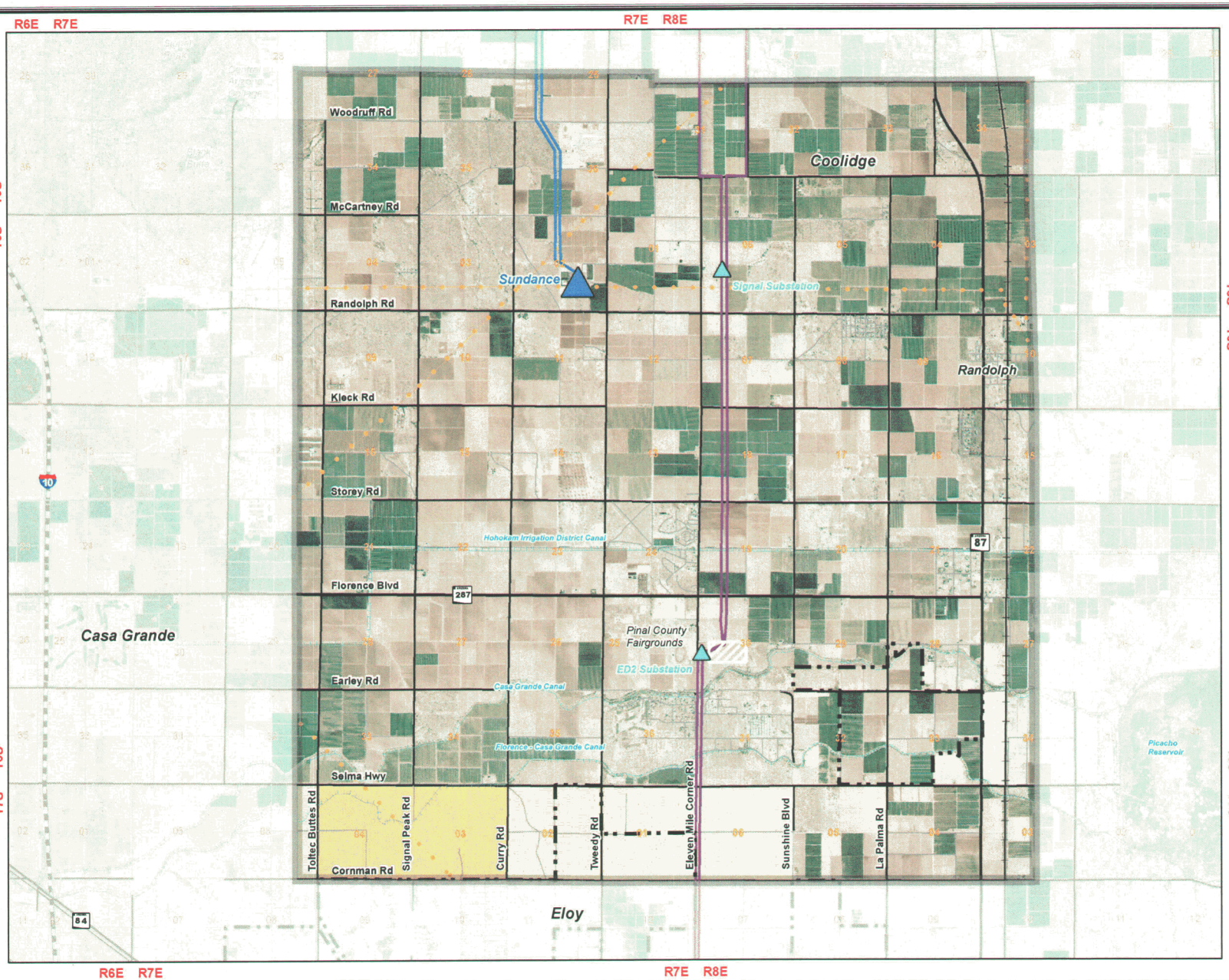
Data Sources

City of Casa Grande, 2006
Aerial Photo - SRP, April 2006

N

0 0.25 0.5 0.75 1
Miles

APS




# Eloy General Plan Land Use

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

September 2007 | **Figure 6** | Author: TJR

## Legend

### City of Eloy General Plan Land Use

- Municipal Boundary Line
- Low-Density Residential
- Medium-Density Residential

### Reference Features

- Project Study Area
- Future Pinal South Substation
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

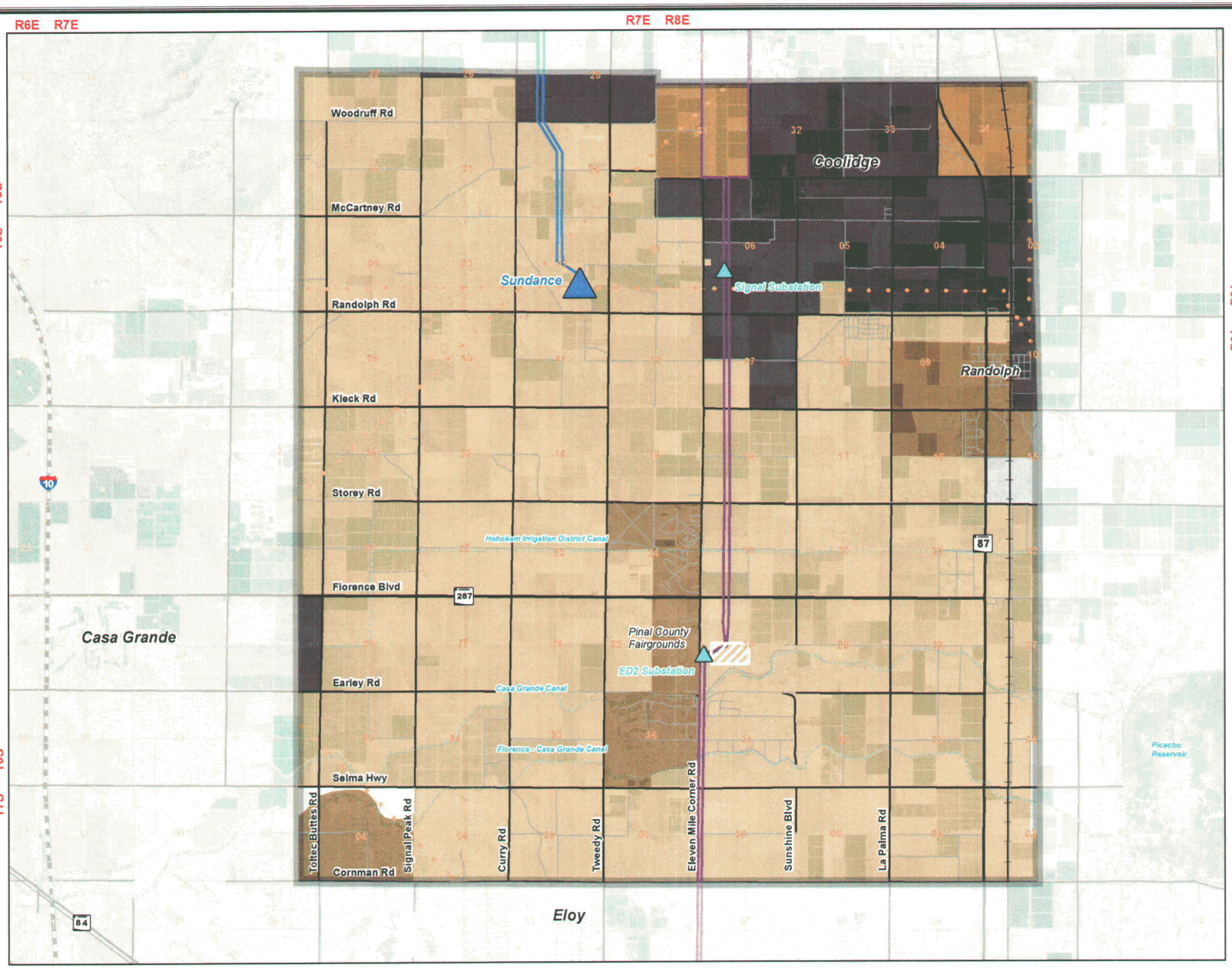
Data Sources

City of Eloy, 2005
Aerial Photo - SRP, April 2006

N

0 0.25 0.5 0.75 1
Miles

APS




**Pinal County General Plan Land Use**

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

| September 2007 | Figure 7 | Author: TJR |
|---|---|---|

## Legend
## Pinal County General Plan Land Use

- Rural
- Rural Community
- Transitional
- Urban
- Industrial
- Incorporated Areas

## Reference Features

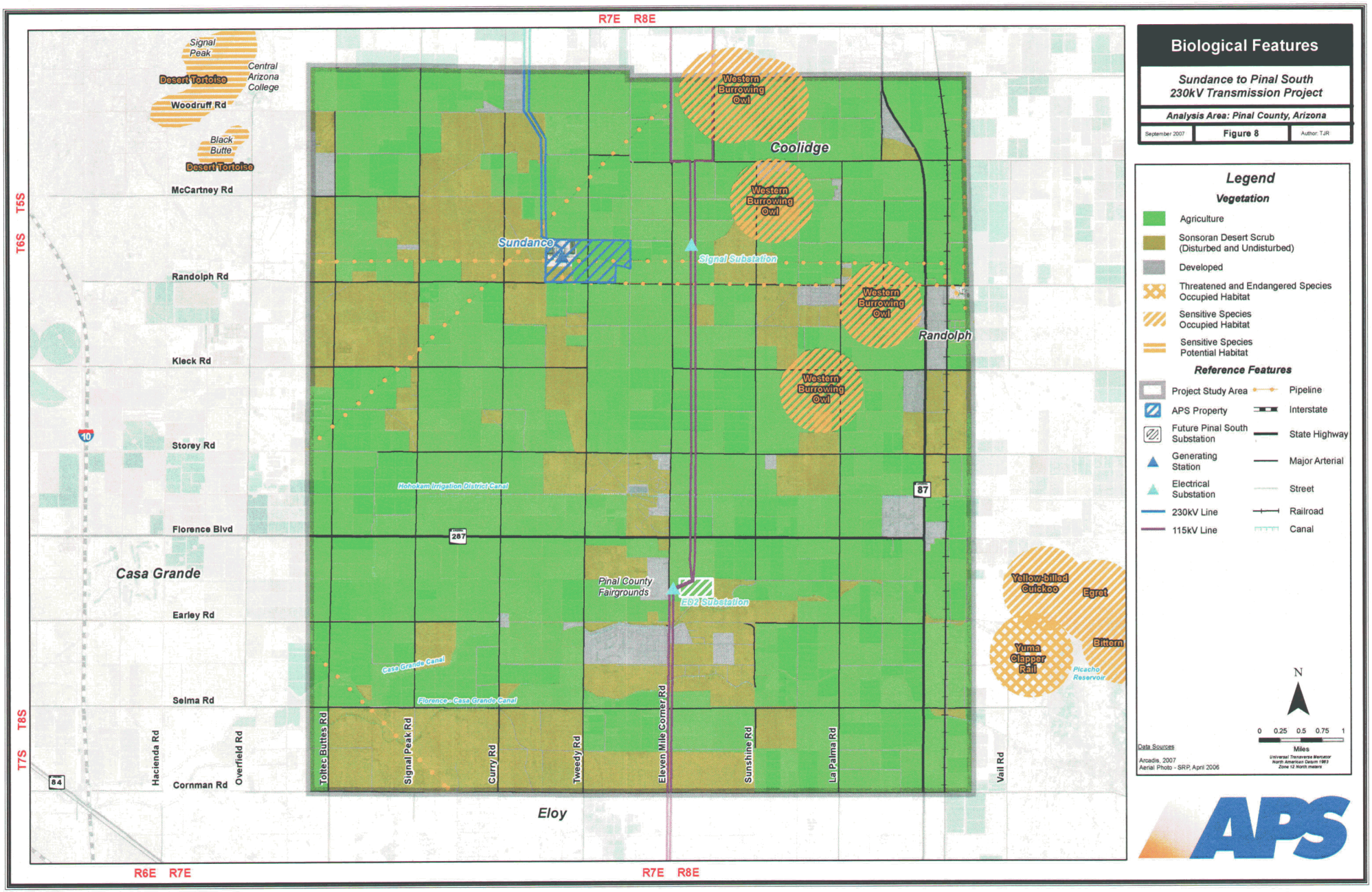
- Project Study Area
- Future Pinal South Substation
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

Data Sources
Pinal County, 2006
Aerial Photo - SRP, April 2006

N

0 0.25 0.5 0.75 1
Miles

APS




# Biological Features

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

| September 2007 | Figure 8 | Author: TJR |
|---|---|---|

## Legend

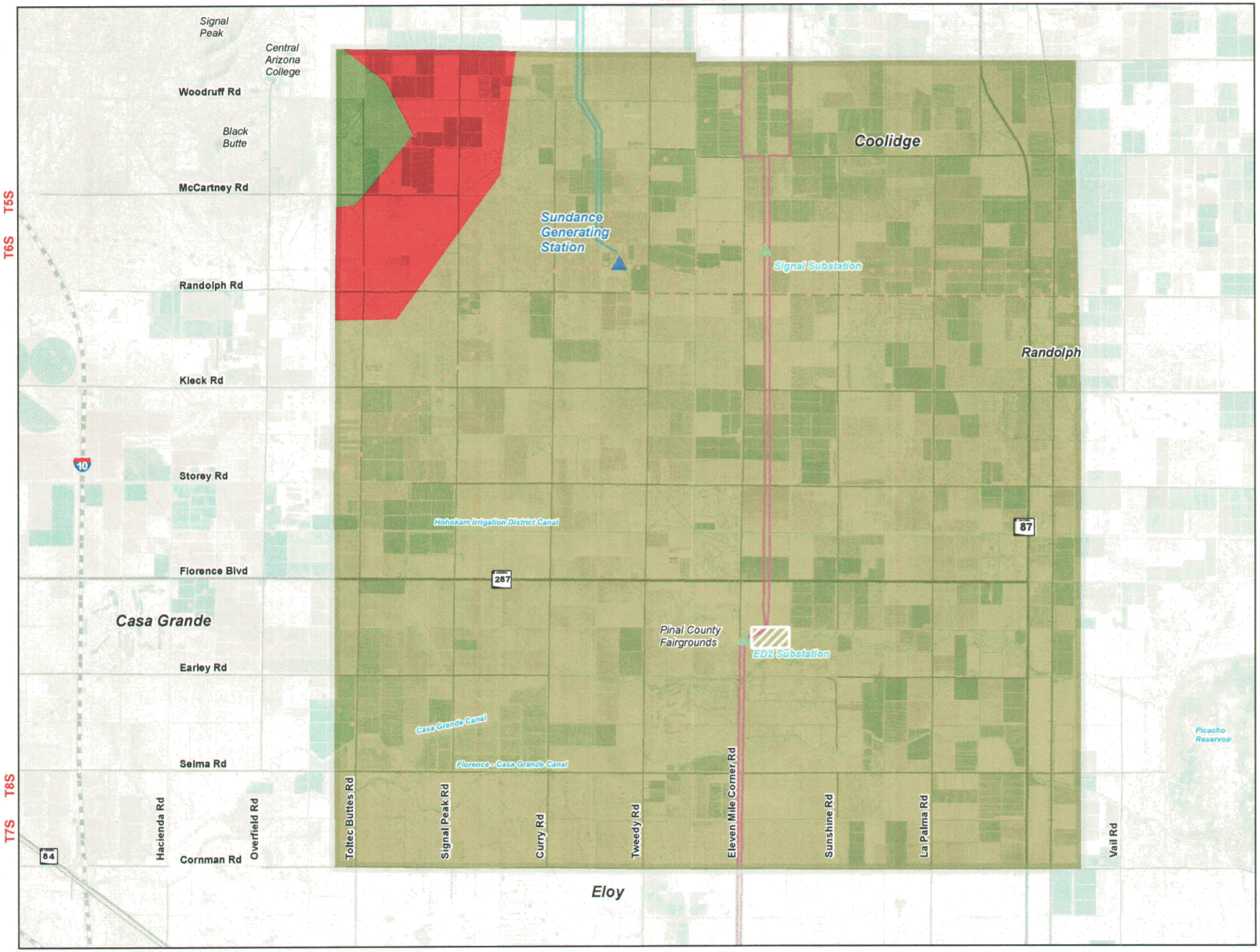
### Vegetation

- Agriculture
- Sonsoran Desert Scrub (Disturbed and Undisturbed)
- Developed
- Threatened and Endangered Species Occupied Habitat
- Sensitive Species Occupied Habitat
- Sensitive Species Potential Habitat

### Reference Features

- Project Study Area
- APS Property
- Future Pinal South Substation
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad
- Canal

APS




# Soils

**Sundance to Pinal South 230kV Transmission Project**

**Analysis Area: Pinal County, Arizona**

| September 2007 | Figure 9 | Author: TJR |
|---|---|---|

## Legend

### Soils

- Casa Grande-Mohall-La Palma
- Lithic Camborthids-Rock Outcrop-Lithic Haplargids
- Torrifluvents

### Reference Features

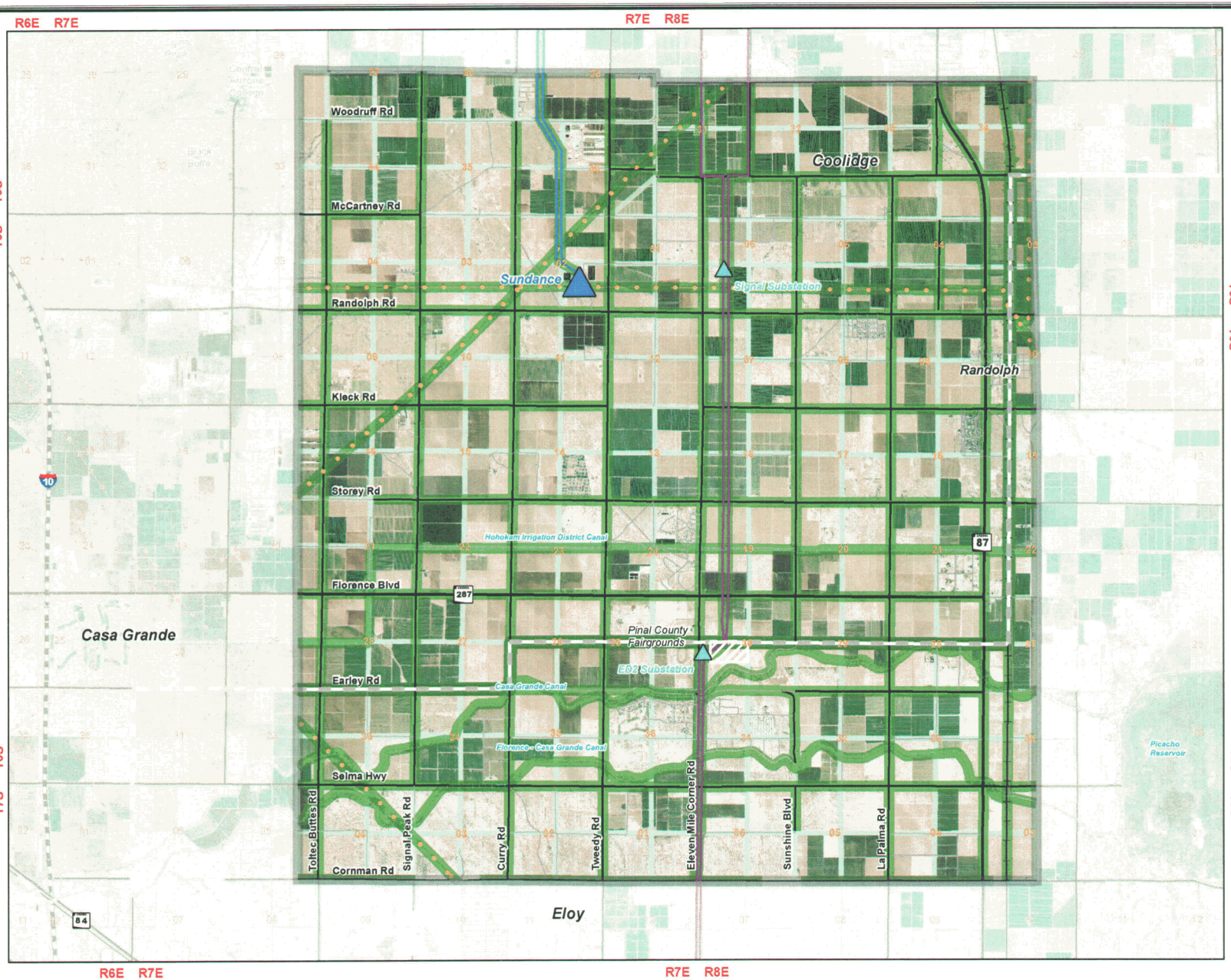
- Project Study Area
- Future Pinal South Substation
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad
- Canal

N

0 0.25 0.5 0.75 1
Miles
Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters

Data Sources
Arcadis, 2007
Aerial Photo - SRP, April 2006

APS




# Opportunities

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

| September 2007 | Figure 10 | Author: TJR |
|---|---|---|

## Legend

***Opportunities***

- Primary Opportunity
- Secondary Opportunity

***Reference Features***

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Future SRP 500/230kV Corridor
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

Data Sources

Arcadis, 2007
Aerial Photo - SRP, April 2006

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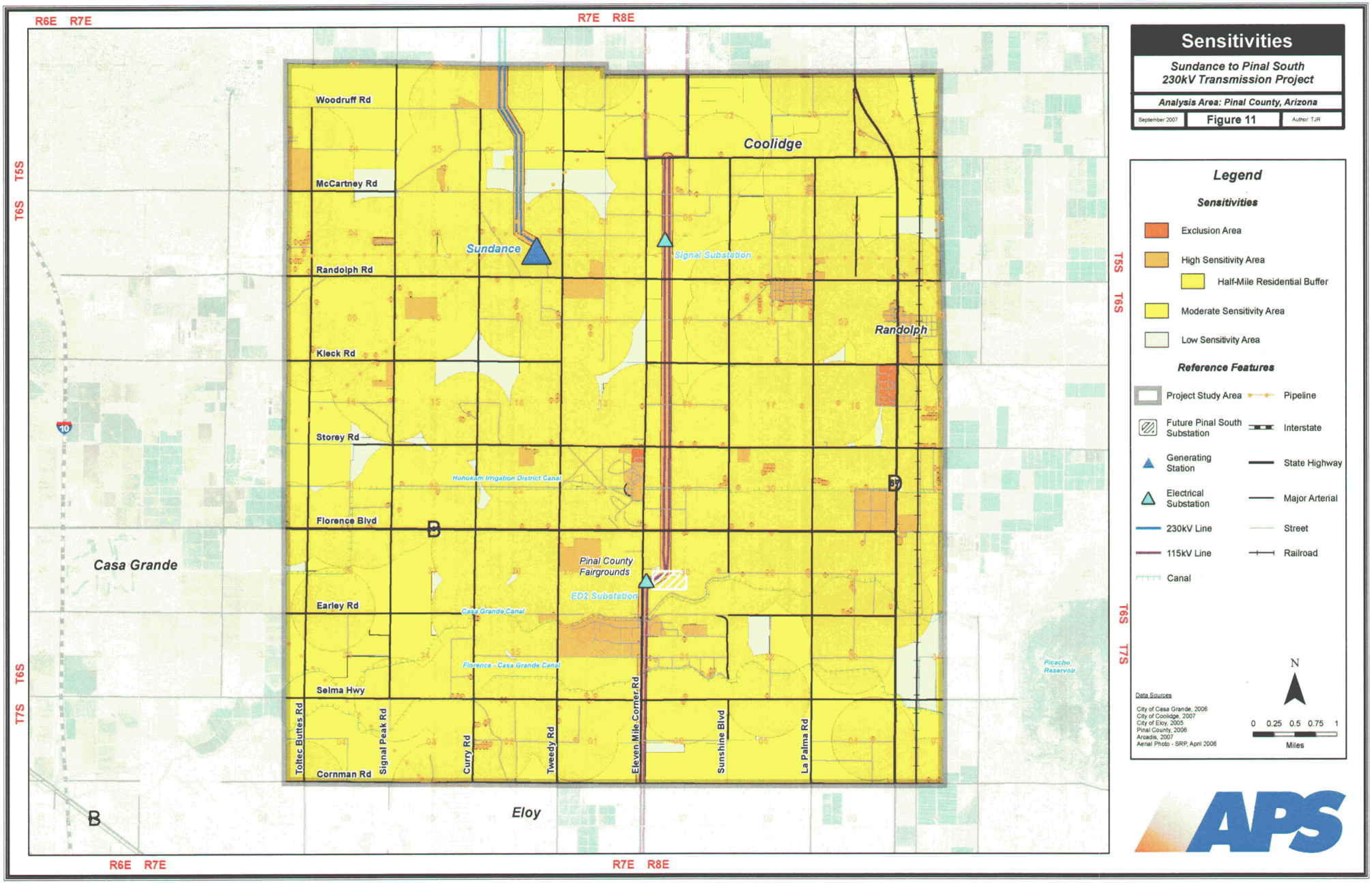
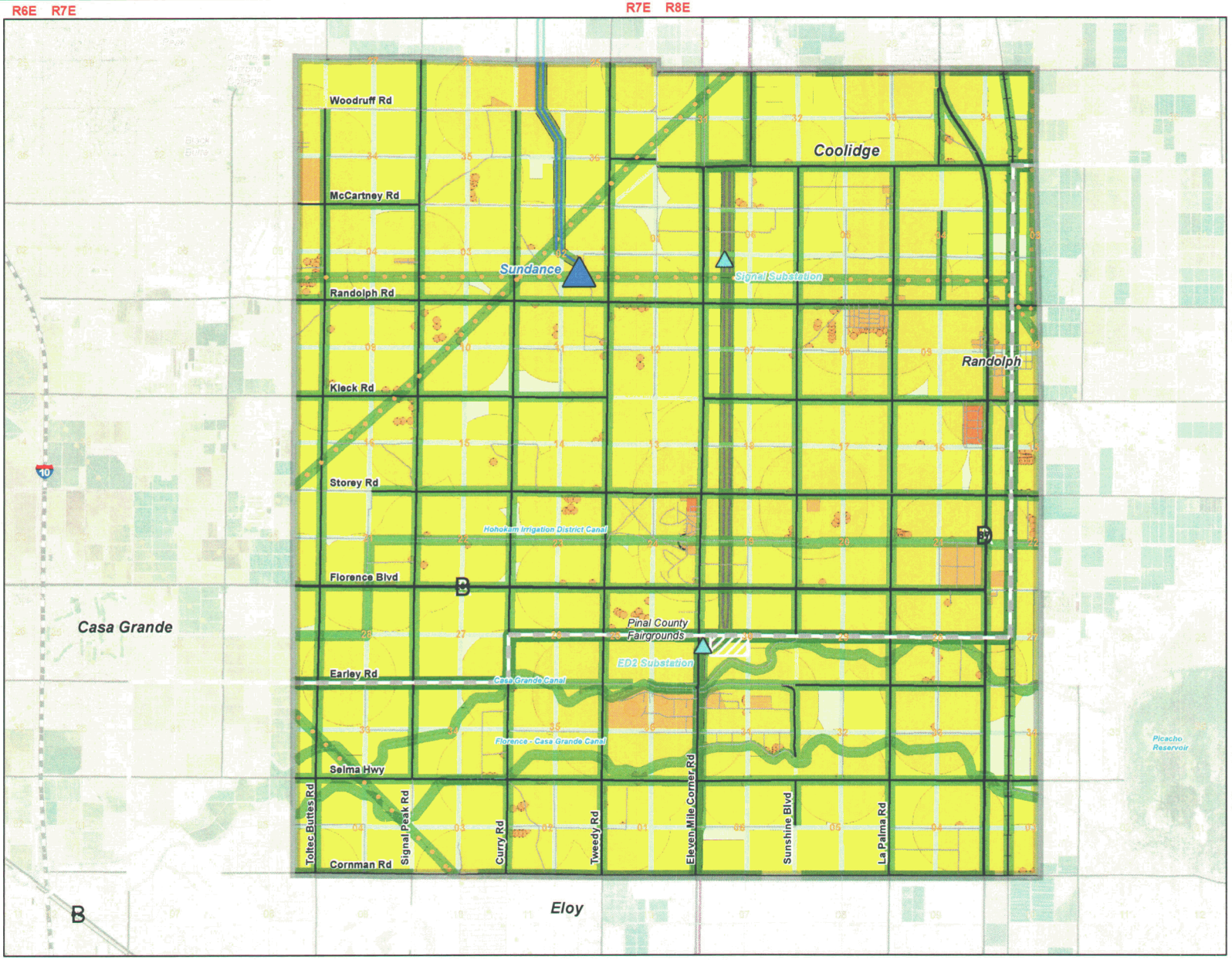
Miles

APS


R6E R7E
R7E R8E
T5S
T6S
T7S
Woodruff Rd
McCartney Rd
Randolph Rd
Kleck Rd
Storey Rd
Florence Blvd
Earley Rd
Selma Hwy
Cornman Rd
Toltec Buttes Rd
Signal Peak Rd
Curry Rd
Tweedy Rd
Eleven Mile Corner Rd
Sunshine Blvd
La Palma Rd
Sundance
Signal Substation
Coolidge
Randolph
Hohokam Irrigation District Canal
Casa Grande Canal
Florence - Casa Grande Canal
Pinal County Fairgrounds
ED2 Substation
Casa Grande
Eloy
Picacho Reservoir
Sensitivities
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
September 2007
Figure 11
Author: TJR
Legend
Sensitivities
Exclusion Area
High Sensitivity Area
Half-Mile Residential Buffer
Moderate Sensitivity Area
Low Sensitivity Area
Reference Features
Project Study Area
Pipeline
Future Pinal South Substation
Interstate
Generating Station
State Highway
Electrical Substation
Major Arterial
230kV Line
Street
115kV Line
Railroad
Canal
Data Sources
City of Casa Grande, 2006
City of Coolidge, 2007
City of Eloy, 2005
Pinal County, 2006
Arcadia, 2007
Aerial Photo - SRP, April 2006
N
0 0.25 0.5 0.75 1
Miles
APS




# Opportunities and Sensitivities

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

September 2007 | **Figure 12** | Author: TJR

## Legend

***Opportunities***

- Primary Opportunity
- Secondary Opportunity

***Sensitivities***

- Exclusion Area
- High Sensitivity Area
  - Half-Mile Residential Buffer
- Moderate Sensitivity Area
- Low Sensitivity Area

***Reference Features***

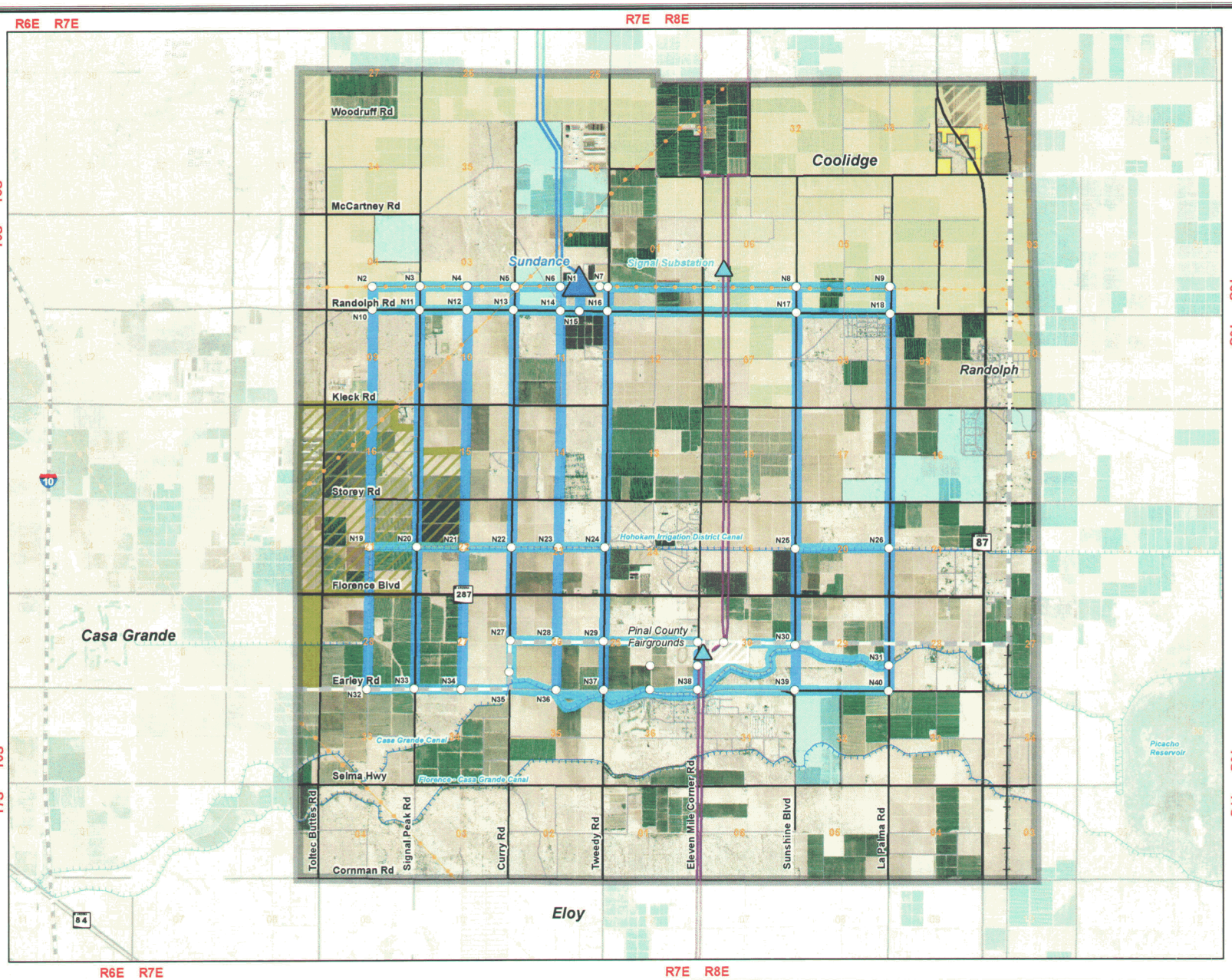
- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Future SRP 500/230kV Corridor
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

Data Sources
City of Casa Grande, 2006
City of Coolidge, 2007
City of Eloy, 2005
Pinal County, 2006
Arcadis, 2007
Aerial Photo - SRP, April 2006

N

0 0.25 0.5 0.75 1
Miles

APS




# Initial Alternative Alignments

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

| September 2007 | Figure 13 | Author: TJR |
|---|---|---|

## Legend

- North - South Alternative Alignment
- East - West Alternative Alignment
- Node

**City of Coolidge**

- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**

- Municipal Boundary
- Proposed Annexation

**Land Ownership**

- Bureau of Land Management
- Arizona State Trust

**Reference Features**

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Future SRP 500/230kV Corridor
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

N

0 0.25 0.5 0.75 1

Miles

Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters

Data Sources:
ARCADIS, 2007
City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - SRP, April 2006

APS

# EXHIBIT C
# AREAS OF BIOLOGICAL WEALTH

# EXHIBIT C
# AREAS OF BIOLOGICAL WEALTH

As stated in Arizona Administrative Code R14-3-219:

> *"Describe any areas in the vicinity of the proposed site or route which are unique because of biological wealth or because they are habitats for rare and endangered species. Describe the biological wealth or species involved and state effects, if any, the proposed facilities will have thereon."*

## Methods

The U.S. Fish and Wildlife Service (USFWS) and the Arizona Game and Fish Department (AGFD) were solicited for information regarding the potential occurrence of special status species within the Project Study Area (PSA). Federal special status species include threatened, endangered, proposed, and candidate species, protected pursuant to the Endangered Species Act of 1973 (ESA), Section 4, as amended (USFWS, 2007a). Endangered species are those species in danger of extinction throughout all or a significant portion of their range. Threatened species are those species likely to become endangered in the foreseeable future. Proposed species are those species recommended for listing under Section 4 of the ESA. Candidate species are those for which the USFWS has enough information on their biological status and threats to propose them for listing as endangered or threatened under the ESA, but for which formal proposal is precluded by other higher priorities. Other special status species include USFWS Species of Concern, AGFD Wildlife of Special Concern, and Arizona Department of Agriculture (ADA) Highly Safeguarded or Salvage Restricted Native Plants. "Species of Concern" is an informal term that refers to those species which the USFWS believes may be in need of concentrated conservation actions. Such conservation actions, monitoring for example, vary depending on the health of the populations and degree and types of threats. USFWS Species of Concern receive no legal protection, and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species. "Wildlife of Special Concern" in Arizona is defined by the AGFD as those species whose occurrence in Arizona is or may be in jeopardy, or there are known or perceived threats of population declines. Special status plants, protected under the Arizona Native Plant Law (NPL) with potential to occur in the PSA fall into the following categories: Highly Safeguarded (no collection allowed), and Salvage Restricted (collection only with permit).

Upon coordination with the USFWS and AGFD, 77 special status species having a general potential to occur within Pinal County were identified (AGFD, 2007; USFWS, 2007b). Of these species, 16 are threatened, endangered, proposed, or candidate species. Fifty (50) species are USFWS Species of Concern, AGFD Wildlife of Special Concern, or ADA Highly Safeguarded or Salvage Restricted Native Plants. An additional 11 species are either Bureau of Land Management (BLM) or United States Forest Service (USFS) Sensitive. As described in this Exhibit, only five of these species are anticipated to occur within the PSA. Of those five species, four are special status plant species and one is a special status animal species. There are no Threatened or Endangered species anticipated to be found in the PSA. The letters obtained from AGFD and USFWS are included in **Exhibit C-1**.

Prior to conducting fieldwork, aspects of each special status species were studied including ecology, habitat requirements, and identification requirements. Qualified biologists conducted multiple site reconnaissance visits. The on-the-ground reconnaissance consisted of pedestrian and vehicle surveys of the PSA in June 2007 and August 2007. Habitat conditions and wildlife observations were recorded. Information collected was used to evaluate the potential for occurrence of these species and to analyze the potential effects of Project implementation.

## Results of Reconnaissance Surveys

Habitats were evaluated and characterized within the PSA. Patches of undisturbed and disturbed native habitat occur within the PSA and consist of Sonoran Desert vegetative communities (Brown, 1994). The dominant native plant community in this area of the Sonoran Desert is characterized as the Sonoran Desertscrub Ecosystem with the Lower Colorado River Valley Subdivision being the dominant feature on the flats. Intermittent, unnamed desert washes exist in a small portion of the PSA and are defined by unique vegetation communities characterized as the Sonoran Riparian Ecosystem such as the Sonoran Wash Series and Mesquite Series. Local washes may also support marginal xeroriparian habitat.

Agriculture is the primary land use within the PSA. Rural, Mixed Residential, and Commercial land use areas are also common. Non-native, weedy, and crop species are typically dominant in these areas.

## Findings

**Table C-1** and **Table C-2** list those special status plant and animal species that may have some potential for occurrence in the PSA (AGFD 2007; USFWS 2007b).

**Table C-1 Special Status Plant Species with Potential Occurrence in the Project Study Area**

| Common Name | Scientific Name | Protective Status | Habitat |
|---|---|---|---|
| Pima Indian mallow | *Abutilon parishii* | SC, SR | Mesic situations in full sun within higher elevation Sonoran Desertscrub. On rocky hillsides, cliff bases, canyon bottoms, lower side slopes, and ledges of canyons among rocks and boulders. Slopes can exceed 45 degrees. In riparian zones, occurs on flat secondary terraces but typically not in canyon bottoms. Often found near trails, probably due to the influence of the trail on the light, heat, and water of the micro-habitat. |
| Thornber fishhook cactus | *Mammillaria thornberi* | SR | Sonoran Desertscrub, most often found under branches of white bursage (*Ambrosia dumosa*). |
| Tumamoca globeberry | *Tumamoca macdougalii* | SR | Occurs in xeric situations in the shade of a variety of nurse plants along gullies and sandy washes of hills and valleys in Sonoran Desertscrub and Sinaloan Thornscrub communities. |
| Varied fishhook cactus | *Mammillaria viridiflora* | SR | Often found under desert shrubs and in the shadows of larger plants and cactus. It is found in gravelly soils of plains and hills in grassland, desert grassland, and woodland. |

[1] Status definitions: USFWS: T = Threatened, E = Endangered, C = Candidate, SC = Species of Concern; ADA NPL: SR = Salvage Restricted

**Table C-2 Special Status Animal Species with Potential Occurrence in the Project Study Area**

| Common Name | Scientific Name | Protective Status | Habitat |
|---|---|---|---|
| Western burrowing owl | *Athene cunicularia hypugaea* | SC | Prefer treeless flat or gently rolling land with holes and tunnels left behind by other rodents (ground squirrels and prairie dogs) |

[1] Status definitions: USFWS: T = Threatened, E = Endangered, C = Candidate, SC = Species of Concern;

## Potential Effects

The following sections address the potential effects to special status species that have a potential to occur within the PSA.

### *Plants*

Special status plant species having some potential to occur within the PSA include Pima Indian mallow, Thornber fishhook cactus, Tumamoc globeberry, and varied fishhook cactus. These species could potentially be found in undisturbed Sonoran Desertscrub habitat within the PSA. This habitat makes up a small percentage of the PSA, and there are no recorded observances of these species within 3 miles of the PSA (Ritter, 2007). If these species are encountered during surveys, they will be avoided by construction activities to the extent feasible. The Applicant will follow all statutes relating to native plants regulated under the NPL. With the incorporation of these mitigation measures, the Project will have a minimal impact on sensitive plant species.

### *Wildlife*

Special status wildlife species with the potential to occur in the PSA are limited to the western burrowing owl. The USFWS considers the western burrowing owl to be a Species of Concern. This species is also protected under the Migratory Bird Treaty Act. AGFD reports known observances of this species within 3 miles of the PSA (Ritter, 2007). ARCADIS biologists also observed this species in several locations within the PSA while conducting field surveys.

Previous disturbances within the PSA have created suitable conditions for this species. The burrowing owl utilizes the raised sides of dike roads and agricultural areas within the PSA. As such, construction activities may displace or harm individuals, particularly eggs or young of unidentified, subterranean nests if appropriate mitigation measures are not in place.

There is a risk of the destruction of burrows during construction and maintenance activities. This can result in direct mortality if the burrows are occupied during the time of collapse or can cause undo stress if alternate burrows are not available. Following approval of the final alignment and prior to construction, lands surrounding the impacted areas will be surveyed for the presence of burrowing owls. Active colonies will be mapped, and construction planning will avoid these areas to the extent possible. If it is determined that burrows would still be at risk of collapse, qualified biologists will clear burrows of occupants and construct alternative burrows following guidelines proposed by AGFD (Ritter, 2007).

## Preferred Route

### *Western Burrowing Owl*

The Preferred Route will cross or is adjacent to approximately 5.5 square miles of agricultural lands. It is in these areas that burrows are the most likely to be encountered. With the incorporation of the previously noted mitigation measures, impacts to the western burrowing owl will be reduced.

## Alternate Route

The Alternate Route will cross or is adjacent to approximately 5.8 square mile of agricultural lands. It is in these areas that burrows are the most likely to be encountered. With the incorporation of the previously noted mitigation measures, impacts to the western burrowing owl will be reduced.

## Northern Corridor Area

The Northern Corridor Area consists primarily of Sonoran Desertscrub vegetation and agriculture. The likelihood of western burrowing owls in this area is small and does not vary within the Northern Corridor Area. With the incorporation of the previously noted mitigation measures, impacts to the western burrowing owl will be reduced.

## Southern Corridor Area

With the exception of the Pinal County Fairgrounds, the Southern Corridor Area consists entirely of agricultural uses. With the incorporation of the previously noted mitigation measures, impacts to the western burrowing owl will be reduced.

## LIST OF PREPARERS

| | | |
|---|---|---|
| Mr. John Messina | 15 years of Experience | BS, MS |
| Mr. Tyler Rychener | 7 years of Experience | BS, MS |

## REFERENCES

Arizona Game and Fish Department (AGFD). 2001. *Athene cunicularia hypugaea.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 6 pp. [Web Page] Located at: http://www.azgfd.gov/w_c/edits/documents/Athecuhy.d_000.pdf Accessed September 29, 2007.

AGFD. 2007. Special Status Species in the Arizona HDMS, listed alphabetically by county, by taxon, by scientific name. Updated 06/28/2007. [Web Page] Located at: http://www.azgfd.gov/w_c/edits/documents/ssspecies_bycounty.pdf Accessed September 28, 2007.

Avian Power Line Interaction Committee (APLIC) and United States Fish and Wildlife Service (USFWS). 2005. Avian Protection Plan (APP) Guidelines. April.

Brown, D.E. (ed.). 1994. Biotic Communities - Southwestern United States and Northwestern Mexico. University of Utah Press. Provo, Utah.

Ritter, Ginger. 2007. Personal communication [*August 17, 2007* letter to Tyler Rychener, ARCADIS, Phoenix, AZ. RE: Special Status Species information for Sundance to Pinal South 230kV Transmission Project] Heritage Data Management System, Project Evaluation Program Specialist, Arizona Game and Fish Department, Phoenix, AZ.

U.S. Fish and Wildlife Service (USFWS) 2007a. Endangered Species Act of 1973. Updated November 30, 2007. [Web Page] Located at: http://www.fws.gov/endangered/ESA/content.html. Accessed December 3, 2007.

USFWS. 2007b. Personal communication [*September 12, 2007* letter to Tyler Rychener, ARCADIS, Phoenix, AZ. RE: Proposed construction, operation, and maintenance of the APS Sundance to Pinal South 230kV Transmission Line in Pinal County, Arizona.]

# EXHIBIT C-1
# AGENCY LETTERS

# Project Evaluation Request
## Arizona Game and Fish Department

**Notice:** In order to obtain a review of your project, we require all of the information requested on this form to be provided. This review is free of charge. However, due to staff and budgetary constraints, we ask you to submit this form early in the process, as estimated turn around time is 30 days (if you need this review in less than 30 days, please include a needed by date and we will try to accommodate your request). This request is a preliminary review and further project review should include draft documents and a letter formally requesting further environmental review.

**Project Evaluation Objectives:**

*Habitat Evaluation* incorporates fish and wildlife resource needs or features in land and water development projects and land and water management planning efforts in Arizona.

*Habitat Protection* ensures habitat protection through environmental compliance and regulation, and to monitor the implementation and effectiveness of mitigation commitments for various land and water development projects and management planning activities in Arizona.

**Instructions: The Following materials are required to process the request**

- **Completed form**
- **Map(s) delineating the project area (preferably a USGS quadrangle map)**
- **Relevant attachments (other supportive documents, photographs, etc.)**

Send to:
**Arizona Game and Fish Department**
**Project Evaluation Program, WMHB**
**2221 West Greenway Road**
**Phoenix, Arizona 85023-4312**
**Fax 602-789-3928**

| Applicant Requesting Project Evaluation | | | Date of Request: |
|---|---|---|---|
| Name<br>Tyler Rychener | | Organization<br>ARCADIS | |
| Street Address<br>8222 South 48th St | City<br>Phoenix | State<br>AZ | Zip Code<br>85044 |
| E-Mail Address<br>Tyler.rychener@arcadis-us.com | Telephone Number<br>602 659 3254 | Fax Number<br>602 438 0102 | |

| Individual/Organization/Agency Proposing Project (if different from above) | | | |
|---|---|---|---|
| Name<br>Greg Bernosky | | Organization<br>Arizona Public Service | |
| Street Address | City | State | Zip Code |
| E-Mail Address<br>Gregory.Bernosky@aps.com | Telephone Number<br>602.493.4448 | Fax Number | |

**Location of Proposed Project** *Remember to attach a topographic and/or plat map delineating the project area*

County(ies)

Pinal County

| Township(s) | Range(s) | Section(s) |
|---|---|---|
| T5S | R7E | 25-28, 33-36 |
| T5S | R8E | 31-34 |
| T6S | R7E | 1-5, 8-17, 20-29, 32-36 |
| T6S | R8E | 3-10, 15-22, 27-34 |
| T7S | R7E | 1-5 |
| T7S | R8E | 3-6 |

**Proposed Project Information**

Project Number or Site Name:
Sundance to Pinal South 230kV Transmission Project

What is the proposed date you intend to begin work on the project?
We have started the siting process. We anticipate going before the ACC siting committee in late 2007
The line is expected to be in service in 2011.

**Proposed Project Information** (continued)

Please briefly describe the project and project activities.

The project will develop a new 230kV double circuit transmission line originating at the Sundance Generating facility and terminating at the certificated Pinal South substation. Project activities will include the construction and maintenance of the new line.

Briefly describe current land uses and habitat types in the project area.

Land use within the Project Study Area (PSA) consists of agriculture, industrial, low density/rural residential, and medium/high density residential. Areas of vacant land are generally vegetated with sonoran dersert scrub including mesquite, four-wing salt bush, bursage, creosote, and cacti. Several occurrences of burrowing owls have been observed during field surveys.

List any waterbodies such as rivers, intermittent streams, lakes, or wetlands within or near the project area. Xeric washes should also be described, along with any anticipated impacts as a result of the project.

Principle waterbodies within the PSA include the Casa Grande, Florence-Casa Grande, and Hohokam Irrigation District canals, and irrigation ditches. There is an unnamed xeric wash in the northwestern corner of the PSA (T5S R7E Sec. 35 and T6S R7E Sec. 3). Vegetation within this wash is dominated be mesquite. The Picacho Reservoir is approximately 1 mile to the east of the southeast corner of the PSA.

List any reports that have been prepared to describe the habitat that will be affected by the proposed project (e.g. habitat reconnaissance surveys, wetland delineation, etc.)

No reports have been prepared at this time.

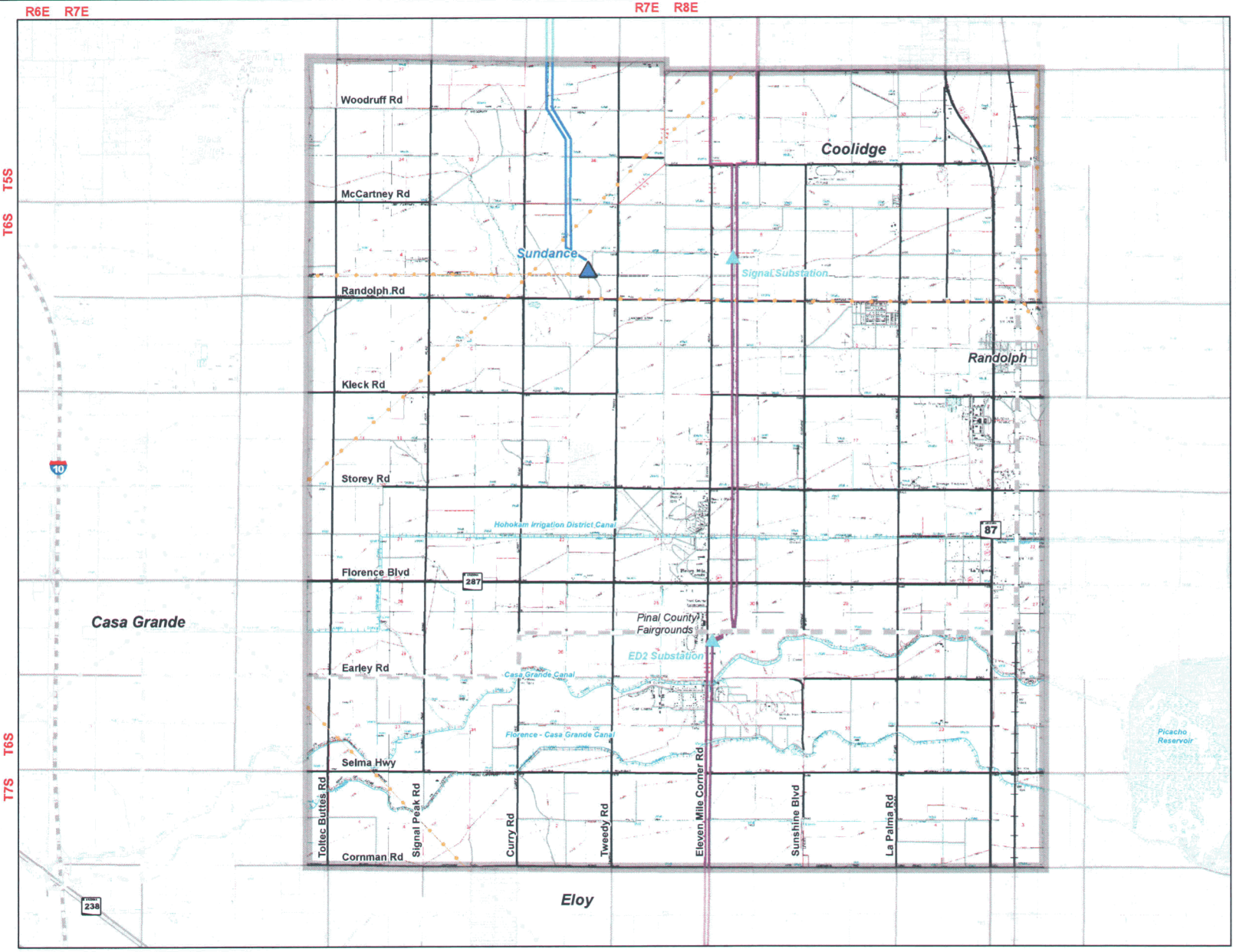
List any other resources or reviews that relate to the proposed project (correspondence, other phases of the project, other alternatives, etc.)

The PSA is within the study area for the SRP 500/230kV PW-SEV/BRG Transmission Line (ACC Docket No. L00000B-04-0126).

List any permits, licenses, or regulatory approvals you have or plan on applying for, or have already received as part of this project.

The project will be applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission. No other permits are anticipated.

**Return as hard copy to AZ Game & Fish Dept., Project Evaluation Program-Habitat Branch, 2221 West Greenway Road, Phoenix, AZ 85023-4312 or via email to pep@azgfd.gov or fax 602-789-3928**




# Project Study Area

**Sundance to Pinal South 230kV Transmission Project**

*Analysis Area: Pinal County, Arizona*

## July 2007

### Legend

**City of Coolidge**
- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**
- Municipal Boundary
- Proposed Annexation

**Land Ownership**
- Bureau of Land Management
- Arizona State Trust

### Reference Features

- Project Study Area
- Future Pinal South Substation
- Future SRP 500/230kV Line
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

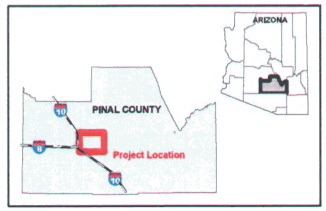
N

0 0.25 0.5 0.75 1
Miles

Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters

Data Sources

City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - SRP, April 2006




APS

THE STATE OF ARIZONA
**GAME AND FISH DEPARTMENT**
2221 WEST GREENWAY ROAD
PHOENIX, AZ 85023-4399
(602) 942-3000 • AZGFD.GOV

**GOVERNOR**
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**COMMISSIONERS**
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**DIRECTOR**
DUANE L. SHROUFE
**DEPUTY DIRECTOR**
STEVE K. FERRELL

RECEIVED
AUG 20 2007
ARCADIS U.S., INC.

August 17, 2007

Mr. Tyler Rychener
ARCADIS
8222 S. 48th St.
Phoenix, AZ 85044

Re: Special Status Species Information for **Sundance to Pinal South 230 kV Transmission Project Study Area.**

Dear Mr. Rychener:

The Arizona Game and Fish Department (Department) has reviewed your request, dated July 26, 2007, regarding special status species information associated with the above-referenced project. The Department's Heritage Data Management System (HDMS) has been accessed and current records show that the special status species listed on the attachment have been documented as occurring in the project vicinity[1].

The Department understands the proposed project activities would involve the installation of a 230kV transmission line. The Department offers the following general comments, based on the limited information provided:

- If the transmission line is below ground, keep trenching and backfilling crews close together to minimize the amount of open trenches at any given time. Trenching should occur during the cooler months (October – March) when wildlife is less active. However, there may be exceptions (e.g. critical wintering areas) that need to be assessed on a site-specific basis. Avoid leaving trenches open overnight. Where trenches cannot be back-filled immediately, escape ramps should be constructed at least every 40 meters. Escape ramps can be short lateral trenches or wooden planks sloping to the surface. The slope should be less than 45 degrees (1:1). Trenches that have been left open overnight should be inspected and animals removed prior to backfilling.
    - In low areas where the trench crosses drainages, the soil should be compacted to reduce the potential for erosion. The banks should be contoured back to a natural state and revegetated with native plants to ensure bank stabilization and minimize sediment loading. During the design of wash and stream crossings, consider potential short and long term impacts of construction on stream flow, flow hydraulics, and channel morphology

[1] The Department's HDMS data are not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity.

- If the transmission line is above ground, it must be designed to prevent or minimize risk of electrocution of raptors.
- Minimize habitat alterations by following existing disturbed areas. When disturbed areas are not an option, altered areas should be returned to the original grade following construction.
- Please survey for desert tortoise and Western burrowing owls. Specific guidelines for each species are included with this letter.
- Limit project activities during the breeding season for birds, generally May through late August, depending on species in the local area. Raptors breed in early February through May. Conduct avian surveys to determine bird species that may be utilizing the area and develop a plan to avoid disturbance during nesting season.
- Avoid work near bridges with bats during maternity season, usually May through late August. If possible, complete work at night when the least amount of bats are roosting.
- Coordinate plant salvage efforts with the Arizona Department of Agriculture, in accordance with the Arizona Native Plant Law. In addition, the applicable land management agencies should be consulted regarding guidelines for revegetation efforts.
- Contact the Army Corp. of Engineers for Best Management Practices and guidelines for minimizing and mitigating impacts to riparian areas.

The Department would appreciate the opportunity to provide an evaluation of impacts to wildlife or wildlife habitats associated with project activities occurring in the subject area when specific details become available. If you have any questions regarding this letter, please contact me at (602) 789-3606. General status information, county and watershed distribution lists and abstracts for some special status species are also available on our web site at http://www.azgfd.gov/hdms.

Sincerely,

Ginger Ritter

Ginger L. Ritter
Project Evaluation Specialist

GLR:gr

cc: Rebecca Davidson, Project Evaluation Program Supervisor
Russ Haughey, Habitat Program Manager, Region VI

AGFD #M07-08032217

## Special Status Species within the Study Area for Sundance to Pinal South 230kV Transmission Project

| NAME | COMMON NAME | ESA | USFS | BLM | STATE |
|---|---|---|---|---|---|
| *Athene cunicularia hypugaea* | Western Burrowing Owl | SC | | S | |
| Gila River Indian Reservation | Gila River Indian Reservation | | | | |

AGFD #M07-08032217.

Arizona Game and Fish Department, Heritage Data Management System, August 17, 2007.
Project Evaluation Program.

# GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS

Arizona Game and Fish Department

Revised January 17, 1997

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

Desert tortoises of the Sonoran population are those occurring south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position at all times and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 105 degrees Fahrenheit unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to two miles, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 105 degrees Fahrenheit, the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- These guidelines do not apply to the Mohave population of desert tortoises (north and west of the Colorado River). Mohave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.

- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.

- Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

RAC:NLO:rc

# Burrowing Owl Artificial Nest Box Project

## An Arizona Partners in Flight Habitat Substitution Project

Photo by Greg Clark

*Project and Problem Summary:*

*In the Eastern United States artificial nest boxes were built by volunteers and organizations to try to increase the populations of Bluebirds. The nest boxes replaced natural tree cavities that had been lost when the trees were lost. The effort was a huge success. The same thing can be done for Burrowing Owls, except the cavity is in the ground. If someone chops down all the trees in a forest, everyone understands that this will have a devastating effect on the wildlife. It is not as obvious that as much damage can be done to some species when holes in the ground are covered up. Efforts are under way to figure out where replacement burrows can be installed that will have the most benefit. Some burrows have been installed to replace burrows lost nearby to development, and much of the following material shows this work. However, these burrows are part of rescue work done in conjunction with Wild At Heart (a rehabilitation group in Cave Creek, Arizona). As important to the owl as rescue work is, it is different from figuring out where to install burrows to attract new populations of owls. Phase I of the project is about finding landowners who will provide burrow sites and learning which sites the Burrowing Owl prefers. We need your help finding sites and installing burrows. Surprisingly, this is not some problem to be solved in the "wilderness." The burrows need to be installed in urban areas where development is already completed . That means all around where people live. We need niche areas, like around commercial buildings or urban greenbelts, where the burrows can be installed away from trees and buildings but near possible food sources (mice and insects). There is still time to reverse the steep decline in the Burrowing Owl population, with your help. If you live in the greater Phoenix area, you can help us directly with this project. Because Arizona is the winter home for many owls that breed in Canada and the states north of Arizona, this project can affect the entire owl population of North America. We need burrow sites and help digging the holes. If you can help, or if you would like more information about how to help the owls in your area, contact Greg Clark at:*

480-961-4046 (or manually type in the e-mail address b i r d i n f o @ m i r r o r - p o l e . com without spaces)

The Burrowing Owl is Federally protected by U.S. Laws pertaining to Migratory Species. If you are contemplating an operation that could destroy a burrow, or cover up a burrow with dirt, possibly killing the owl inside, this is against the law. You can find out more about this where the list of protected birds is given on a U.S. Fish and Wildlife website:

http://migratorybirds.fws.gov/intrnltr/treatlaw.html#mbta

This burrow in Chandler became the home for owls that were displaced for a 200-home development project.

Once an area is slated for development where there are Burrowing Owls present, someone must carefully investigate all the burrows to make sure no owls are inside and then carefully collapse the burrow so no owl can return to be trapped inside. One of the first things that happens at a development site is land preparation that moves all the surface dirt around. Sadly, this can trap the owls in the burrow. Investigating these burrows is where Wild At Heart comes in. Holders of both Arizona Game and Fish and U.S. Fish and Wildlife permits for doing this type of work, Wild At Heart can investigate and safely collapse the burrows and, where necessary, relocate the owls to new sites. Follow the next link to see some burrow sites in Chandler, Arizona where the burrows had to be collapsed. Fortunately, a nearby homeowner offered to help us with our artificial burrow project and so the owls were able to relocate only a few hundred feet from where they were born, in habitat much like where they lived before.

Additional Burrow Construction Information and Protection Needed for Domestic Dog Attacks

Arizona Burrowing Owl Distribution

More Burrow Sites and Owl Photos

Red_Hawk Power_Plant_Release_Site New June, 2002. See where 25 Burrowing Owls were released.

Paseo Verde School New May, 2003. See the owls in one of the burrows using infrared video cameras.

mirror-pole.com home

Copyright Greg Clark, 2001

July 16, 2007

Mr. Steve Spangle
Field Supervisor
U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4915

**RE: Information request for the Sundance to Pinal South 230kV Transmission Project**

Dear Mr. Spangle,

Arizona Public Service (APS) intends to gather information necessary for preparing an application for a Certificate of Environmental Compatibility (CEC) for the Arizona Corporation Commission (ACC) to construct, operate, and maintain a 230-kilovolt (kV) transmission line in Pinal County.

In 2005 the ACC certificated the Pinal West – Browning 500kV Transmission Line Project (PW-BRG). The Pinal South substation was also certificated as a component of this project. The Sundance to Pinal South 230kV Transmission Project (Project) is being initiated to connect the existing Sundance Generating Station to the Pinal South substation.

The proposed Project will include the construction of a new 230kV transmission line from the Sundance Generating Station to the certificated Pinal South substation. The transmission line corridor has not been finalized, but potential routes are being identified within the Project Study Area (See **Figure 1**).

**Figure 1** is included to detail the Study Area location and boundary. Additionally, the following Project legal descriptions in **Table 1** are inclusive to the defined Study Area:

Table 1
Project Study Area Legal Description

| Township | Range | Sections |
|---|---|---|
| T5S | R7E | 25-28, 33-36 |
| T5S | R8E | 31-34 |
| T6S | R7E | 1-5, 8-17, 20-29, 32-36 |
| T6S | R8E | 3-10, 15-22, 27-34 |
| T7S | R7E | 1-5 |
| T7S | R8E | 3-6 |

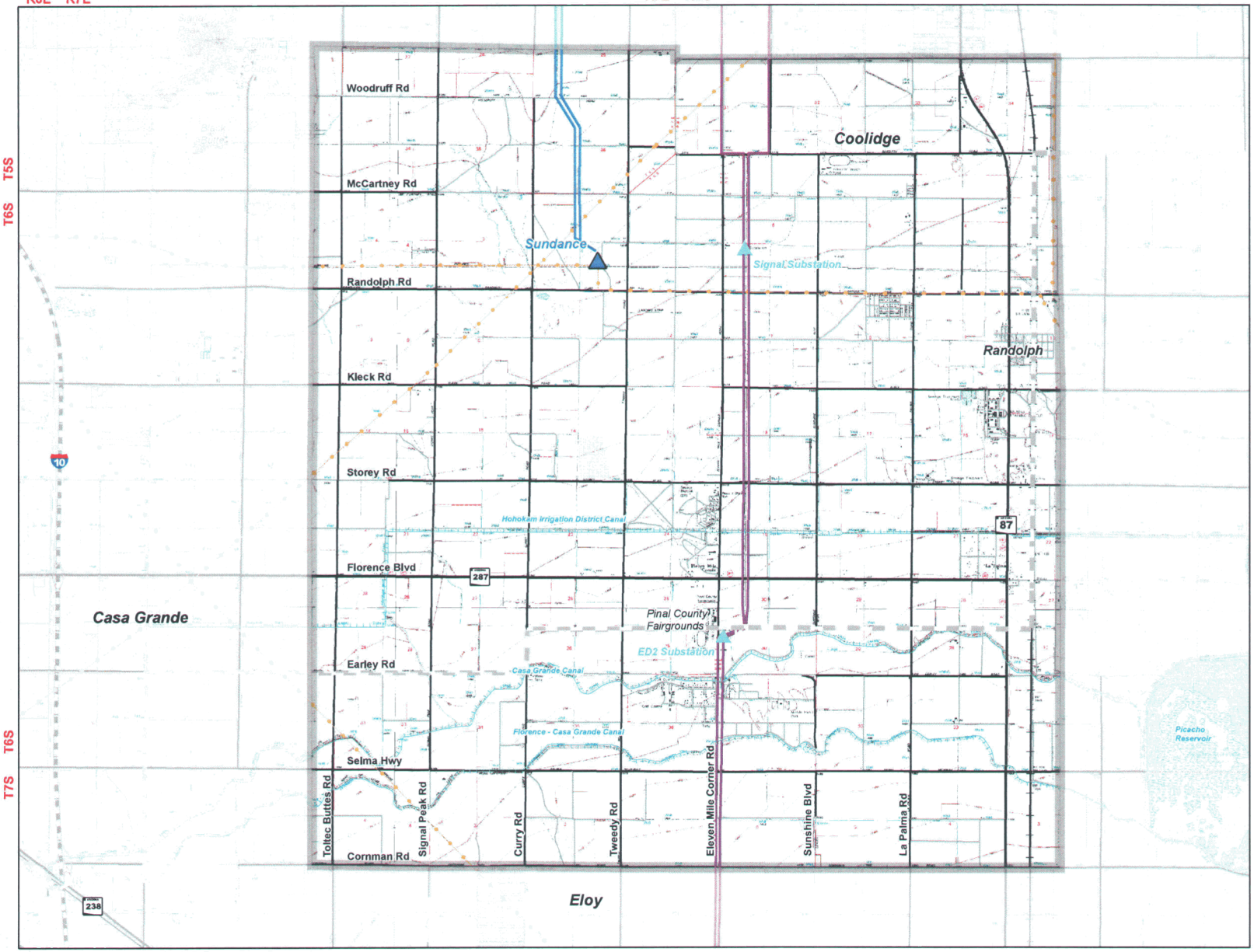
For the purposes of identifying any potential issues with federally-listed species, we would like to request a list of threatened, endangered, proposed, and candidate wildlife and plant species that may occur within the defined Study Area. We are also interested in any critical habitats that may occur within the area. Lastly, we would also like to receive any additional comments or concerns the Service may have related to the proposed Project.

If you have any questions, concerns, or require additional information please feel free to contact me at (602) 659 - 3254.

Sincerely,

Tyler Rychener
Project Scientist
Greystone / ARCADIS
Tyler.Rychener@arcadis-us.com

Enclosures: Figure 1 – Project Study Area




# Project Study Area

**Sundance to Pinal South 230kV Transmission Project**

*Analysis Area: Pinal County, Arizona*

## July 2007

### Legend

**City of Coolidge**
- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**
- Municipal Boundary
- Proposed Annexation

**Land Ownership**
- Bureau of Land Management
- Arizona State Trust

### Reference Features

- Project Study Area
- Future Pinal South Substation
- Future SRP 500/230kV Line
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

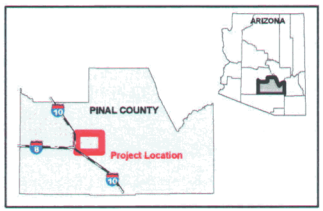
N

0 0.25 0.5 0.75 1
Miles

Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters

Data Sources

City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - SRP, April 2006




APS

# United States Department of the Interior

**U.S. Fish and Wildlife Service**
**Arizona Ecological Services Field Office**
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513


In Reply Refer to:

AESO/SE
22410-2007-SL-0437

RECEIVED

September 12, 2007

ARCADIS U.S., INC.

Mr. Tyler Rychener, Project Scientist
Greystone ARCADIS
8222 South 48th Street Suite 140
Phoenix, Arizona 85044

RE: Proposed Construction, Operation, and Maintenance of the APS Sundance to Pinal South 230 kV Transmission Line in Pinal County, Arizona

Dear Mr. Rychener:

Thank you for your recent request for information on threatened or endangered species, or those that are proposed to be listed as such under the Endangered Species Act of 1973, as amended (Act), which may occur in your project area. The Arizona Ecological Service Field Office has posted lists of the endangered, threatened, proposed, and candidate species occurring in each of Arizona's 15 counties on the Internet. Please refer to the following web page for species information in the county where your project occurs:
**http://www.fws.gov/southwest/es/arizona**

If you do not have access to the Internet or have difficulty obtaining a list, please contact our office and we will mail or fax you a list as soon as possible.

After opening the web page, find Arizona County/Species List on the main page. Then click on the county of interest. The arrows on the left will guide you through information on species that are listed, proposed, candidates, or have conservation agreements. Here you will find information on the species' status, a physical description, all counties where the species occurs, habitat, elevation, and some general comments. Additional information can be obtained by going back to the main page. On the left side of the screen, click on Document Library, then click on Documents by Species, then click on the name of the species of interest to obtain General Species Information, or other documents that may be available. Click on the "Cactus" icon to view the desired document.

Please note that your project area may not necessarily include all or any of these species. The information provided includes general descriptions, habitat requirements, and other information for each species on the list. Under the General Species Information, citations for the Federal Register (FR) are included for each listed and proposed species. The FR is available at most Federal depository libraries. This information should assist you in determining which species may or may not occur within your project area. Site-specific surveys could also be helpful and

may be needed to verify the presence or absence of a species or its habitat as required for the evaluation of proposed project-related impacts.

Endangered and threatened species are protected by Federal law and must be considered prior to project development. If the action agency determines that listed species or critical habitat may be adversely affected by a federally funded, permitted, or authorized activity, the action agency will need to request formal consultation with us. If the action agency determines that the planned action may jeopardize a proposed species or destroy or adversely modify proposed critical habitat, the action agency will need to enter into a section 7 conference. The county list may also contain candidate or conservation agreement species. Candidate species are those for which there is sufficient information to support a proposal for listing; conservation agreement species are those for which we have entered into an agreement to protect the species and its habitat. Although candidate and conservation agreement species have no legal protection under the Act, we recommend that they be considered in the planning process in the event that they become listed or proposed for listing prior to project completion.

If any proposed action occurs in or near areas with trees and shrubs growing along watercourses, known as riparian habitat, we recommend the protection of these areas. Riparian areas are critical to biological community diversity and provide linear corridors important to migratory species. In addition, if the project will result in the deposition of dredged or fill materials into waterways, we recommend you contact the Army Corps of Engineers which regulates these activities under Section 404 of the Clean Water Act.

The State of Arizona and some of the Native American Tribes protect some plant and animal species not protected by Federal law. We recommend you contact the Arizona Game and Fish Department and the Arizona Department of Agriculture for State-listed or sensitive species, or contact the appropriate Native American Tribe to determine if sensitive species are protected by Tribal governments in your project area. We further recommend that you invite the Arizona Game and Fish Department and any Native American Tribes in or near your project area to participate in your informal or formal Section 7 Consultation process.

For additional communications regarding this project, please refer to consultation number 22410-2007-SL-0437. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area.

If we may be of further assistance, please feel free to contact Brenda Smith (928) 226-0614 (x101) for projects in Northern Arizona, Debra Bills (602) 242-0210 (x239) for projects in central Arizona and along the Lower Colorado River, and Sherry Barrett (520) 670-6150 (x223) for projects in southern Arizona.

Sincerely,

Debra T. Bills

for Steven L. Spangle
Field Supervisor

cc: Regional Supervisor, Arizona Game and Fish Department, Tucson, AZ
Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ

W:\Cathy Gordon\species list letters\letters completed\Graystone ARCADIS APS Sundance to Pinal South Kv Transmission Line.doc:cgg

# EXHIBIT D
# BIOLOGICAL RESOURCES

# EXHIBIT D
# BIOLOGICAL RESOURCES

As stated in Arizona Administrative Code R14-3-219:

> *"List the fish, wildlife, plant life and associated forms of life in the vicinity of the proposed site or route and describe the effects, if any, the proposed facilities will have thereon."*

## Methods

Qualified biologists conducted multiple on-the-ground field reconnaissance which consisted of both vehicle and pedestrian surveys of the Project Study Area (PSA). Prior to conducting fieldwork, aspects of habitat and aerial photography were studied. The on-the-ground reconnaissance occurred in June and August 2007 when habitat conditions and observations were recorded. Information collected was used to evaluate the potential effects of Project implementation on biological resources.

## Vegetation

The majority of the PSA consists of agricultural lands. There are also patches of undisturbed native vegetation, disturbed native vegetation, and rural landscaping. Native vegetation communities have been classified using the hierarchical system developed by Brown (1994). The dominant native plant community in this area of the Sonoran Desert is the Sonoran Desertscrub Ecosystem. The Lower Colorado River Valley Subdivision is the dominant community surrounding the PSA. Sonoran Riparian Scrub exists along several small, unnamed washes in the northwestern corner of the PSA. **Table D-1** lists common plant species that may occur or that have been observed within the PSA. The Arizona Native Plant Law (NPL) states that, if protected native plant species are to be destroyed or removed, the property owner must contact the Arizona Department of Agriculture (ADA) prior to such actions. This process does not restrict the removal of such species on private property, but is meant to encourage the salvage of these plants when possible. Species in the PSA protected under the NPL include mesquite (*Prosopis sp.*), foothills paloverde (*Circidium microphyllum*), ironwood (*Olneya tesota*), ocotillo (*Fonquieria splendens*), and all cactus species.

Areas of the PSA supporting native vegetation were subdivided into three communities: Creosote Bush – White Bursage Shrublands, Mesquite Woodlands, and Desert Wash. Community descriptions are as follows:

> The creosote bush (*Larrea tridentate*) - white bursage (*Ambrosia dumosa*) community is the most widespread native vegetation type in the PSA. Other shrub species in this series include four-wing saltbush (*Atriplex canensens*), brittlebush (*Encelia farinose*), and burroweed (*Isocoma tenueseca*). Trees occur at low density and include mesquite, foothills paloverde, and ironwood. Cactus species, including barrel cactus (*Ferrocactus wislizenii*) and jumping cholla (*Opuntia bigelovii*), are also found at low densities.

Mesquite woodlands or *bosques* are areas where trees occur at greater density and create more vertical structure in the community. Other species in these areas can include ironwood, foothills paloverde, and wolfberry (*Lycium sp.*).

Desert wash communities occur along ephemeral drainages, creating narrow bands of species that differ from the surrounding area. Similar to mesquite woodlands, these communities support more tree species than the surrounding creosote bush – white bursage shrublands. Within the PSA, species that are dominant in this community include mesquite, foothills paloverde, saltcedar (*Tamarisk sp*), and burrowbush (*Bacharris sarathroides*). Some cottonwood (*Populus fremontii*) is also present in very low density.

**Table D-1**
**Common Plant Species**
**Potential Occurrence in the PSA**

| Common Name | Scientific Name | Ecosystem |
|---|---|---|
| Triangleleaf bursage | *Ambrosia deltoidea* | Sonoran Desertscrub, Sonoran Riparian |
| White bursage | *Ambrosia dumosa* | Sonoran Desertscrub |
| Fiddlehead | *Amsinckia intermedia* | Sonoran Riparian |
| Purple three-awn | *Aristida purpurea* | Sonoran Desertscrub |
| Four-wing saltbush | *Atriplex canescens* | Sonoran Desertscrub |
| All scale | *Atriplex polycarpa* | Sonoran Desertscrub |
| Datura | *Datura stramonium* | Sonoran Riparian |
| Englemann's hedgehog cactus | *Echinocereus englemannii* | Sonoran Desertscrub |
| Brittlebush | *Encelia farinosa* | Sonoran Desertscrub, Sonoran Riparian |
| Skeletonweed | *Eriogonum deflexum* | Sonoran Desertscrub |
| Filaree | *Erodium cicutarium* | Sonoran Desertscrub |
| Barrel cactus | *Ferocactus wislizenii* | Sonoran Desertscrub |
| Ocotillo | *Fouquieria splendens* | Sonoran Desertscrub |
| Rhatany | *Krameria parviflora* | Sonoran Desertscrub, Sonoran Riparian |
| Creosote bush | *Larrea tridentata* | Sonoran Desertscrub, Sonoran Riparian |
| Wolfberry | *Lycium spp.* | Sonoran Desertscrub, Sonoran Riparian |
| Little fishhook cactus | *Mammillaria thornberi* | Sonoran Desertscrub |
| Teddybear cholla | *Opuntia bigelovii* | Sonoran Desertscrub |
| Prickly pear cactus | *Opuntia engelmannii* | Sonoran Desertscrub |
| Jumping cholla | *Opuntia fulgida* | Sonoran Desertscrub |
| Desert mistletoe | *Phoradendron californicum* | Sonoran Desertscrub |
| Galleta grass | *Pleuraphis jamesii* | Sonoran Desertscrub, Sonoran Riparian |
| Mesquite | *Prosopis spp.* | Sonoran Riparian |
| Bladdersage | *Salazaria mexicana* | Sonoran Desertscrub |
| Russian thistle | *Salsola iberica* | Sonoran Desertscrub, Sonoran Riparian |
| London rocket | *Sisymbrium irio* | Sonoran Desertscrub, Sonoran Riparian |

| Table D-1<br>Common Plant Species<br>Potential Occurrence in the PSA | | |
|---|---|---|
| **Common Name** | **Scientific Name** | **Ecosystem** |
| Globe mallow | *Sphaeralcea spp.* | Sonoran Desertscrub, Sonoran Riparian |

## Wildlife

Wildlife resources within the PSA are predominantly associated with Sonoran Desertscrub and agricultural land habitats. External to the PSA, additional resources exist in nearby lands, including Picacho Reservoir to the southeast, and Signal Peak and Black Butte to the northwest. Species occurrence, abundance, and distribution are strongly influenced by the presence of surface water, topography, and habitat types within and surrounding the PSA. The majority of available habitat consists of creosote bush – white bursage series and mixed scrub series with mesquite dominant. **Tables D-2, D-3,** and **D-4** list common mammals, birds, reptiles, and/or amphibians that may occur, or that have been observed, within the PSA.

### *Mammals*

Most mammalian species likely to be present are small, inconspicuous, largely nocturnal species of rodents and bats. Desert-adapted rodents include long-tailed pocket mice (*Perognathus formosus*) and desert kangaroo rats (*Dipodomys deserti*). Several species of bats may be present. Medium-sized mammals found in the PSA include desert cottontail (*Sylvilagus auduboni*), black-tailed jackrabbits (*Lepus californicus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Felis rufus*), and badger (*Taxidae taxus*). The only large mammal with a likelihood to be found within the regional area is the desert mule deer (*Odocoileus hemionus crooki*); however, it is not anticipated to be present in the PSA. **Table D-2** provides a more comprehensive list of mammalian species that may occur.

### *Birds*

Most bird species likely to be present are those associated with agricultural or developed land use. Species associated with Sonoran Desertscrub will also be present. Because water resources within the PSA are limited to canals and ditches, species abundance will be less than that for the greater regional area including Picacho Reservoir. The majority of the birds present during any given season are small songbirds like the mourning dove (*Zenaida macroura*) and raptors like the red-tailed hawk (*Boteo jamaicensis*). **Table D-3** provides a more comprehensive list of bird species that may be present in the PSA.

### *Amphibians and Reptiles*

Relatively undisturbed desert habitats represent the best habitat for reptiles, although some species may be found in agricultural areas. Suitable habitat for amphibians like the Sonoran desert toad (*Bufo alvarius*) may be present in washes whenever water is present. **Table D-4** provides a list of amphibian and reptilian species that may be present in the PSA.

**Table D-2**
**Mammal Species**
**Potential Occurrence in the PSA**

| Common Name | Scientific Name |
|---|---|
| Harris' antelope squirrel | *Ammospermophilus harrisii* |
| Pallid bat | *Antrozous pallidus* |
| Ringtail | *Bassariscus astutus* |
| Coyote | *Canis latrans* |
| Mexican long-tongued bat | *Choeronycteris mexicana* |
| Desert kangaroo rat | *Dipodomys deserti* |
| Merriam's kangaroo rat | *Dipodomys merriami* |
| Big brown bat | *Eptesicus fuscus* |
| Spotted bat | *Euderma maculatum* |
| Western mastiff bat | *Eumops perotis* |
| Mountain lion | *Felis concolor* |
| Bobcat | *Felis rufus* |
| Red bat | *Lasiurus borealis* |
| Hoary bat | *Lasiurus cinereus* |
| Southern yellow bat | *Lasiurus ega xanthinus* |
| Mexican long-nosed bat | *Leptonycteris nivalis* |
| Black-tailed jackrabbit | *Lepus californicus* |
| Hooded skunk | *Mephitis macroura* |
| Striped skunk | *Mephitis mephitis* |
| California myotis | *Myotis californicus* |
| Fringed myotis | *Myotis thysanodes* |
| Cave myotis | *Myotis velifer* |
| Yuma myotis | *Myotis yumanensis* |
| White-throated woodrat | *Neotoma albigula* |
| Desert woodrat | *Neotoma lepida* |
| Desert shrew | *Notiosorex crawfordi* |
| Desert mule deer | *Odocoileus hemionus crooki* |
| Muskrat | *Ondatra zibethicus* |
| Southern grasshopper mouse | *Onychomys torridus* |
| Collared peccary | *Pecari tajacu* |
| Arizona pocket mouse | *Perognathus amplus* |
| Bailey's pocket mouse | *Perognathus baileyi* |
| Long-tailed pocket mouse | *Perognathus formosus* |
| Rock pocket mouse | *Perognathus intermedius* |
| Little pocket gopher | *Perognathus longimembris* |
| Desert pocket mouse | *Perognathus penicillatus* |

**Table D-2**
**Mammal Species**
**Potential Occurrence in the PSA**

| Common Name | Scientific Name |
|---|---|
| Brush mouse | *Peromyscus boylii* |
| Cactus mouse | *Peromyscus eremicus* |
| Deer mouse | *Peromyscus maniculatus* |
| Western pipistrelle | *Pipistrellus Hesperus* |
| Townsend's big-eared bat | *Plecotus townsendii* |
| Raccoon | *Procyon lotor* |
| Western harvest mouse | *Reithrodontomys megalotis* |
| Arizona gray squirrel | *Sciurus arizonensis* |
| Arizona cotton rat | *Sigmodon arizonae* |
| Round-tailed ground squirrel | *Spermophilus tereticaudus* |
| Rock squirrel | *Spermophilus variegatus* |
| Western spotted skunk | *Spilogale gracilis* |
| Desert cottontail | *Sylvilagus audubonii* |
| American free-tailed bat | *Tadarida brasiliensis* |
| Pocketed free-tailed bat | *Tadarida femorosacca* |
| Big free-tailed bat | *Tadarida macrotis* |
| Badger | *Taxidae taxus* |
| Botta's pocket gopher | *Thomomys bottae* |
| Gray fox | *Urocyon cinereoargenteus* |
| Kit fox | *Vulpes macrotis* |
| Source: Hoffmeister 1986 | |

| Table D-3<br>Bird Species<br>Potential Occurrence in the PSA | |
|---|---|
| **Common Name** | **Scientific Name** |
| Cooper's hawk | *Accipiter cooperii* |
| Sharp-shinned hawk | *Accipiter striatus* |
| Red-winged blackbird | *Agelaius phoeniceus* |
| Sage sparrow | *Amphispiza belli* |
| Black-throated sparrow | *Amphispiza bilineata* |
| Black-chinned hummingbird | *Archilochus alexandri* |
| Great blue heron | *Ardea herodias* |
| Verdin | *Auriparus flaviceps* |
| Cedar waxwing | *Bombycilla cedrorum* |
| Great horned owl | *Bubo virginianus* |
| Cattle egret | *Bubulcus ibis* |
| Zone-tailed hawk | *Buteo albonotatus* |
| Red-tailed hawk | *Buteo jamaicensis* |
| Ferruginous hawk | *Buteo regalis* |
| Swainson's hawk | *Buteo swainsoni* |
| Lark bunting | *Calamospiza melanocorys* |
| Gambel's quail | *Callipepla gambelii* |
| Anna's hummingbird | *Calypte anna* |
| Costa's hummingbird | *Calypte costae* |
| Cactus wren | *Campylorhynchus brunneicapillus* |
| Northern cardinal | *Cardinalis cardinalis* |
| Pyrrhuloxia | *Cardinalis sinuatus* |
| Lesser goldfinch | *Carduelis psaltria* |
| House finch | *Carpodacus mexicanus* |
| Turkey vulture | *Cathartes aura* |
| Lark sparrow | *Chondestes grammacus* |
| Lesser nighthawk | *Chordeiles acutipennis* |
| Northern harrier | *Circus cyaneus* |
| Red-shafted northern flicker | *Colaptes cafer* |
| Gilded flicker | *Colaptes chrysoides* |
| Rock dove | *Columba livia* |
| Inca dove | *Columbina inca* |
| Common ground-dove | *Columbina passerine* |
| Western wood-pewee | *Contopus sordidulus* |
| Common raven | *Corvus corax* |
| Yellow-rumped warbler | *Dendroica coronata* |
| Black-throated gray warbler | *Dendroica nigrescens* |

| Table D-3<br>Bird Species<br>Potential Occurrence in the PSA | |
|---|---|
| **Common Name** | **Scientific Name** |
| Yellow warbler | *Dendroica petechia* |
| Pacific-slope flycatcher | *Empidonax difficilis* |
| Dusky flycatcher | *Empidonax oberholster* |
| Cordilleran flycatcher | *Empidonax occidentalis* |
| Gray flycatcher | *Empidonax wrightii* |
| Horned lark | *Eremophila alpestris* |
| Brewer's blackbird | *Euphagus cyanocephalus* |
| American kestrel | *Falco sparverius* |
| Greater roadrunner | *Geococcyx californianus* |
| Blue grosbeak | *Guiraca carulea* |
| Cliff swallow | *Hirundo pyrrhonota* |
| Barn swallow | *Hirundo rustica* |
| Northern oriole | *Icterus bullockii* |
| Hooded oriole | *Icterus cucullatus* |
| Bullock's oriole | *Icterus galbula* |
| Dark-eyed junco | *Junco hyemalis* |
| Loggerhead shrike | *Lanius ludovicianus* |
| Gila woodpecker | *Melanerpes uropygialis* |
| Lincoln's sparrow | *Melospiza lincolnii* |
| Song sparrow | *Melospiza melodia* |
| Elf owl | *Micrathene whitneyi* |
| Northern mockingbird | *Mimus polyglottos* |
| Bronzed cowbird | *Molothrus aeneus* |
| Brown-headed cowbird | *Molothrus ater* |
| Ash-throated flycatcher | *Myiarchus cinerascens* |
| Brown-crested flycatcher | *Myiarchus tyrannulus* |
| MacGillivary's warbler | *Oporornis tolmiei* |
| Sage thrasher | *Oreoscoptes montanus* |
| Western screech owl | *Otus kennicottii* |
| Harris' hawk | *Parabuteo unicinctus* |
| House sparrow | *Passer domesticus* |
| Phainopepla | *Phainopepla nitens* |
| Common poorwill | *Phalaenoptilus nuttallii* |
| Black-headed grosbeak | *Pheucticus melanocephalus* |
| Ladder-backed woodpecker | *Picoides scalaris* |
| Abert's towhee | *Pipilo aberti* |
| Green-tailed towhee | *Pipilo chlorurus* |
| Spotted towhee | *Pipilo erythrophthalmus* |

**Table D-3**
**Bird Species**
**Potential Occurrence in the PSA**

| Common Name | Scientific Name |
|---|---|
| Canyon towhee | *Pipilo fuscus* |
| Western tanager | *Piranga ludoviciana* |
| Blue-gray gnatcatcher | *Polioptila caerulea* |
| Black-tailed gnatcatcher | *Polioptila melanura* |
| Vesper sparrow | *Pooecetes gramineus* |
| Vermillion flycatcher | *Pyrocephalus rubinus* |
| Great-tailed grackle | *Quiscalus mexicanus* |
| Ruby-crowned kinglet | *Regulus calendula* |
| Rock wren | *Salpinctes obsoletus* |
| Black phoebe | *Sayornis nigricans* |
| Say's phoebe | *Sayornis saya* |
| Rufus hummingbird | *Selasphorus rufus* |
| Western bluebird | *Sialia mexicana* |
| Brewer's sparrow | *Spizella breweri* |
| Chipping sparrow | *Spizella passerine* |
| Northern rough-winged swallow | *Stelgidopteryx serripennis* |
| Western meadowlark | *Sturnella neglecta* |
| European starling | *Sturnus vulgaris* |
| Tree swallow | *Tachycineta bicolor* |
| Violet-green swallow | *Tachycineta thalassina* |
| Bewick's wren | *Thryomanes bewickii* |
| Bendire's thrasher | *Toxostoma bendirei* |
| Curve-billed thrasher | *Toxostoma curvirostre* |
| House wren | *Troglodytes aedon* |
| American robin | *Turdus migratorius* |
| Western kingbird | *Tyrannus verticalis* |
| Barn owl | *Tyto alba* |
| Orange-crowned warbler | *Vermivora celata* |
| Lucy's warbler | *Vermivora luciae* |
| Nashville warbler | *Vermivora ruficapilla* |
| Virginia's warbler | *Vermivora virginiae* |
| Bell's vireo | *Vireo bellii* |
| Warbling vireo | *Vireo gilvus* |
| Wilson's warbler | *Wilsonia pusilla* |
| White-winged dove | *Zenaida asiatica* |
| Mourning dove | *Zenaida macroura* |
| White-crowned sparrow | *Zonotrichia leucophrys* |

Sources: Corman 2000a, Corman 2000b

**Table D-4**
**Reptile and Amphibian Species**
**Potential Occurrence in the PSA**

| Common Name | Scientific Name |
|---|---|
| Arizona glossy snake | *Arizona elegans noctivaga* |
| Sonoran desert toad | *Bufo alvarius* |
| Great plains toad | *Bufo cognatus* |
| Red-spotted toad | *Bufo punctatus* |
| Zebra tail lizard | *Callisaurus draconoides* |
| Banded sand snake | *Chilomeniscus cinctus* |
| Western shovel-nosed snake | *Chionactus occipitalis* |
| Gila spotted whiptail | *Cnemidophorus flagellicaudus* |
| Western whiptail | *Cnemidophorus tigris* |
| Desert banded gecko | *Coleonyx variegatus variegatus* |
| Western diamondback rattlesnake | *Crotalus atrox* |
| Sonoran sidewinder | *Crotalus cerastes cercobombus* |
| Speckled rattlesnake | *Crotalus mitchellii pyrrhus* |
| Black-tailed rattlesnake | *Crotalus molossus* |
| Mojave rattlesnake | *Crotalus scutulatus* |
| Arizona black rattlesnake | *Crotalus viridis cerberus* |
| Common collared lizard | *Crotaphytus collaris* |
| Western collared lizard | *Crotaphytus collaris baileyi* |
| Desert iguana | *Dipsosaurus dorsalis* |
| Large spotted leopard lizard | *Gambelia wislizenii wislizenii* |
| Desert tortoise | *Gopherus agassizii* |
| Gila monster | *Heloderma suspectum* |
| Canyon tree frog | *Hyla arenicolor* |
| Night snake | *Hypsiglena torquata* |
| Sonoran mud turtle | *Kinosternon sonoriense* |
| Common kingsnake | *Lampropeltis getula* |
| Western blind snake | *Leptotyphlops humilis* |
| Rosy boa | *Lichanura trivirgata* |
| Red coachwhip | *Masticophis flagellum piceus* |
| Arizona coral snake | *Micruroides euryxanthus* |
| Desert horned lizard | *Phrynosoma platyrhinos* |
| Desert horned lizard | *Phrynosoma platyrhinos calidiarum* |
| Regal horned lizard | *Phrynosoma solare* |
| Saddled leaf-nosed snake | *Phyllorhynchus browni* |
| Western leaf-nosed snake | *Phyllorhynchus decurtatus perkinsi* |
| Sonoran gopher snake | *Pituphis melanoleucus affinis* |

| Table D-4<br>Reptile and Amphibian Species<br>Potential Occurrence in the PSA | |
|---|---|
| **Common Name** | **Scientific Name** |
| Bullfrog | *Rana catesbeiana* |
| Western long-nosed snake | *Rhinocheilus lecontei lecontei* |
| Western patch-nosed snake | *Salvadora hexalepis* |
| Western chuckwalla | *Sauromalus obesus obesus* |
| Couch spadefoot | *Scaphiopus couchi* |
| Western spadefoot | *Scaphiopus hammondii* |
| Southern spadefoot | *Scaphiopus multiplicatus* |
| Sonoran spiny lizard | *Sceloporus magister magister* |
| Yellow-backed spiny lizard | *Sceloporus magister uniformis* |
| Ground snake | *Sonora semiannulata* |
| SW black-headed snake | *Tantilla hobartsmithi* |
| Lyre snake | *Trimorphodon biscutatus* |
| Spiny softshell | *Trionyx spiniferus* |
| Arizona brush lizard | *Urosaurus graciosus shannoni* |
| Tree lizard | *Urosaurus ornatus* |
| Side-blotched lizard | *Uta stansburiana* |
| Source: Stebbins 1985 | |

### *Invasive Species (Noxious Weeds)*

Non-native, weedy, and crop species typically dominate disturbed native habitats, agricultural lands, irrigation canals, and rural areas. It is possible that noxious weeds are present in disturbed areas, but no species on the Arizona noxious weed list (Arizona Department of Agriculture, 2007) were detected during reconnaissance surveys. Common noxious weed species in the PSA that are not included in the Arizona noxious weed list include pigweed (*Amaranthus sp.*), filaree (*Erodium cicutarium*), and Russian thistle (*Salsola tragus*).

## Potential Effects

### *Preferred Route*

#### *Vegetation*

Effects to vegetation would result from access road improvement, structure clearing and placement, and construction of equipment storage areas and pull sites. The Preferred Route would cross approximately 1.3 miles of native vegetation. The majority of this distance (1.2 miles) crosses Creosote Bush – White Bursage. Areas of Mesquite Woodland and Desert Wash are also crossed for short distances.

Creosote Bush – White Bursage areas are located within the Northern Corridor Area, along the east side of Curry Road to 0.5 mile south of Randolph Road, along the west side of Curry Road between Kleck Road and Storey Road, and in the Southern Corridor Area east of Eleven Mile Corner Road. In these areas, disturbance would be limited to the extent possible. The amount of native vegetation that would be cleared during construction would likely be minimal because existing access roads along the Preferred Route would be used to the extent feasible. Only a small amount of vegetation would be cleared at structure and pull sites. Compared to the amount of similar habitat in the surrounding area, the effects of this disturbance would be minimal. Revegetation of all newly disturbed areas using approved seed mixes would ensure that native vegetation is reestablished.

Areas classified as Mesquite Woodland are located within the Southern Corridor Area. Impacts to these areas would be prevented by limiting activities to adjacent agricultural areas.

Areas classified as Desert Wash are located in the northwest corner of the PSA near the intersection of Curry Road and Randolph Road. It is unlikely that these areas would be disturbed, as they can be spanned by the Project.

### *Wildlife*

Construction would have direct and indirect effects on wildlife populations in the vicinity of the PSA. Direct effects to reptiles and small mammals, including direct mortality caused by equipment, may occur during construction. Animals such as lizards, snakes, and small mammals may be impacted by construction and maintenance vehicles; however, speed limits on these roads are low enough to allow most of them to avoid harm. Burrowing mammals, amphibians, and reptiles may experience a low occurrence of mortality during construction of new spur roads. Bird nests or nest sites may be destroyed when vegetation is cleared for roads or structure sites. The overall number of individual animals that may be impacted by heavy equipment and other construction vehicles is expected to be minimal, and the species affected are generally common and widespread in similar habitats in the vicinity.

Potential indirect effects include temporary displacement of certain wildlife species during construction. Due to the nature of transmission line construction, wildlife displacement would be minimal and short-term because construction equipment would not be in any single construction location for an extended period of time.

### *Invasive Species (Noxious Weeds)*

The quantity of invasive species is not likely to increase as a result of construction due to the lack of noxious weeds observed during field reconnaissance. The majority of the Preferred Route is within existing agriculture land use. Agricultural practices currently in use would be likely to continue following construction.

The seeding plan for native vegetation disturbance areas would be designed so that native species would germinate and provide adequate cover to prevent soil erosion and promote slope stabilization. Commercial seed would be utilized on all areas of disturbance. Local genotypes would be used where seed supply allows. Seed would be tested and certified to contain no noxious weeds in the mix by the ADA.

All heavy equipment from other geographic regions utilized during construction would be washed prior to departure from the equipment storage facility. This would ensure that weed seed from a different region is not transported into the PSA. Therefore, equipment would arrive to the PSA washed and cleaned.

## Alternate Route

Effects to biological resources, including vegetation, wildlife, and noxious weeds associated with the Alternate Route, would be similar to those associated with the Preferred Route. The effects to each resource, specific to the Alternate Route, are described in the following sections.

### Vegetation

The Alternate Route would cross approximately 2.0 miles of native vegetation. The majority of this distance crosses Creosote Bush –White Bursage. Two small areas of Mesquite Woodland would also be crossed.

Creosote Bush – White Bursage areas are located within the Northern Corridor Area, along the west side of the route between Randolph Road and Kleck Road, along the east side of the route for 0.5 mile north and south of Kleck Road, along the east side of the route between Storey Road and SR 287, and in the Southern Corridor Area east of Eleven Mile Corner Road. Potential impacts within this community would be similar to those described for the Preferred Route.

Mesquite Woodland areas are located on the east side of the route south of Storey Road and within the Southern Corridor Area. Impacts to these areas would be avoided with the placement of structures.

### Wildlife

Wildlife habitat along the Alternate Route is comparable to those described for the Preferred Route. Potential impacts to the wildlife would be similar to those described for the Preferred Route.

### Invasive Species (Noxious Weeds)

The management of the spread of noxious weeds for the Alternate Route would be similar to those presented for the Preferred Route.

## Northern Corridor Area

Biological resources within the Northern Corridor Area consist of Creosote Bush – White Bursage vegetation. Various routing options within the Northern Corridor Area do not vary with regards to potential biological resource impacts.

## Southern Corridor Area

West of Eleven Mile Corner Road, and (with the exception of the Pinal County Fairgrounds) the Southern Corridor Area, consists entirely of agriculture. East of Eleven Mile Corner Road, the

Southern Corridor Area contains Sonoran Desertscrub and Mesquite Woodland vegetation. Project components within the Pinal County Fairgrounds would have a lower impact on biological resources due to low resource availability in this area. Project components on the east side of Eleven Mile Corner Road would have a greater impact on biological resources due to higher resource availability in the area. The remaining portion of the Southern Corridor Area west of Eleven Mile Corner Road would be entirely within agricultural areas and would not differ with respect to impacts to biological resources.

## LIST OF PREPARERS

| | | |
|---|---|---|
| Mr. John Messina | 15 years of Experience | BS, MS |
| Mr. Tyler Rychener | 7 years of Experience | BS, MS |

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# EXHIBIT E
## SCENIC AREAS, HISTORIC SITES AND STRUCTURES, ARCHAEOLOGICAL SITES

# EXHIBIT E
# SCENIC AREAS, HISTORIC SITES AND STRUCTURES, ARCHAEOLOGICAL SITES

As stated in Arizona Administrative Code R14-3-219:

> *"Describe any existing scenic areas, historic sites and structures or archaeological sites in the vicinity of the proposed facilities and state the effects, if any, the proposed facilities will have thereon."*

## Visual Resources

### *Methodology*

Visual resources consist of the landforms, vegetation, rock and water features, and cultural modifications that create the visual character and sensitivity of a landscape. These factors also contribute to the sensitivity of the landscape to visual change. A number of factors were inventoried for the existing visual resources of the Project Study Area (PSA) in order to evaluate the effect the Project would have on visual resources and characteristic landscapes. The primary existing visual condition factors considered in this PSA are defined below and include: Visual Quality, Viewer Concern, Viewer Exposure, and Overall Visual Sensitivity.

- Visual Quality (VQ) is a measure of the overall impression or appeal of an area as determined by the particular landscape characteristics such as landforms, rock forms, water features, and vegetation patterns, as well as associated public values. The attributes of variety, vividness, coherence, uniqueness, harmony, and pattern contribute to VQ classifications of indistinctive (low), common (moderate), and distinctive (high). VQ is studied as a point of reference to assess whether a given project would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with them.

- Viewer Concern (VC) addresses the level of interest or concern of viewers regarding an area's visual resources and is closely associated with viewers' expectations for the area. VC reflects the importance placed on a given landscape based on the human perceptions of the intrinsic beauty of the existing landforms, rock forms, water features, vegetation patterns, and even cultural features.

- Viewer Exposure (VE) describes the degree to which viewers are exposed to views of the landscape. Viewer exposure considers:
    - distance zones (proximity of viewers to the subject landscape);
    - number of viewers;
    - the duration of view; and
    - landscape visibility (the ability to see the landscape).

Landscape visibility can be a function of several interconnected considerations including:

- proximity to viewing point;
- degree of discernible detail;
- seasonal variations (snow, fog, and haze can obscure landscapes);
- time of day; and
- presence or absence of screening features such as landforms, vegetation, and/or built structures.

Landscapes are generally subdivided into three or four distance zones based on relative visual distances from travel routes or observation points. Distance zones typically include foreground, middle-ground, and background.

- Overall Visual Sensitivity (OVS) is a concluding assessment related to an existing landscape's susceptibility to changes in visual conditions. OVS is derived from a comparison of existing VQ, VC, and VE.

These factors were analyzed from Key Observation Points (KOPs) that are representative of the visual conditions along Preferred and Alternate Routes. KOPs are locations from which the visual analysis is focused and are generally selected to be representative of key locations from which the Project will be seen. KOPs are often located in an effort to evaluate existing landscapes and potential impacts on visual resources with various levels of sensitivity, in different landscape types and terrain, and from various vantage points. KOP locations for typical projects include:

- residential areas;
- major travel corridors or points of visual access;
- recreation areas;
- key vistas; and
- locations that provide good examples of the existing visual context.

The types and degree of visual changes that would be caused by the Project are subsequently analyzed. Visual changes are shown in computer-generated photographic simulations based on photographs taken from the KOPs to illustrate the effects of the Project from sensitive viewing locations. Diagrams of all of the potential structures that have been simulated are included in **Exhibit G** of this Application.

## Existing Conditions

### Landscape Character

The PSA is in the Sonoran Desert section of the Basin and Range Lowlands Province in central Arizona, which is characterized by mountain ranges extending north and south with long, linear valleys between the ranges. The landscape consists of broad, exposed, flat to undulating terrain sparsely vegetated with low growing desert scrub. Topography within the PSA is generally flat, though on clear days mountains are visible on the horizon to the northwest, northeast, southeast and southwest. Historically, the area was characterized by a natural to rural/agricultural landscape setting. The PSA is experiencing population growth and a transition from agricultural land use to residential, commercial, and industrial land uses.

Existing visual modifications consist of agriculture, transportation routes, utilities, recreational facilities, and industrial, rural, mixed-residential, and commercial development of varying densities. Primary transportation routes within the PSA include State Route (SR) 287, Eleven Mile Corner Road, and Randolph Road. Existing utilities include a corridor containing two 115kV transmission lines owned and operated by Western Area Power Administration (Western), which run north-south approximately ¼ mile east of Eleven Mile Corner Road and a corridor with one double-circuit and one single-circuit 230kV transmission lines also owned and operated by Western, which leave the Sundance Generating Station (Sundance) to the north. A network of 69kV and 12kV distribution lines are located throughout the PSA. Other linear features within the PSA consist of natural gas pipelines, canals, and laterals.

Industrial development includes the Sundance facility, electrical substations, as well as cotton gins located intermittently throughout the PSA. Designated recreational areas within the PSA include the Pinal County Fairgrounds and the Tierra Grande Golf Course, located within the Tierra Grande development south of Earley Road. Most private land holdings have been modified by agriculture or other activities. Residential development is increasing throughout the PSA.

### Visual Quality

Overall landscape views within the PSA are dominated by agricultural lands with mountains visible on the horizon. Cultural modifications including the Sundance facility, existing transmission lines, roads, and canals have further influenced the existing visual quality. Water is present in the numerous canals located throughout the PSA; however, the only natural water features are ephemeral desert washes and a small spring in the northern part of the PSA. Views of the spring are obscured by tall mesquite and saltcedar. Vegetation patterns consist of isolated parcels of Sonoran Desertscrub within the agricultural matrix.

## Sensitive Viewsheds and Potential Effects

Visual impacts from sensitive viewsheds or viewpoints to viewers in the PSA would include the placement of the new 230kV transmission line structures and the development of a new substation adjacent to the existing Sundance facility. Impacts to sensitive viewsheds are reduced where existing industrial and electrical utilities exist and where no landscape modification has occurred, with areas of potentially higher impacts in those locations with existing residential development. Generally, visual impacts will be reduced through the use of specific construction

considerations and mitigation measures. The Project will be constructed using non-specular conductors and dulled grey structures. Additionally, the proposed routes parallel existing or planned linear facilities to the greatest extent possible and will be located so as to closely parallel these facilities without inhibiting the safe operation of any facility. When parallel to the future SRP double-circuit 500/230kV transmission line, the Project would match spans and have similar structure heights, thereby reducing visual contrast between the two facilities. Finally, existing access will be used to the extent possible, reducing the need for additional areas of disturbance associated with the construction and operation of the line.

Eight KOPs were selected within the PSA and are described in this section. The locations of the KOPs are depicted on **Figure E-1** and include representation of impacts to sensitive viewsheds, including residential areas, views from primary transportation corridors (Randolph Road and SR 287), and recreation areas (Pinal County Fairgrounds and the Tierra Grande Golf Course). Photos of existing conditions were taken in September 2007. Other information about the existing conditions at the time of the photos is included on **Figures E-2** through **E-14**.

### *Residential Areas*

Residential development is generally rural in character with houses dispersed at very low densities across the PSA. Several medium and low density subdivisions are also present. Views from residential areas are dominated by agriculture in the foreground with native desert vegetation in some locations, and mountains visible in the distance. Mountain views are frequently diminished by dust and haze associated with agricultural practices. There are dispersed individual residences and residential areas within the PSA that would have views of the proposed routes.

#### Preferred Route

The Preferred Route would be visible to residential viewers within the PSA; however, in the majority of cases Project components would be located over 1 mile from existing residences. At this distance, Project components would appear small and would have a low impact on VQ. Impacts to VQ would be further minimized with the use of dull grey tubular steel support structures, utilizing existing right-of-way (ROW) that has already been modified by road construction, co-locating adjacent to and matching span distance with the future SRP transmission line. Visual effects of the new substation would be minimal because the substation would be located adjacent to Sundance and be similar in appearance to the existing industrial components of the facility.

Along the Preferred Route, there is only a single residence along Curry Road. KOP 1 (**Figure E-2**) depicts the existing view and the potential view (simulated condition) from the Preferred Route. The view is located at the residential driveway located on the west side of Curry Road approximately ¼ mile north of Storey Road. The view is to the north-northeast. Land use surrounding the residence is primarily agriculture. The Sundance facility is located approximately 2 miles to the north and is visible in the mid-ground. An existing 12kV distribution line is visible on the east side of Curry Road and existing 69kV sub-transmission lines along Kleck Road are also discernable in the mid-ground. The Superstition Mountains are visible behind Sundance although obscured by haze. As depicted on **Figure E-2**, the proposed 230kV line would be a visible addition to the landscape. Due to existing modifications to the landscape, including existing transmission lines, the Sundance facility, and Curry Road, the effects to visual resources would be minimized.

## Alternate Route

Overall, effects of the Alternate Route on residential viewers within the PSA would be similar to the Preferred Route. However, there are more existing residences located in close proximity to the Alternate Route. For these viewers, the effects of the Alternate Route would be greater than the Preferred Route.

KOP 2 (**Figure E-3**) is located along the Alternate Route, within a residential development approximately ⅓ mile south of Randolph Road. The view is north-northeast. Land use surrounding the KOP is agriculture with Sonoran Desertscrub. The Sundance facility is located approximately ½ mile to the north and is visible in the mid-ground. An existing 12kV distribution line is visible on the on the west side of the photo and existing 69kV sub-transmission and 230kV transmission lines are discernable in the mid-ground. The Superstition Mountains are visible behind Sundance though obscured by haze. As depicted in **Figure E-3**, the proposed 230kV transmission line and new substation would be visible additions to the landscape, however due to the existing landscape modifications, impacts to visual resources would be minimized.

KOP 3 (**Figure E-4**) is located at the intersection of Ladd and Pecina Roads east of the Alternate Route and approximately 350 feet south of Storey Road. The view is from an existing residential development looking to the west across natural landscape. Land use surrounding the KOP is primarily agricultural with some residential development. Natural landscape can be seen in the foreground. An existing 12kV distribution line can be seen in the mid-ground. As depicted in **Figure E-4**, the 230kV transmission line would be a visible addition to the landscape. Due to the unmodified nature of the landscape, impacts to visual resources would be greater than those associated with the Preferred Route.

## Southern Corridor Area

The Southern Corridor Area includes a residential development one-half mile east of Tweedy Road. Views from this development were depicted for both the Preferred Route and Alternate Route in this area.

KOP 4 (**Figure E-5**) depicts the view of the Preferred Route within the Southern Corridor area as observed from this residential development. The surrounding landscape has been modified by agricultural land use. Views of the Casa Grande Mountains and Table Top Mountains are visible in the background. The future SRP double-circuit 500/230kV transmission line was included in this analysis for this KOP since the line has been certificated and is expected to be built prior to, or simultaneously with the Project. As depicted in **Figure E-5**, Project components would be visible additions to the landscape. The proposed 230kV transmission line would be built parallel to and match spans with the future SRP transmission line. The new structures would be located adjacent to the future SRP transmission line, and the incremental impacts to visual resources would therefore be minimized.

**Figure E-6** is a simulation of the Alternate Route as viewed from KOP 4 within the Southern Corridor. Under the Alternate Route scenario, the 230kV transmission line would be in the distance and the structures would be seen against the backdrop of the mountains. The Alternate Route would be located 0.5 mile south of the future SRP transmission line and would add an additional utility corridor in the landscape. When considered in contrast to paralleling

immediately adjacent to the future SRP transmission line, the additional impacts to visual resources created by the Alternate Route would be greater than those of the Preferred Route.

## Transportation

Primary transportation routes in the PSA include SR 287, Randolph Road, and Eleven Mile Corner Road. Other roads within the PSA are paved and unpaved arterials and collectors. In general, the Project will be visible from most transportation routes, though visual impacts will vary greatly with distance and travel speed.

### *Preferred Route*

The Preferred Route would cross both Randolph Road and SR 287. Both of these crossings would be at 90 degree angles, limiting the duration of views of the line. The Preferred Route would not parallel any of the major transportation routes in the PSA, but would parallel and, to the extent possible, share ROW with Curry Road. Where the Preferred Route is parallel with the future SRP transmission line, it would also be visible from SR 287 to viewers looking south. However, because the two lines will have matching span distances and have similar structure heights, the additional impact to visual resources would be minimized.

KOP 5 (**Figure E-7**) is located along the south side of SR 287 approximately ½ mile west of Curry Road. The view is to the East. Land use surrounding the KOP is primarily agriculture. An existing 69kV sub-transmission line is visible on the south side of SR 287. The Picacho Mountains are in the background, though partially obscured by haze. As depicted on **Figure E-7** the 230kV transmission line would be a visible addition to the landscape for travelers along this road; however, because the line is perpendicular to the highway and travel speeds are approximately 55 miles per hour, the duration of the view would be minimal.

KOP 6 (**Figure E-8**) is located at the southeast corner of the Northern Corridor Area at the intersection of Tweedy and Randolph Roads. The view is to the west-northwest. Land use surrounding the KOP is agriculture with low-density residential development immediately east of the KOP. The Sundance facility and an existing 69kV distribution line can be seen along the south side of Randolph Road in the mid-ground. Black Butte and Signal Peak are visible in the far background. As depicted in **Figure E-8**, the Preferred Route and the new substation would be visible additions to the landscape. Due to high traffic along Randolph Road, VE is increased, however; traveling speed is approximately 45 miles per hour, reducing the time for which the Project components are visible. The new substation would be visible, but would be set back from the road and blend in with existing infrastructure associated with Sundance. Overall impacts to visual resources would be minimized by the existing development and travel speeds.

### *Alternate Route*

The Alternate Route would cross SR 287 at the same angle as the Preferred Route only ½ mile to the east, and have similar impacts to transportation viewers along this corridor.

Impacts of the Alternate Route as viewed from KOP 6 are depicted on **Figure E-9.** The Alternate Route would leave the new substation and travel south along the half section line, eliminating the east-west segment of the Preferred Route along the gas pipeline. Visual impacts would be lower because of the reduction in the number of structures needed to construct this route.

## Recreation

Recreation areas within the PSA include the Pinal County Fairgrounds and the Tierra Grande Golf Course south of Earley Road. Both of these recreation areas are within or adjacent to the Southern Corridor Area. In order to depict the views, both the Preferred Route and the Alternate Route were simulated in the Southern Corridor Area.

### *Southern Corridor Area*

In and around the Pinal County Fairgrounds, the Southern Corridor Area allows flexibility to route the Project either along: the Preferred Route, which is parallel to the future SRP transmission line within the Fairgrounds; the Alternate Route which follows Earley Road; or a potential option that would co-locate the Project with the future SRP transmission line for part of the distance, then separate the two lines and place the Project along the southern perimeter of the Fairgrounds property.

KOP 7 (**Figure E-10**) is located at the northwest corner of the southern exhibit hall at the Pinal County Fairgrounds. The view is to the southwest. The grand stands are visible in the mid-ground on the left and the Casa Grande Mountains are visible in the background on the right. As depicted in **Figure E-10**, crossing the Fairgrounds, the Preferred Route would be adjacent to the future SRP transmission line, with approximately 115 feet separating the structures of the two lines. The two lines would bisect the Fairgrounds property between the race track to the south and the exhibit halls to the north. The structures would be positioned to match spans with the future SRP transmission line, reducing the effects of the additional visual impacts.

**Figure E-11** depicts the Alternate Route as seen from the Fairgrounds (KOP 7). The support structures would not be located adjacent to the SRP structures, but would be visible to the south along Earley Road, creating the addition of a second utility corridor. While direct visual impacts to the Fairgrounds may be less if the Alternate Route along Earley Road were selected, the impacts to the residences south of this alignment would be much greater.

The third scenario in this area, is depicted from KOP 7 in **Figure E-12**. Under this scenario, the Project would be routed along the western and southern boundary of the Fairgrounds property. This scenario would surround the Fairgrounds on three sides of the property with transmission lines and would necessitate the use of multiple turning structures. Impacts to visual resources would be much greater than that of the Preferred or Alternate Route to the Fairgrounds and surrounding areas.

**Figure E-13** and **Figure E-14** depict views from the Tierra Grande Golf Course of the Preferred and Alternate Routes in the Southern Corridor Area.

KOP 8 (**Figure E-13**) is located at the west end of West Fairway Cove Drive, in the Tierra Grande development. The view is west-northwest. Land use surrounding the KOP is residential development with Sonoran Desertscrub, and agriculture. The Tierra Grande Golf Course can be seen in the foreground. Existing residences are visible in the mid-ground on the left and a 12kV distribution line is discernible behind existing vegetation along the Casa Grande Canal. As depicted in **Figure E-13**, views of both the future SRP transmission line and the Preferred Route from the Tierra Grande Golf Course would be screened by existing vegetation growing along the south side of the Casa Grande Canal, which runs east to west immediately north of the golf course, minimizing visual impacts.

**Figure E-14** depicts the Alternate Route as viewed from the Tierra Grande Golf Course (KOP 8). The Alternate Route follows Earley Road. While still partially screened by vegetation along the Casa Grande Canal, the structures would be much closer to the Tierra Grande development and would be an obvious addition to the landscape with greater visual impacts than the Preferred Route.

## LIST OF PREPARERS

| | | |
|---|---|---|
| Mrs. Kenda Pollio | 17 years of Experience | BS, MS, AICP |
| Mr. Tyler Rychener | 7 years of Experience | BS, MS |
| Mr. Ben Coker | 2 years of experience | BS, MAS |

## Cultural Historical Setting

The following description of the Project Study Area (PSA) cultural history of the area of the Project is summarized in large part from the following sources: Bilsbarrow and Palus (1997); City of Casa Grande (2004); Clemensen (1992); Craig and Hackbarth (1997); Deaver and Altschul (1994); Gilpin and Phillips (1998); Haynes (1986); Janus (1989); Marmaduke (1993); Myrick (1980); Russell (1975); Spier (1970); Whittlesey et al. (1994); Wright (2002); Wright et al. (2002). The following discussion is divided into prehistoric and historic periods. The prehistoric periods include the Paleoindian, Archaic, and Hohokam, and the historic periods include the Protohistoric and Historic.

### *Prehistoric*

#### *Paleoindian*

The earliest known record of human habitation in Arizona's desert regions dates to approximately 12,000 years (Haury 1950). These Paleoindian hunters-gatherers were highly mobile, and surface cultural remains associated with their habitation and subsistence sites are rare, as Paleoindian cultural materials are often buried deep beneath Holocene sedimentary deposits.

The Paleoindian period, approximately 10,000 to 7500 B.C., is characterized by small, nomadic bands that followed megafauna and gathered wild plants. Sites from this period have been documented in southern Arizona (Cordell 1984; Haury 1950; Haynes 1986; Huckell 1984). However, sediments from this period are generally not exposed in the Casa Grande area. No Paleoindian sites have been reported near this area.

The subsistence practices of early hunter-gatherers changed approximately 10,000 to 8000 B.C. with the extinction of large game, as well as with the environmental changes associated with the Pleistocene/Holocene climatic transition (Guthrie 2006; Martin 1967). The overall lifestyle of the early hunter-gatherers continued into the Archaic period (ca. 8000 to 200 B.C.), but increased aridity during the early- to mid-Holocene brought about a change in the occurrence of plant species in the Southwest (Van Devender et al. 1987). Many of these drought-tolerant plants, such as mesquite, paloverde, and screwbean pods; saguaro and other cactus fruits; and agave, were exploited by prehistoric peoples. These plants provided a protein-rich food source that supplemented the Archaic diet of small game.

#### *Archaic*

The Early Archaic period, approximately 7500 to 5000 B.C., is characterized by a hunting and gathering lifestyle, similar to the preceding Paleoindian period. A major difference however was a climatic drying and warming trend leading to desert conditions, and the disappearance of Pleistocene big game, through natural or human agents. Hunting focused on modern game animals and gathering focused on seasonally available resources, with Archaic groups maintaining a significant degree of residential mobility. As the Archaic period progressed (Middle Archaic, ca. 5000 to 2000 B.C.), some populations began to experiment with encouraged plants. Various wild plant resources were encouraged through selective planting or reseeding, weeding of competitor species, and supplemental watering. Seasonal rounds were generally maintained, with encouraged plant stands being revisited during harvest time. Tools identified during the Archaic period such as metates, manos, and mortars demonstrate a significant focus on

processing wild plant foods. Small seasonally occupied villages were present, but larger more permanent villages did not develop until the Late Archaic period.

The Late Archaic, approximately 2000 B.C. to A.D. 1, is a period of increasing sedentism although group mobility was still maintained to varying degrees. Encouraged plants began to give way to small-scale horticulture, especially with the introduction of domestic cultigens. Maintaining small fields and crops meant increased sedentism, and Late Archaic populations along floodplains and alluvial fans began to assemble into permanent villages. Sites of this type are known from the Tucson area, the PSA, and the Phoenix area. Experimentation with domestic cultigens from Mexico appeared first in the Tucson area (corn circa. 1700 to 1200 B.C.), which is located closer to the source area for these cultigens. Late Archaic villages are deeply buried under alluvium because of their location on floodplains and alluvial fans.

## *Hohokam*

A summary of Hohokam chronology is presented in **Table E-1**. A brief discussion of each period in its chronological sequence is presented below. The Pioneer, Colonial, and Sedentary periods are collectively referred to as Preclassic.

### Pioneer Period

The first period of Hohokam development involves a transition in local populations, as opposed to the influx of peoples from Mesoamerica as had been previously believed. During the transition from the Late Archaic to the Pioneer period, populations slowly began to shift their subsistence strategy to focus on a more sedentary, agriculture-dependent way of life. Hunting and gathering available wild foods remained important, but the Hohokam developed a complex water control system that made irrigation agriculture possible. Ceramics first appeared during this period as plainware utilitarian items, and expanded to include many types of decorated wares including: redwares, red-on-gray, and red-on-buff. The Snaketown phase, at the end of the Pioneer period, saw several changes which indicated a growing population, increased trade contacts, and growing complexity: more diverse ceramic vessel forms and designs; expansion of irrigation systems; the presence of ceramic figurines, slate palettes, carved stone bowls, and other ritual and ceremonial items; presence of shell from the Gulf of California; and trade goods from Mesoamerica and the Mogollon rim area.

### Colonial Period

During this period, the number, size, type, and complexity of Hohokam sites in the area increased. Pithouses within villages tended to cluster in courtyard groups, probably occupied by extended families, which opened onto communal plaza areas. Numerous large villages contained ballcourts, which are posited to be related to the Mesoamerican game. These ballcourts probably served as a focus for community integration, where peoples from smaller surrounding hamlets would come to trade, renew kinship ties, and take part in various community activities. Smaller villages and subsistence-related sites were increasingly established during this period. Exotic trade items such as macaws and copper bells from Mesoamerica often overshadow continuing trade with Mogollon Rim and Colorado Plateau populations. By the end of the Colonial period, Hohokam sites were established throughout central and southern Arizona in a variety of environmental settings.

## Sedentary Period

Throughout this period, patterns established during the preceding Colonial period were intensified. Economic complexity increased with certain villages specializing in particular crafts. In addition, a possible hierarchical distinction between sites, especially those along shared canal systems, is indicated. Platform mounds began to be constructed during this period, and appear to have served as a type of public architecture possibly associated with hierarchical divisions within villages, with ceremonial activities, or both. As the ballcourt slowly began to go out of use, the focus of community activities began to switch to the platform mound. There are few changes to Hohokam material culture during this time with the exception of the beginnings of platform mounds, adobe/jacal surface structures, and redware.

**Table E-1**
**Hohokam Chronology (Dean 1991).**

| Period | Phase | Approximate Time Span (A.D. years) |
|---|---|---|
| Pioneer | Red Mountain | 0-300 |
| | Vahki | 300-500 |
| | Estrella | 500s |
| | Sweetwater | 600s |
| | Snaketown | 700s |
| | | |
| Colonial | Gila Butte | 775 to 850/900 |
| | Santa Cruz | 850-900 to 950/1000 |
| | | |
| Sedentary | Sacaton | 950/975 to 1100/1150 |
| | | 1100 to 1200 |
| | | |
| Classic | Soho | 1150/1200 to 1300 |
| | Civano | 1300 to 1450/1500 |

## Classic Period

Most familiar Hohokam traits disappeared or underwent radical changes during this period. Many large villages were abandoned, although, several grew as outlying populations and groups in smaller settlements aggregated with existing communities (or formed new communities) along major watercourses. Pithouses disappeared almost completely and were replaced by surface structures of adobe and masonry, which were often organized into roomblocks, then compounds with the addition of enclosing walls. Platform mounds effectively replaced ballcourts as the focus of community activities. Red-on-buff pottery was replaced by red and polychrome wares. Treatment of the dead changed: inhumation became common while cremation declined. Trade patterns shifted from a Mesoamerican focus to a more northern and eastern focus. As the trade patterns shifted to the north and east, architectural and material culture traits of the Classic period Hohokam were being derived from contact with populations in that region of eastern Arizona and western New Mexico—the Salado culture. The reorganization of Classic period Hohokam

architectural and material culture styles into styles that more closely resembled the Salado indicated increased regional interaction between the two groups. In the past it was believed to represent an invasion by Salado peoples, but this is no longer thought to be the case.

There may also be a late/post-Classic Hohokam occupation known as the Polvoron phase. The existence of the phase is still a matter of debate, as well as how it fits into the generally accepted Hohokam chronology. It may extend Hohokam culture into the 16th century, or it may merely represent the end of the Hohokam sequence around A.D. 1450 to 1500. This phase is defined in the archaeological record by the reoccupation of late Classic structures, a return to pithouses, and the end of inhumation methods of burial.

### Protohistoric

The Protohistoric period dates from approximately 1450/1500, the end of the Hohokam sequence, to the establishment of the Tubac presidio by the Spanish in 1753. The Protohistoric period saw reoccupation of several prehistoric sites by the Maricopa, Kohatk, or Pima, as well as the development of new settlements. The Jesuit missionary, Father Eusebio Francisco Kino was the first Spanish explorer to provide written accounts of the Gila River area. He was assigned to missionize in the Pimeria Alta (Land of Upper Pimas), a region that today includes northern Mexico and southern Arizona. During Kino's travels, he established many visitas and a few missions from the modern international border to the Gila River region. In addition, his explorations served as an important first step toward an overland route between Sonora, the Pima villages of the Gila River, and settlements along the California coast. Kino visited villages along the Gila River at least six times between 1691 and 1702. During his journeys, Kino mapped and described Pima villages and his interactions with various groups. Kino does not describe irrigation agriculture, so it is suspected that local populations subsisted by floodwater agriculture, hunting, and gathering. By 1744 however, the Pima were growing wheat with irrigation agriculture, and by 1775 irrigated wheat was a major crop in most Pima villages. Throughout the 1700s, the Spanish continued to expand the mission system in southern Arizona and continued to introduce non-native crops, animals, trade goods, religion, and culture.

### Historic

The Historic period in Arizona dates roughly from 1753 to 1954. The 1753 date was chosen as it represents the founding of the first permanent Spanish settlement in Arizona. Dates of Protohistoric and Historic periods can differ across Arizona, usually based on dates of contact with Europeans and dates of permanent settlement by Europeans. For the purposes of this study, the aforementioned dates will be used.

According to the National Parks Service (NPS), the year 1775 marks the year Juan Bautista de Anza (Anza) successfully opened an overland route of emigration and supply from Sonora to the missions and settlements of Alta California. The 198 soldiers and families that Anza escorted brought with them on their 1,200 mile trek their language, traditions, and diverse New World Hispanic culture. The backgrounds of all soldiers and settlers were carefully recorded as español, mulato, or mestizo. Almost all the expedition members were born on this continent and had mixed European, African or Indian parentage. These influences changed the lives of the indigenous peoples and shaped the development of Arizona and California. The route Anza opened supplied the settlements of Alta California long enough for them to become established. In 1781, the Yumas revolted against Spanish rule and closed the route during the rest of the

colonial period. In later years, Anza's trail served the military, settlers, cattlemen, forty-niners and other desert travelers.

The Mexican War of Independence did not have a direct affect on the area, as most of the battles took place far south of southern Arizona. However, the Spanish did have to withdraw their troops to central Mexico, which left a vacuum that the Apache exploited. During the 1820s, Apache raiders were estimated to have killed approximately 5,000 people in Sonora and southern Arizona. Mexico was victorious in the war, and declared independence in 1821. The new Mexican government abolished the mission system. In Arizona, settlements and occupation contracted to Tucson and Tubac. In response to increased Apache raiding, Piman settlement also contracted south and west. During the Mexican (1821 to 1853) and subsequent American occupations, Pima wheat production increased dramatically, as a result the Pima sold excess crop to settlers and travelers using the Gila Trail.

Arizona north of the Gila River became part of the United States in 1848, although the American phase did not officially begin until 1853, when this area was sold to the United States by Mexico as part of the Gadsden Purchase. American fur trappers and traders began working the Gila River in 1825 (the American phase dates from 1853 to present). During the Mexican-American War, American military forces passed through southern Arizona on their way to California, commonly using routes centered on the Santa Cruz and Gila rivers. These routes were well blazed by the Army, and increased use occurred after the end of the war. One specific route, the Gila Trail, was by this time a widely used mail, freight, and emigrant route. At the close of the American Civil War, settlement in the Gila River valley increased dramatically. This was due in part to the American Army's attempts to pacify the Apache. Arizona was first included as part of the Territory of New Mexico, and then the Territory of Arizona, and officially received American statehood in 1912.

After the Civil War, Americans began to settle permanently along the Gila River because of the availability of good agricultural lands. Agricultural activities by American settlers along the Middle Gila and further upstream caused an insufficient supply of water for Pima farmers. By 1872, the water reaching Pima crops was so limited that some Pimas relocated to the Salt River valley. However, this is not the only reason the Pima moved. Commercial pursuits in the growing Phoenix-Mesa-Lehi area, land and water availability, and the Anglo desire for a buffer between themselves and the raiding activities of the Apache also served as agents to pull Pimas from the Gila River valley to the Salt River valley. Settlers came not only from the east to settle within Arizona's agricultural lands, and rich mining districts, but also from Utah. Mormon settlers established towns in northern and eastern Arizona, and into northern Mexico. Some of the largest areas of Mormon settlement are the modern Mesa and Safford areas, although significant settlement also took place along the Little Colorado and San Pedro Rivers.

From 1880 to 1900, the population of southern Arizona doubled, and by the turn of the century, Arizona had a population of 100,000. Many communities were established. The major town centers within the Area of Study (AOS) are discussed below. Arizona went on to become a major producer of cotton and copper, although these industries have had their ups and downs. Agriculture tends to remain as the major economic focus within the AOS. The 20th century saw the transformation of significant portions of Arizona into military installations. Prisoner of war camps where established in proximity to the communities of Florence and Queen Creek and along the Gila River between 1942 and 1945 (Iritani, 1994).

## *Southern Pacific Railroad*

### Mainline

After the close of the Civil War, a southern railroad route along the now defunct Butterfield Stage Route was being explored as an option to move goods and people across the country in a timely fashion. The Southern Pacific Railroad Company (SPRR) was to lay track from San Francisco to Yuma, while the Texas and Pacific Railroad Company (TPRR) was to lay track westward across Texas, New Mexico, and Arizona to meet with the SPRR at Yuma. As the SPRR reached the Arizona border, the TPRR was stalled in the vicinity of Fort Worth, Texas, nowhere near the interconnection point at Yuma. Having no authority to continue into Arizona, the SPRR courted the U.S. Congress, but failed to receive approval. The SPRR then turned to the territorial legislatures of Arizona and New Mexico, and received approval to continue laying track eastward.

The first train arrived in Maricopa Station, modern Heaton, on April 29, 1879. Maricopa Station quickly became a boomtown, as it was the closest point to retain Alternate transportation to reach Phoenix. Maricopa Station soon had a large office building, a warehouse, and a hotel. As with most railroad boomtowns, the town soon succumbed to the ups-and-downs of railroad economy, and a new junction for the transfer of goods to Phoenix was located eastward. The SPRR continued to push eastward and reached Casa Grande on May 19, 1879. Casa Grande served as the end of the line for several months, and came to be known as Terminus. In January 1880, construction continued eastward. As 1881 drew to a close, the SPRR track through Arizona connected to the nationwide system of rail lines. The economy and settlement of southern Arizona quickly changed as it was now reliably connected to the rest of the country. The SPRR was taken over by the UPRR in 1997 (Union Pacific Railroad 2006).

### Casa Grande

The SPRR suffered a work stoppage while laying track across Arizona. A temporary camp was established at the railhead in May 1879. An office was established in a boxcar and workers drilled a deep well and installed a pump to provide water. The camp was called Terminus, which meant end of the line. When construction resumed in January 1880, the community of Terminus remained with three buildings and five residents. A railroad station was left as part of the settlement. By September 1880, SPRR executives renamed the settlement Casa Grande, after the prehistoric ruins located approximately 20 miles northeast of town. By the end of 1880, Casa Grande had grown to a population of 33 residents.

## *Chronology*

Chronology is a key component in understanding the processes of cultural change in the Arizona desert regions. Sites located in southwestern Arizona and also known as Papagueria are primarily scattered ruins, once thought to be so numerous that there was often not much to the stratigraphic depth (Haury 1950).

Prehistoric residential sites do, however, contain the remains of houses, pit features, and other subsurface cultural deposits. Chronology in this area is a major research issue for Gila River drainage system. Short of reliable absolute dates from well-understood contexts, archaeologists in Gila River valley in the past have been forced to rely heavily on artifact cross dating, the origin of which was with black-on-white sherds from the Western Anasazi area (Gumerman and Haury

1979:76). It is no surprise, therefore, that our knowledge of the chronology of cultures in the region continues to change and that our comprehension of regional cultural processes remains a work in progress. Key research questions include the following:

- Can the sites yield information relating to established regional lithic and ceramic typologies?
- Can the Hohokam ceramic chronology be further refined?
- Are there variations in the temporal framework in Hohokam manifestations in relationship to the distance from the core Hohokam area?

### Data Requirements

In most areas of the Southwest, addressing issues of chronology requires samples suitable for absolute-dating analysis. Sample materials include botanical and faunal remains for radiocarbon dating, burned clay associated with cultural features for archaeomagnetic dating, and wood samples from specific species for tree-ring dating. Other, less-precise absolute-dating methods include thermoluminescence and obsidian hydration analyses. Sites that can provide the kind of samples described above in interpretable contexts are extremely rare in the archaeological record of the Gila River area.

## *Subsistence*

The Sonoran Desert area of southern Arizona is in a region of alternating mountains and plains, with major streams that were the lifelines of the Hohokam people (Gumerman and Haury 1979:75). They provided water for irrigation canals, and the mountains provided ecozones for natural food sources not found on the river plains.

Paleoindian and Archaic foraging strategies changed to hunting and gathering cultures bound to floodplain resources, and progressed to floodplain-based, logistically organized horticultural societies that continued to exploit wild riparian and desert resources. For the horticulturalists, using wild resources minimized risk imposed by an agricultural adaptation. The degree of organizational complexity needed to be responsive to a variety of environmental factors. As a result, household size, composition, and organization; the size of local population aggregates; the mix of resources used (cultigens or wild plants, riverine or desert resources) varied based on the distribution and availability of resources. Key research questions include the following:

- What mix of resources did the Archaic people and the Hohokam use?
- If the resource mix changed through time, do these changes correlate with increasing population density, environmental fluctuations, or both?
- Are ethnographic models representative of prehistoric and/or protohistoric periods?

### Data Requirements

Data required to answer these questions consist of faunal and floral remains from use contexts in Archaic, Hohokam period, and protohistoric residential sites. Macrofloral and palynological samples from sealed cultural contexts (features) and from an array of plant and animal food-

processing equipment are important components in defining the resource mix, and immunoassay residue analysis on lithic tools recovered from cultural contexts could potentially provide information on patterns of animal exploitation. As with chronological needs, contexts that can provide these data are rare.

### *Land-Use Patterns*

Land-use patterns form an important part of a culture's adaptation to its surrounding environment, and its strategy characterizes and describes the ways in which a culture interacts with and exploits its natural resources. The organization of land-use strategies is patterned and is reflected in the set of functional site types embedded in the land-use system.

Analysis of land-use systems provides considerable insights into interactions between economic adaptations and changing environmental and social circumstances, and like subsistence systems, they operate in an ecological context and are, therefore, responsive to fluctuations in environmental conditions. Essentially land-use systems influence, and are influenced by a myriad of extant social conditions, such as organizational complexity, labor organization and scheduling, ritual and ceremonial activities, and interrelations with neighboring communities, among other factors. Key research questions include the following:

- Did Hohokam site locations co-vary with environmental factors? If so, what factors appear to have been the most significant?
- How do site location and site type relate to the spatial distribution of raw-material sources in the region?
- Did site complexity influence the direction of trade relations with the Southern tribes versus the Northern and Eastern tribes?

#### Data Requirements

By obtaining information about residential, subsistence, and functional site-type patterning, we can reconstruct land-use strategies. Using subsistence, spatial, and chronological information obtained from residential sites, nonresidential site types, and land-use systems, the entire system can be defined. Elements comprising land-use systems (including issues of economy and seasonality) must be discerned from subsistence-related data recovered from each class of sites.

### *Contact and Interaction between Native Americans and Europeans and Euroamericans*

Historical-period accounts of the primary Native American group in the PSA, the Pima, exist from the mid eighteenth and mid-nineteenth centuries. The first written account of Pima lifeways was first recorded by the Spanish Fr. Kino in the mid eighteenth century. Archaeological information to support or augment ethnohistoric data is largely lacking. Important questions about protohistoric and historical-period Pima subsistence and settlement systems remain. Key research questions include the following:

- To what degree were protohistoric and historical-period Pima integrated into the local Euroamerican economy?

- To what degree, if at all, did this Native American group rely on wild botanical and faunal resources during the mid eighteenth and early nineteenth centuries?
- Are ethnohistoric data representative of Pima subsistence and land use patterns? What resource mix did they rely on during the early historical period?
- How well, if at all, were European-introduced domesticated plants and animals incorporated into the Pima resource mix?

### Data Requirements

Data required to answer these questions can best be obtained from one or more eighteenth to nineteenth century Pima residential sites. If the sites have stratigraphic depth, they may include structures and sealed features that contain data that inform on subsistence, economic, social, and ritual aspects of past lifeways.

### *Historical-Period Occupation*

The eighteenth and nineteenth century occupation of southern Arizona had a significant impact on the lives of the Native American people of the area. While changes were already underway in the PSA when the Europeans first encountered the area, more drastic changes followed. The phases of the Hohokam period saw an intensification, peak, and decline in agricultural activities. During the protohistoric and historic periods the Native Americans returned to a more intensive agricultural practice with the addition of non-native crops, animals, trade goods, religion, and culture. Key research questions include the following:

- How did the establishment of missions and presidios, as well as the introduction of new crops and livestock, affect settlement pattern, subsistence strategies and cultural traditions?
- Can the study of historic archaeological sites, in conjunction with archival research, tell about the lives of the Spanish, Mexican, and Euroamerican soldiers and settlers in the Pima area?

### Data Requirements

While few historic resources have been previously recorded in the PSA, there is great potential for further research into the lives of migrants into the area. Excavation of historic archaeological sites, as well as ethnohistoric data and sources can reveal a wealth of information that may provide insight into the social fabric of the lives of the migrants into the area and the effects of those cultures on the Native culture.

## Methods

A Class I Cultural Resource Inventory was completed for the PSA. This document was distributed to State Historic Preservation Office (SHPO), Arizona State Museum, Ak-Chin Indian Community, Fort McDowell Yavapai Nation, Gila River Indian Community, the Hopi Tribe, Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation. Correspondence with these agencies is included in **Exhibit E-1.** Specifically, a ½-mile wide buffer of the entire PSA was analyzed. This area is considered the Area of Study (AOS).The previously recorded

cultural resources and investigations in the PSA, including a ½ mile-wide buffer, were examined using data received from the Arizona State Museum Cultural Resources Database (AZSITE) database to determine if known cultural resources would be potentially impacted by the proposed Project. Information from the National Register of Historic Places, Arizona Historic Site List, Casa Grande Historic Register, Evergreen Local Historic District List, historic trails lists from NPS, BLM, Arizona State Parks, and Pinal County were also reviewed to determine if any listed National, State, or Local historic resources were present in the PSA. None of the Project is located on tribal lands, and no data regarding Traditional Cultural Properties (TCPs) was gathered.

## Research Overview

Site and project files were checked at the AZSITE and various databases from Federal, State, and Local sources were reviewed to determine if any previously recorded cultural resources were within the PSA and buffer. The National Register of Historic Places listing, Arizona Historic Site List, Casa Grande Historic Register, Evergreen Local Historic District List showed that one eligible historic site (AZ AA:3:209) listed was present in the PSA.

The historic trails listings from NPS showed that the Juan Bautista de Anza National Historic Trail Corridor (established by Congress in 1990) encompasses the entire PSA and all Project components. However, the Anza Trail segment has not been identified as an archaeological site in the PSA as discussed below.

- The BLM historic trails database shows the Anza Trail Corridor on the eastern side of the PSA and crossing the Southern Corridor Area, the Sundance facility, and the southern terminal end of the Preferred and Alternate Routes.

- Arizona State Parks lists a 4.5 mile segment of the Anza Trail present in the Tubac Presidio State Historic Park, located 95 miles southeast of the PSA.

- The Pinal County Trails Plan (2005) proposes to establish a 1000-foot regional trail corridor on the western side of the PSA and crossing a portion of the Preferred Route and the western edge of the Southern Corridor Area. The actual Anza Trail segment has not been identified and recorded within the PSA; however, based on the diaries of Juan Bautista de Anza and Friar Font the corridors represent their travel between two known points. The surrounding area has been and has been disturbed by agricultural activities, and it is unlikely that evidence of the trail segments still exists in the PSA. The three corridors identified by the NPS, BLM, and Pinal County are proposed for future recreational opportunities.

The AZSITE records check revealed that seven projects have been conducted within the ½ mile-wide buffer of the PSA, with five of the projects occurring within or crossing the PSA (**Table E-2**).

The Signal Peak Upgrade Project (2000-082. Arizona State Museum [ASM]) and the Sundance Historic Irrigation Project (2001-674.ASM) were conducted within the ½ mile-wide buffer, but not across the proposed routes or Project components.

The Coolidge-Saguaro 115kV Transmission Line Project (1982-200.ASM) was located within the ½ mile-wide buffer and crosses the Project in Southern Corridor Area. Nine cultural sites and

four isolates were recorded for the Coolidge-Saguaro Project; however, none were recorded in the PSA.

**Table E-2**
**Summary of Previous Archaeological Research in AOS**

| Project No. | Purpose of Project | Location | Acres Within the AOS | Project Type | Report Reference |
|---|---|---|---|---|---|
| 1982-200.ASM | Coolidge-Saguaro 115kV Transmission Line Project | T9S/R9E §31, 32 | 1.5 miles x 100' | Class III survey | Hammack 1982 |
| 1985-226.ASM | AAPL ROW Pipeline Project | T6S/R7E §1, 2, 3 | 1 mile x 200' | Class III survey | Batshe 1985 Higgins and Brunsen 1985 |
| 1985-238.ASM | CAP Hohokam Irrigation District Project | T6S/R7E §1, 2, 3, 12 | 720 acres | Class III survey | Van Nimwegen and Hockbarth 1985 |
| 1998-540.ASM | SR 287 Oracle Maintenance Project | T6S/R7E §25, 26, 27 T6S/R8E §30 | 3.5 miles x 77-170' | Class III survey | Stone 2000 |
| 2000-082.ASM | Signal Peak Upgrade Project | T6S/R7E §3, 4, 9, 10, 15, 16, 21, 22, 27, 28 | 5 miles | Class III survey | Hackbarth 2000 |
| 2001-674.ASM | Sundance Historic Irrigation Project | T6S/R7E §1, 2 | .5 miles | Class III survey | O'Mack 2001 |
| No Data | Pinal West to Southeast Valley/Browning 500kV Project | No Data | 9400 acres | Class I survey | Walth 2004 |

The All American ROW Pipeline Project (1985-226.ASM) was located within the ½ mile-wide buffer, and crosses the Northern Corridor Area. One (AZ AA:2:95) of the 32 sites recorded for the Pipeline project was located within the PSA on the western edge of the Northern Corridor Area.

The Central Arizona Project (CAP) Hohokam Irrigation District Project (1985-238.ASM) was located within the ½ mile-wide buffer, and crosses multiple Project components including: the Sundance facility, the Alternate Route, the substation interconnection facilities at Sundance, and the Northern Corridor Area. Fifteen cultural sites were recorded for the Hohokam project in 1985 and one site (AZ AA:2:207) was recorded within the ½ mile-wide buffer, but outside any Project component areas.

The SR 287 Oracle Maintenance Project (1998-540.ASM) was located within the ½ mile-wide buffer, and crosses both Preferred and Alternate Routes. One of the 14 sites (AZ AA:2:149) recorded for the project crosses both proposed routes.

The Class I Pinal West to Southeast Valley Project was located in Maricopa and Pinal Counties and covered the entire PSA; however, only five of the 923 previously recorded sites were identified within ½ mile-wide buffer of the Project.

## Recorded Cultural Resources

Five cultural resource sites are previously recorded in the PSA, four of them are historic resources and three of those four are not considered eligible (**Table E-3**). The three historic sites not

considered eligible are AZ AA:2:149 (SR 287) and AZ AA:2:175 (Eleven Mile Road), and AZ AA:2:207 (historic trash pit). SR 287 crosses both routes; Eleven Mile Road also crosses both routes as well as the Southern Corridor Area; and the historic trash pit is within the ½ mile buffer, but not within any Project components.

Only one site, the historic Casa Grande Canal (AZ AA:3:209), has been determined eligible for the National Register. A segment of the canal is located south of the Project and two areas of this segment are directly adjacent to the Southern Corridor Area; however, neither canal areas are directly impacted by the Project.

**Table E-3**
**Summary of Previously Recorded Cultural Resources in AOS**

| Site Number | Site Type | Eligibility Recommendation | Reference |
|---|---|---|---|
| AZ AA:2:95 | Hohokam Site | Not Evaluated | AZSITE No. 04900 |
| AZ AA:2:149 | Historic State Route 287 | Not Considered Eligible | AZSITE No. 76102 |
| AZ AA:2:175 | Historic Eleven Mile Road | Not Considered Eligible | AZSITE No. 76103 |
| AZ AA:2:207 | Historic Trash Pit | Not Considered Eligible | AZSITE No. 94123 |
| AZ AA:3:209 | Historic Casa Grande Canal | Considered Eligible | AZSITE No. 22013 |

There is one Native American archaeological site (AZ AA:2:95) located on the western edge of the Northern Corridor Area, and it has not been evaluated for eligibility for the National Register. Mitigation will be implemented to eliminate or minimize impacts to these sites.

## *Potential Effects*

For most cultural resources the greatest potential for adverse impact is from ground disturbing activities directly associated with construction. For the Project, ground disturbance would occur at structure locations, improvements to access roads for construction, traffic associated with stringing the power lines, operation, or maintenance, and at ancillary construction sites such as pull sites, construction yards, and material staging areas. Some historic or prehistoric sites are important because they are locations of significant historical or traditional events, traditional or historic transportation corridors, or because they include important buildings or structures that are integrally associated with the setting and feeling of their location. In the latter cases, indirect effects such as visual, atmospheric, or auditory intrusion on the setting also need to be taken into consideration. Some unavoidable indirect effects may occur to cultural resources. For example, vibration can impact architectural remains by shaking fragile walls and dust, and exhaust from construction vehicles can coat and erode architectural structures and rock art panels. Other indirect impacts that can occur include vandalism, an increase in incidental deterioration, artifact collection, or illegal excavation or removal of structural materials as a result of opening or easing access to previously inaccessible areas for the construction crews and consequently, the general public. Restriction of access to sensitive areas can reduce indirect effects.

Appropriate mitigation measures for known sites and sites discovered during subsequent Class III pedestrian surveys would be developed in consultation with the Arizona State Land Department (ASLD), SHPO, and interested tribes. Many potential effects can be removed by avoiding cultural resource sites. Mitigation measures could include moving structure locations or pull

sites, where possible, and flagging or fencing of sites during construction. Adjusting structure spacing so that they are placed at the maximum feasible distance from the resource can also minimize effects to linear historic properties such as canals and historic roads. Other mitigation measures could include site testing and excavation.

Intensive Class III inventories may not identify all historic properties in an Area of Potential Effect (APE) because various natural conditions can hinder the discovery process. Unanticipated discoveries are undocumented cultural resources and human remains that are encountered during construction or operation of facilities. If unanticipated discoveries are made in connection with construction activities on private lands, the Project will cease work on the affected area of the Project and notify the Director of the Arizona State Museum pursuant to A.R.S. §41-865.

ARCADIS' intensive Class I cultural inventory of 9407.1 acres within the PSA identified one National Register eligible site; however, neither the Preferred or Alternate routes nor any of the Project components impact the eligible site. Three Anza Trail Corridors have been identified in the PSA by BLM, NPS, and Pinal County, but archaeological manifestations of the Anza Trail have not been identified in the PSA. The extensive ground disturbance from past and present agricultural activities makes it unlikely that evidence of the Trail will be present.

### *Preferred Route*

The APE for the Preferred Route encompasses 1085 acres. Between 1982 and 2004, there have been seven archaeological projects conducted within this area, and six of the seven studies were Class III surveys. The Class I survey encompasses 100 percent of the PSA, and the Class III surveys totaled 53.4 acres, or 5 percent of the APE. Three sites within the APE were identified during these investigations. These sites combined comprise 4.6 acres within the APE, or 0.4 percent. One site is a Native American archaeological site (AZ AA:2:95) and it has not been evaluated for eligibility for the National Register. The other two sites, AZ AA:2:149 (SR 287) and AZ AA:2:175 (Eleven Mile Road), are not considered eligible.

### *Alternate Route*

The Alternate Route encompasses 880 acres, and as with the Preferred Route between 1982 and 2004 there have been seven archaeological projects conducted within this area, and six of the seven previous archaeological studies were Class III surveys. The Class I survey encompasses 100 percent of the PSA, and the Class III totaled 11 acres, or 1 percent of the APE. Two sites within the APE were identified during these investigations. These sites combined comprise 3 acres within the APE, or 0.3 percent. Sites, AZ AA:2:149 (SR 287) and AZ AA:2:175 (Eleven Mile Road), are not considered eligible for the National Register.

A Class III Survey is typically conducted following the design stage and prior to construction. Prior to construction, pedestrian cultural surveys would be conducted on locations of proposed ground disturbance that have not been previously surveyed. Pedestrian surveys would also occur in disturbance areas if the previous surveys were prior to 1985 because these surveys do not meet current standards. If the pedestrian surveys discover cultural sites in any of the proposed disturbance areas, appropriate mitigation would be identified and implemented.

## LIST OF PREPARERS

| | | |
|---|---|---|
| Trish Mitchell | 20 years of Experience | BA, MA |

## REFERENCES

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# EXHIBIT E-1
# AGENCY AND TRIBAL CORRESPONDNCE

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**www.arcadis-us.com**

EP&P

Ms. Nancy Nelson
Cultural Resource Manager
Ak-Chin Him Dak Eco Museum Road
Ak-Chin Indian Community
47685 North Eco Museum Road
Maricopa, AZ 85239

RE: Class I Cultural Resources Inventory of Lands Associated with the Proposed Sundance to Pinal South Transmission Line Project.

Date:
November 6, 2007

Contact:
Trish Mitchell

Phone:
619.291.7800

Email:
Trish.Mitchell@arcadis-us.com

Our ref:
AZ002523.0001.00006

Dear Ms. Nelson:

Arizona Public Service (APS) proposes to construct a new 230 kV double circuit transmission line, which will originate at the Sundance Generating Station and terminate at the future Pinal South Substation near Casa Grande, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Inventory document prepared by ARCADIS Inc., of Phoenix, Arizona, for your review and comment.

The Arizona State Museum has previously stated that submission of a Class I inventory document is not a standard procedure, but APS has been directed to do so by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC). The project must receive a Certificate of Environmental Compatibility prior to any ground disturbing construction activities. The proposed project has a preferred alignment and an alternative alignment; however, the final alignment has not yet been approved by the ACC. The Class I document includes the locations and descriptions of cultural resources listed in public records within 0.5 miles of the alternative routes. The document was developed as a planning document to guide additional research. A through description of the project, location of all alternatives, previous cultural resource projects, and known cultural resource sites are provided in the enclosed document.

The proposed project is not a Federal undertaking as defined in 36 CFR 800 and, therefore, is not subject to the National Historic Preservation Act, Section 106 consultation process. The proposed transmission line does not cross any tribal lands and no information is included regarding any cultural resources on tribal lands. Futhermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information including

maps will be deleted from any copies of the document available to the general public. This document has been sent to the following agencies and communities for review at this time: the Arizona State Historic Preservation Office, the Arizona State Museum, the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

APS and ARCADIS greatly appreciate your comments and will address any issues and concerns that you may have. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following individual:

Gregory L. Bernosky, APS Project Manager
P.O. Box 53933, M.S. 4030
Phoenix, AZ 85072-3933

Your letter will be included as part of the project record that is filed with the ACC. If you have any further questions or would like to discuss this document, please call me at 619-291-7800.

Sincerely,

Patricia T. Mitchell

Patricia T. Mitchell, M.A., RPA
Staff Archaeologist
ARCADIS U.S., Inc.
Trish.Mitchell@arcadis-us.com
www.arcadis-us.com

Copies:
Gregory L. Bernosky, APS
file

# AK-CHIN INDIAN COMMUNITY

Cultural Resources Office

42507 W Peters & Nall Road • Maricopa, Arizona 85239 • Telephone: (520) 568-1369 • Fax: (520) 568-1366


November 15, 2007

Gregory L. Bernosky
APS Project Manager
P.O. Box 53933
M.S. 4030
Phoenix, AZ 85072-3933

Re: Proposed Sundance to Pinal South 230 kV double circuit Transmission Line Project

Dear Mr. Bernosky:

The Ak-Chin Cultural Resources Office did receive a letter dated November 6, 2007, along with a copy of the Class I Cultural Resources report, regarding the above-referenced project.

At this time, our office will defer comments to the Gila River Indian Community.

Thank you for informing our office about this project. If you have any questions, please contact me at (520) 568-1369.

Sincerely,

Gary Gilbert
Cultural Resources Technician II
Cultural Resources Office
Ak-Chin Indian Community

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Mr. James Garrison
State Historic Preservation Officer
Arizona State Historic Preservation Office
1300 West Washington
Phoenix, AZ 85007

EP&P

RE: Class I Cultural Resources Inventory of Lands Associated with the Arizona Public Service-Proposed Sundance to Pinal South 230kV Transmission Line Project.

Date:
November 6, 2007

Contact:
Trish Mitchell

Phone:
619.291.7800

Email:
Trish.Mitchell@arcadis-us.com

Our ref:
AZ002523.0001.00006

Dear Mr. Garrison:

Arizona Public Service (APS) proposes to construct a new 230 kV double circuit transmission line, which will originate at the Sundance Generating Station and terminate at the future Pinal South Substation near Casa Grande, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Inventory document prepared by ARCADIS Inc., of Phoenix, Arizona, for your review and comment.

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APS and ARCADIS greatly appreciate your comments and will address any issues and concerns that you may have. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following individual:

Gregory L. Bernosky, APS Project Manager
P.O. Box 53933, M.S. 4030
Phoenix, AZ 85072-3933

Your letter will be included as part of the project record that is filed with the ACC. If you have any further questions or would like to discuss this document, please call me at 619-291-7800.

Sincerely,

Patricia T. Mitchell

Patricia T. Mitchell, M.A., RPA
Staff Archaeologist
ARCADIS U.S., Inc.
Trish.Mitchell@arcadis-us.com
www.arcadis-us.com

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Ms. Karen Ray
Coordinator Cultural Resources
Fort McDowell Yavapai Nation
P.O. Box 17779
Fountain Hills, AZ 85269

EP&P

RE: Class I Cultural Resources Inventory of Lands Associated with the Proposed Sundance to Pinal South Transmission Line Project.

Date:
November 6, 2007

Dear Ms. Ray:

Contact:
Trish Mitchell

Phone:
619.291.7800

Email:
Trish.Mitchell@arcadis-us.com

Our ref:
AZ002523.0001.00006

Arizona Public Service (APS) proposes to construct a new 230 kV double circuit transmission line, which will originate at the Sundance Generating Station and terminate at the future Pinal South Substation near Casa Grande, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Inventory document prepared by ARCADIS Inc., of Phoenix, Arizona, for your review and comment.

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Phoenix, AZ 85072-3933

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Sincerely,

Patricia T. Mitchell

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Staff Archaeologist
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Copies:
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November 28, 2007

Patricia T Mitchell
Staff Archaeologist
ARCADIS U.S., Inc

Dear Patricia,

Thank you for report on the proposed Sundance to Pinal South Transmission Line Project in Pinal County for APS. At this time we have no specific issues or concerns regarding the area reviewed. This area was used by the Yavapai and we would appreciate contact from your agency if anything that might relate to the Fort McDowell Yavapai Nation is discovered during ground disturbance.

Your report was thorough and easily understood. I appreciated the historical information and sensitivity in protecting previously identified sites.

Respectfully,

Gary L Loutzenheiser
Cultural Representative
Fort McDowell Yavapai Nation

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Mr. Barnaby Lewis
Cultural Resource Specialist
Gila River Indian Community
P.O. Box 2140
Sacaton, AZ 85247

EP&P

RE: Class I Cultural Resources Inventory of Lands Associated with the Proposed Sundance to Pinal South Transmission Line Project.

Date:
November 6, 2007

Contact:
Trish Mitchell

Phone:
619.291.7800

Email:
Trish.Mitchell@arcadis-us.com

Our ref:
AZ002523.0001.00006

Dear Mr. Lewis:

Arizona Public Service (APS) proposes to construct a new 230 kV double circuit transmission line, which will originate at the Sundance Generating Station and terminate at the future Pinal South Substation near Casa Grande, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Inventory document prepared by ARCADIS Inc., of Phoenix, Arizona, for your review and comment.

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APS and ARCADIS greatly appreciate your comments and will address any issues and concerns that you may have. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following individual:

Gregory L. Bernosky, APS Project Manager
P.O. Box 53933, M.S. 4030
Phoenix, AZ 85072-3933

Your letter will be included as part of the project record that is filed with the ACC. If you have any further questions or would like to discuss this document, please call me at 619-291-7800.

Sincerely,

Patricia T. Mitchell

Patricia T. Mitchell, M.A., RPA
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Mr. Lee Kuwanwisiwma
Director Cultural Preservation Office
The Hopi Tribe
P.O. Box 123
Kykotsmovi, AZ 86039

EP&P

RE: Class I Cultural Resources Inventory of Lands Associated with the Proposed Sundance to Pinal South Transmission Line Project.

Date:
November 6, 2007

Dear Mr. Kuwanwisiwma:

Contact:
Trish Mitchell

Phone:
619.291.7800

Email:
Trish.Mitchell@arcadis-us.com

Our ref:
AZ002523.0001.00006

Arizona Public Service (APS) proposes to construct a new 230 kV double circuit transmission line, which will originate at the Sundance Generating Station and terminate at the future Pinal South Substation near Casa Grande, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Inventory document prepared by ARCADIS Inc., of Phoenix, Arizona, for your review and comment.

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Gregory L. Bernosky, APS Project Manager
P.O. Box 53933, M.S. 4030
Phoenix, AZ 85072-3933

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Sincerely,

Patricia T. Mitchell

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Staff Archaeologist
ARCADIS U.S., Inc.
Trish.Mitchell@arcadis-us.com
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THE HOPI TRIBE

Hopi Cultural Preservation Office
P.O. Bo 123
Kykotsmovi, AZ 86039
(928) 734-3612

Benjamin H. Nuvamsa
CHAIRMAN

Todd Honyaoma, Sr.
VICE-CHAIRMAN

November 13, 2007

Patricia T. Mitchell, Staff Archaeologist
ARCADIS U.S., Inc.
8222 South 48th Street, Suite 140
Phoenix, Arizona 85044

Dear Ms. Mitchell,

Thank you for your correspondence on behalf of Arizona Public Service, with an enclosed Class I cultural resources inventory report, regarding the proposed Sundance to Pinal South 230kV double circuit Transmission Line Project. Because the Hopi Tribe claims ancestral and cultural affiliation to prehistoric cultural groups in Arizona, including the Hohokam cultural group in southern Arizona, and the Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites and Traditional Cultural Properties, we appreciate your solicitation of our input and your efforts to address our concerns.

The Hopi Cultural Preservation Office has reviewed the enclosed Class I inventory report that identifies an unevaluated Hohokam prehistoric site, AZ AA:2:95, at the western edge of the northern corridor area. Because the majority of the project area has not been surveyed for cultural resources, we support the recommendation that a Class III field survey be conducted, and look forward to receiving a copy of the draft survey report for review and comment.

If any of the identified, eligible or undetermined prehistoric sites will be adversely affected by this proposal, we will request to be provided with a copy for review and comment of any draft archaeological testing or data recovery plans.

If you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office. Thank you again for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: Arizona State Historic Preservation Office

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EP&P

Ms. Joni Ramos
President
Salt River Pima-Maricopa Indian Community
10005 East Osborn Road
Scottsdale, AZ 85256

RE: Class I Cultural Resources Inventory of Lands Associated with the Proposed Sundance to Pinal South Transmission Line Project.

Date:
November 6, 2007

Contact:
Trish Mitchell

Phone:
619.291.7800

Email:
Trish.Mitchell@arcadis-us.com

Our ref:
AZ002523.0001.00006

Dear Ms. Ramos:

Arizona Public Service (APS) proposes to construct a new 230 kV double circuit transmission line, which will originate at the Sundance Generating Station and terminate at the future Pinal South Substation near Casa Grande, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Inventory document prepared by ARCADIS Inc., of Phoenix, Arizona, for your review and comment.

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Phoenix, AZ 85072-3933

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Sincerely,

Patricia T. Mitchell

Patricia T. Mitchell, M.A., RPA
Staff Archaeologist
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Trish.Mitchell@arcadis-us.com
www.arcadis-us.com

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Mr. Peter Steere
Program Manager, Cultural Affairs Department
Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634

EP&P

RE: Class I Cultural Resources Inventory of Lands Associated with the Proposed Sundance to Pinal South Transmission Line Project.

Date:
November 6, 2007

Contact:
Trish Mitchell

Phone:
619.291.7800

Email:
Trish.Mitchell@arcadis-us.com

Our ref:
AZ002523.0001.00006

Dear Mr. Steere:

Arizona Public Service (APS) proposes to construct a new 230 kV double circuit transmission line, which will originate at the Sundance Generating Station and terminate at the future Pinal South Substation near Casa Grande, Pinal County, Arizona. I have enclosed a copy of the Class I Cultural Resources Inventory document prepared by ARCADIS Inc., of Phoenix, Arizona, for your review and comment.

The Arizona State Museum has previously stated that submission of a Class I inventory document is not a standard procedure, but APS has been directed to do so by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC). The project must receive a Certificate of Environmental Compatibility prior to any ground disturbing construction activities. The proposed project has a preferred alignment and an alternative alignment; however, the final alignment has not yet been approved by the ACC. The Class I document includes the locations and descriptions of cultural resources listed in public records within 0.5 miles of the alternative routes. The document was developed as a planning document to guide additional research. A through description of the project, location of all alternatives, previous cultural resource projects, and known cultural resource sites are provided in the enclosed document.

The proposed project is not a Federal undertaking as defined in 36 CFR 800 and, therefore, is not subject to the National Historic Preservation Act, Section 106 consultation process. The proposed transmission line does not cross any tribal lands and no information is included regarding any cultural resources on tribal lands. Futhermore, traditional cultural places, religious sites, and traditional use areas are not included in the document. All cultural resource locational information including maps will be deleted from any copies of the document available to the general public.

This document has been sent to the following agencies and communities for review at this time: the Arizona State Historic Preservation Office, the Arizona State Museum, the Ak-Chin Indian Community, the Fort McDowell Yavapai Nation, the Gila River Indian community, the Hopi Tribe, the Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation.

APS and ARCADIS greatly appreciate your comments and will address any issues and concerns that you may have. Please provide your comments in 30 calendar days of receipt of this document to the attention of the following individual:

Gregory L. Bernosky, APS Project Manager
P.O. Box 53933, M.S. 4030
Phoenix, AZ 85072-3933

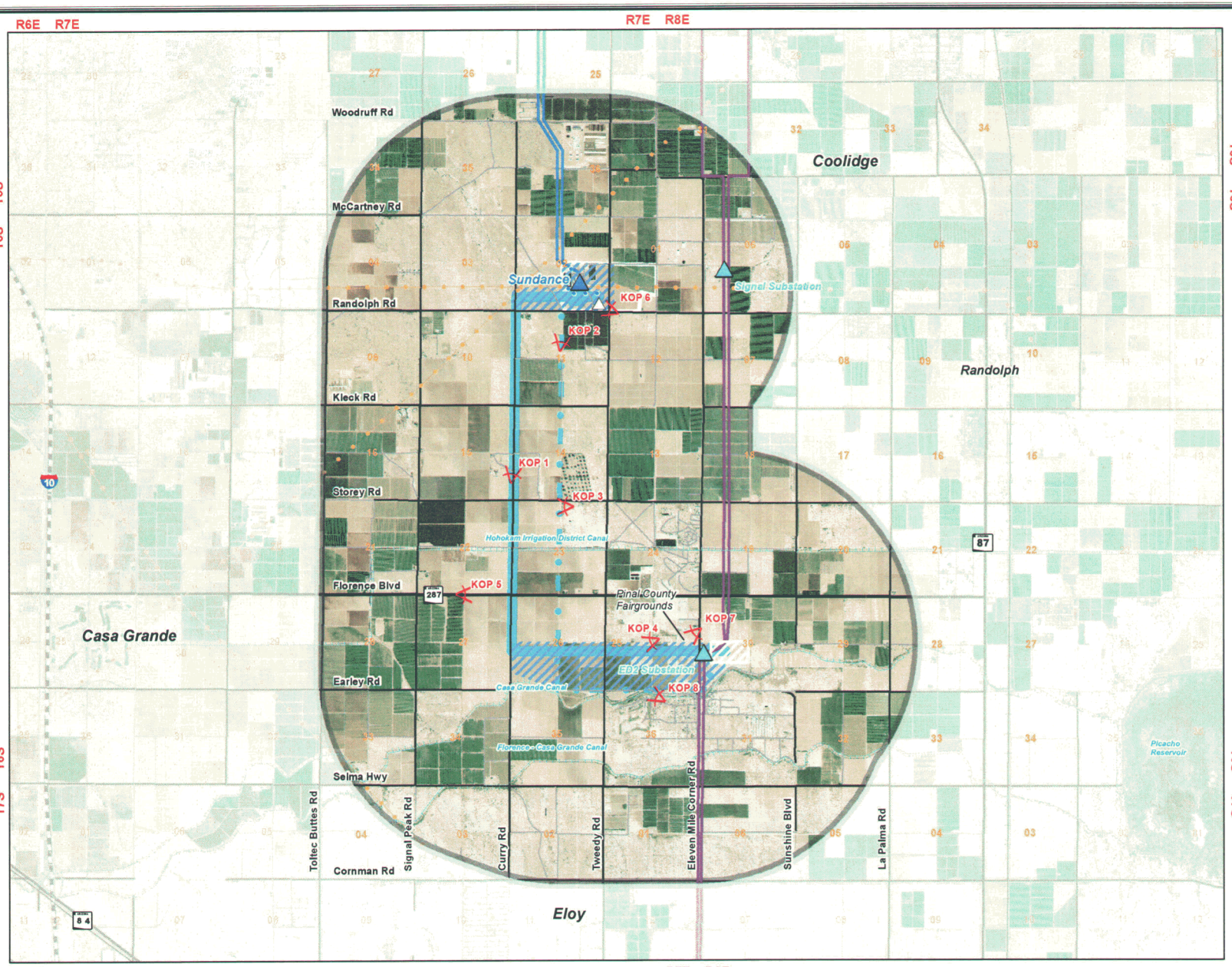
Your letter will be included as part of the project record that is filed with the ACC. If you have any further questions or would like to discuss this document, please call me at 619-291-7800.

Sincerely,

Patricia T. Mitchell

Patricia T. Mitchell, M.A., RPA
Staff Archaeologist
ARCADIS U.S., Inc.
Trish.Mitchell@arcadis-us.com
www.arcadis-us.com

Copies:
Gregory L. Bernosky, APS
file




# Figure E-1

## Key Observation Points

***Sundance to Pinal South 230kV Transmission Project***

***Analysis Area: Pinal County, Arizona***

# December 2007

### Legend

- Preferred Route
- Tie Line
- Alternative Route
- Requested Corridor for Potential Sub-Routes
- New Substation at Sundance
- Key Observation Point

### *Reference Features*

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Sundance Generating Facility
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

N

Scale: 1:62,500

0 0.25 0.5 0.75 1 Miles

Data Sources

ARCADIS, July and September 2007

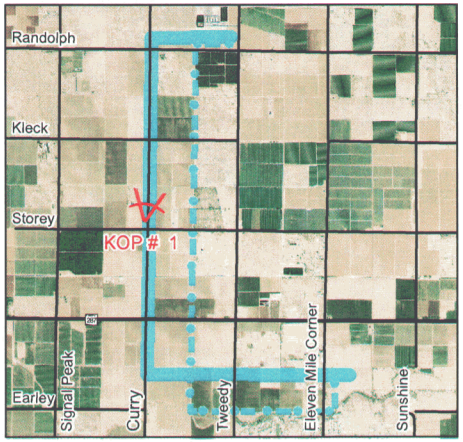
Aerial Photo - may, 2007

APS

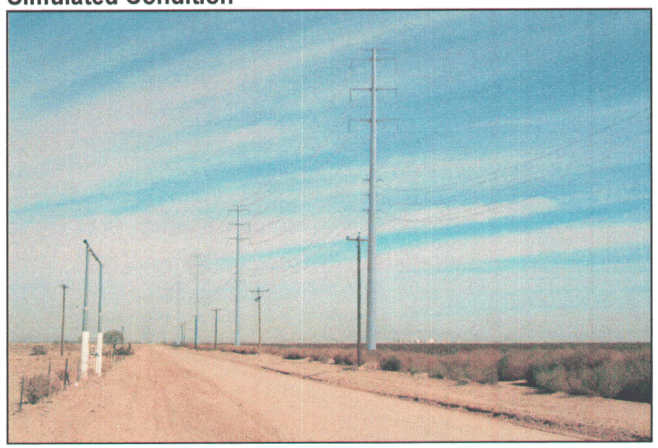
## Existing Condition

KOP 1 is a view to the north along Curry Road from a residential driveway located approximately ¼-mile north of Storey Road. An existing 12kV line is visible in the foreground along the east side of Curry Road. Sundance is visible in the background along the horizon.

## Photo Location




## Simulated Condition



Simulation of a 230kV double-circuit line with double-circuit 69kV under-build along the Preferred Route, shown on the east side of Curry Road.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: North-northwest

Weather Conditions: Sunny with scattered clouds

Simulated Components:

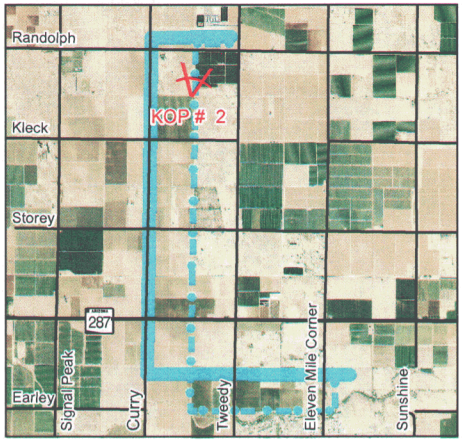
- Double-circuit 230kV with Double-circuit 69kV under-build, 140' tall, 800' spans
- Route centerline is 75' east of Curry Road centerline

**Figure E-2**

## Existing Condition

KOP 2 is a view to the north from residences along Red Bronc Road, 1/3-mile south of Randolph Road. An existing 12kV line is visible on the west side of the road and Sundance is visible in the center of the photo in the middleground. Existing 230kV lines leaving Sundance to the north are also visible in the background.

## Photo Location




## Simulated Condition

Simulation of a 230kV double-circuit line with double-circuit 69kV under-build along the Alternate Route, located along the east side of the half-section line between Curry and Tweedy Roads. A new 230kV/69kV substation at Sundance is also simulated in the middleground.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: North-northeast

Weather Conditions: Sunny with scattered clouds

Simulated Components:

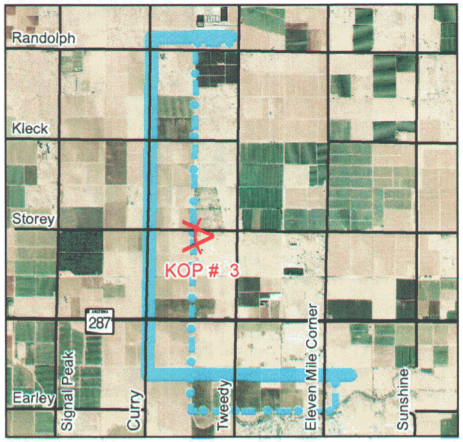
- Double-circuit 230kV with Double-circuit 69kV under-build, 140' tall, 800' spans
- Route centerline is 50' east of half-section line
- New 230kV substation at Sundance

**Figure E-3**

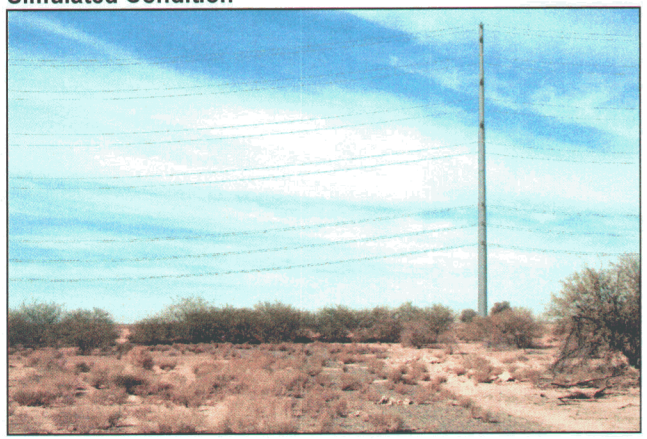
## Existing Condition

KOP 3 is a view to the west from a residential development south of Storey Road. The photo is taken from the intersection of Ladd Road and Pecina Road within the development. Natural vegetation leading up to a berm along a lateral canal is visible in the foreground.

## Photo Location




## Simulated Condition



Simulation of a 230kV double-circuit line with double-circuit 69kV under-build along the Alternate Route. The new structures, shown on the east side of the half-section line between Curry and Tweedy Roads, would be partially obscured by existing topography and vegetation.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: west

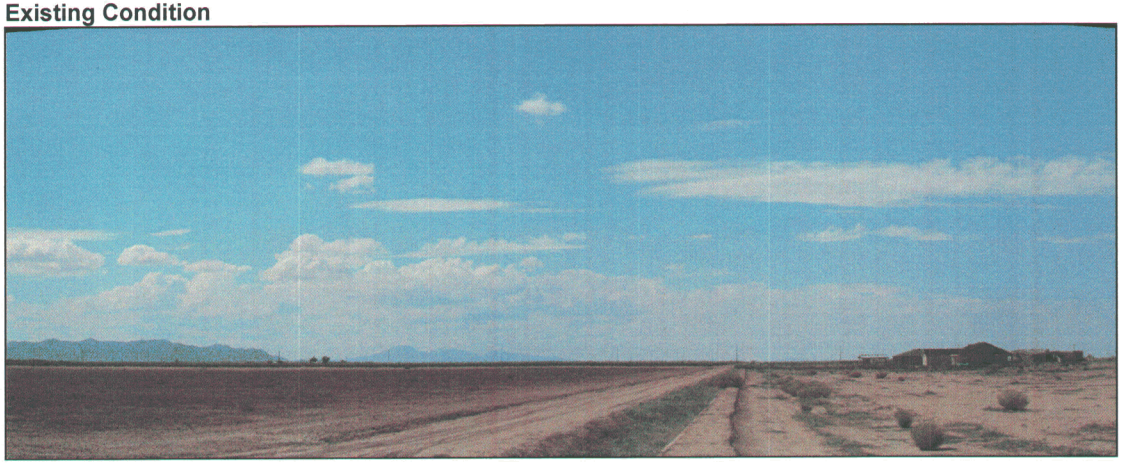
Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 140' tall, 800' spans
- Route centerline is 50' east of half-section line

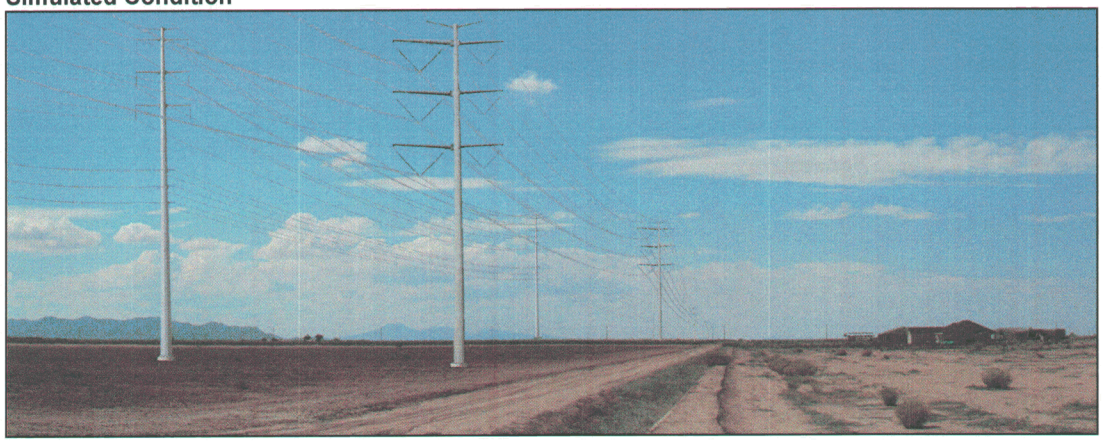
**Figure E-4**

## Existing Condition



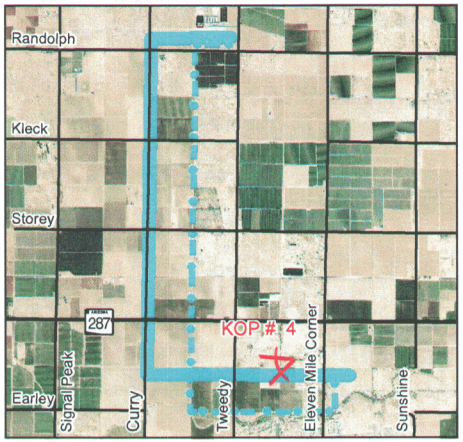
KOP 4 is a view of the Southern Corridor Area from a residential development northwest of the Pinal County Fairgrounds and ½-mile east of Tweedy Road. Existing residences are visible on the right and the Casa Grande and Table Top Mountains are visible in the background on the left. An existing 69kV line along Tweedy Road is visible in the middleground along the horizon.

## Simulated Condition



Simulation of a 230kV double-circuit line with double-circuit 69kV under-build following the Preferred Route adjacent to the SRP 500/230kV line. The previously certificated SRP 500/230kV line is simulated on the right and would be constructed prior to or concurrent with the Applicant's Project.

## Photo Location




## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: West-southwest

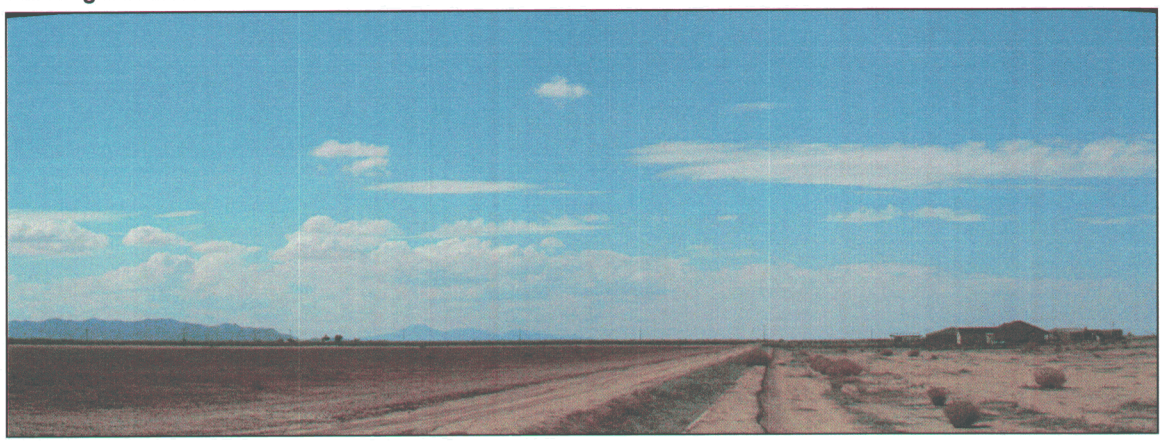
Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 150' tall, 900' spans
- SRP 500/230 structure 160' tall, 900' spans
- SRP route centerline is 50' from the half-section and the Project centerline is 115' from the SRP centerline

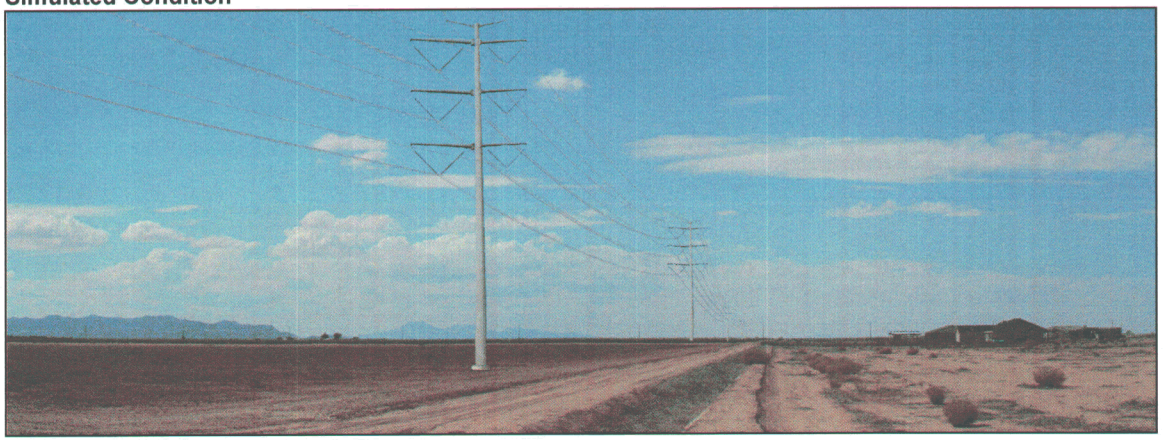
**Figure E-5**

## Existing Condition



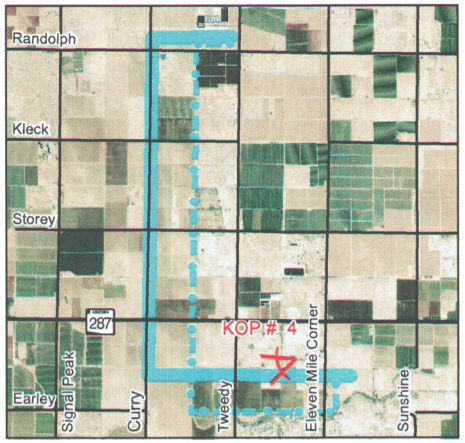
KOP 4 is a view of the Southern Corridor Area from a residential development northwest of the Pinal County Fairgrounds and ½-mile east of Tweedy Road. Existing residences are visible on the right and the Casa Grande and Table Top Mountains are visible in the background on the left. An existing 69kV line along Tweedy Road is visible in the middleground along the horizon.

## Simulated Condition



Simulation of a 230kV double-circuit line with double-circuit 69kV under-build following the Alternate Route, to the east of the half-section line between Curry and Tweedy Roads and north of Earley Road. The previously certificated SRP 500/230kV line is simulated in the foreground and would be constructed prior to or concurrent with the Applicant's Project.

## Photo Location




## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: West-southwest

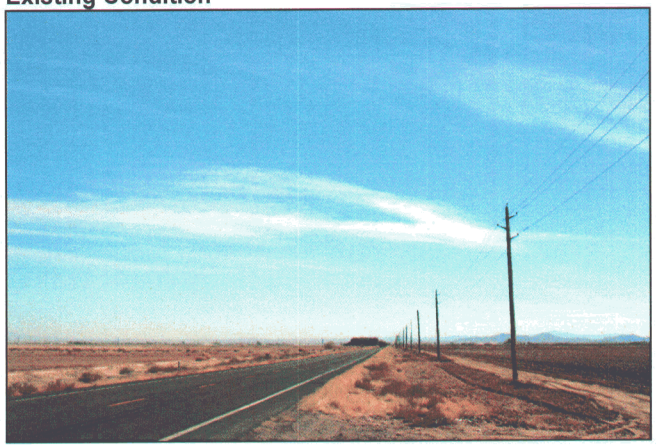
Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 150' tall, 900' spans
- SRP 500/230 structure, 160' tall, 900' spans
- SRP route centerline is 50' from the half-section and the Project centerline is 60' from Earley Road

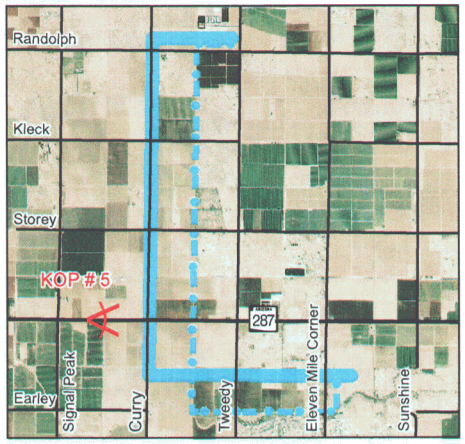
**Figure E-6**

## Existing Condition



KOP 5 is a view to the east along SR 287 from ½-mile west of Curry Road. An existing 69kV line is visible along the south side of SR 287 and low mountains are visible on the right.

## Photo Location




## Simulated Condition

Simulation of a 230kV double-circuit line with double-circuit 69kV under-build along the Preferred Route, shown on the east side of Curry Road.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: East

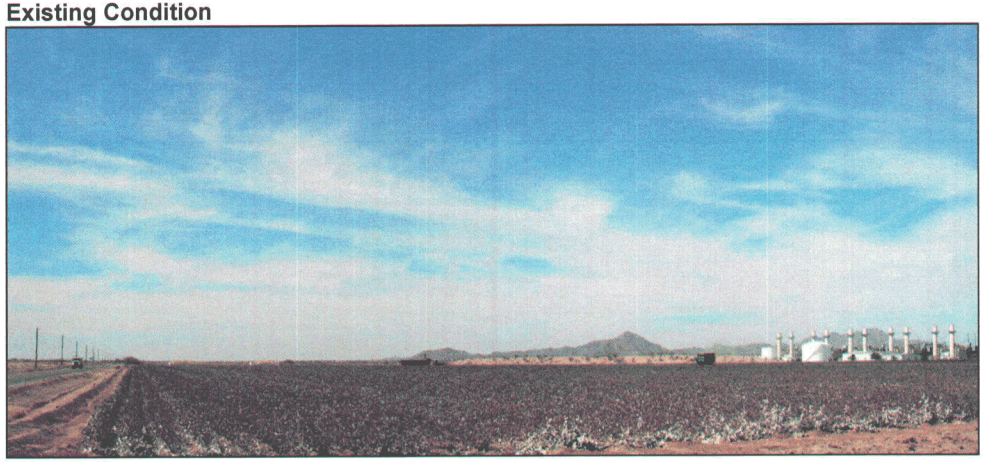
Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 140' tall, 800' spans
- Route centerline is 75' east of the Curry Road centerline

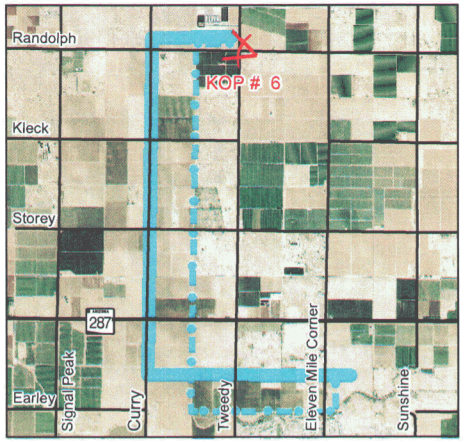
**Figure E-7**

## Existing Condition



KOP 6 is a view of the Northern Corridor Area looking west from the intersection of Tweedy and Randolph Roads. Sundance is visible on the right with Signal Peak and Black Butte in the background. An existing 69kV line along the south side of Randolph Road is also visible on the left.

## Photo Location




## Simulated Condition

Simulation of a 230kV double-circuit line with double-circuit 69kV under-build and new 230kV/69kV substation at Sundance. The simulation is of the Preferred Route configuration with lines to Pinal South leaving the substation to the north, then turning east along the gas pipeline corridor and turning south along the east side of Curry Road. A single-circuit 230kV tie-line to the Western switchyard would continue to the north.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: West-northwest

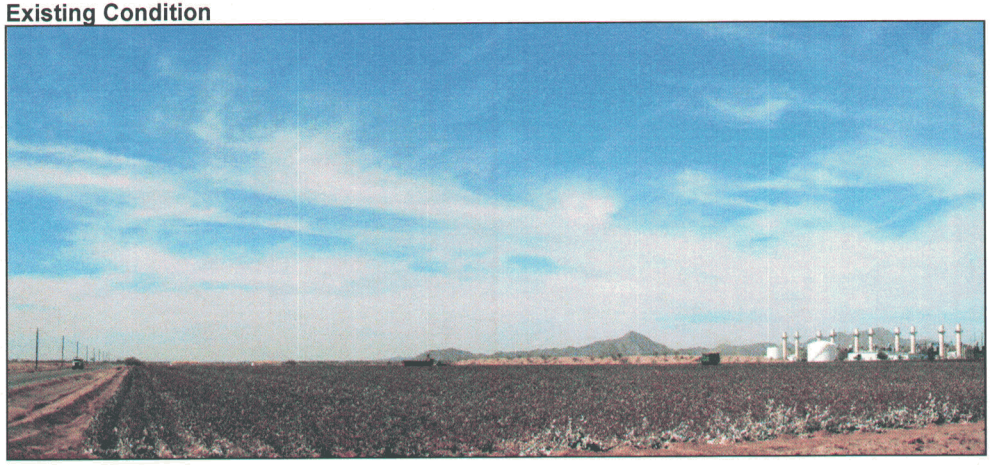
Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 140' tall, 800' spans
- New 230kV/ 69kV Substation at Sundance
- Route centerline is 50' east of the half-section line and 100' south of the Transwestern centerline

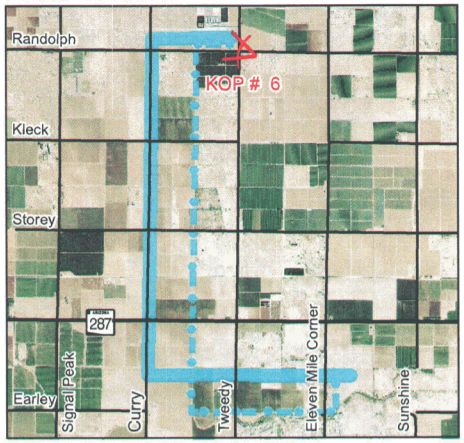
**Figure E-8**

## Existing Condition



KOP 6 is a view of the Northern Corridor Area looking west from the intersection of Tweedy and Randolph Roads. Sundance is visible on the right with Signal Peak and Black Butte in the background. An existing 69kV line along the south side of Randolph Road is also visible on the left.

## Photo Location




## Simulated Condition

Simulation of a 230kV double-circuit line with double-circuit 69kV under-build and new 230kV/69kV substation at Sundance. The simulation is of the Alternate Route configuration with lines to Pinal South leaving the substation to the south along the half-section line between Curry and Tweedy Roads. A single circuit tie-line to the Western switchyard would continue to the north.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: West-northwest

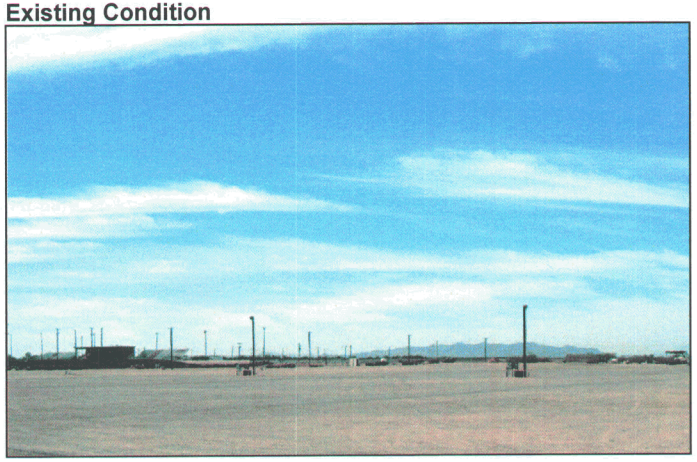
Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 140' tall, 800' spans
- New 230kV/ 69kV Substation at Sundance
- Route centerline is 50' east of half-section line

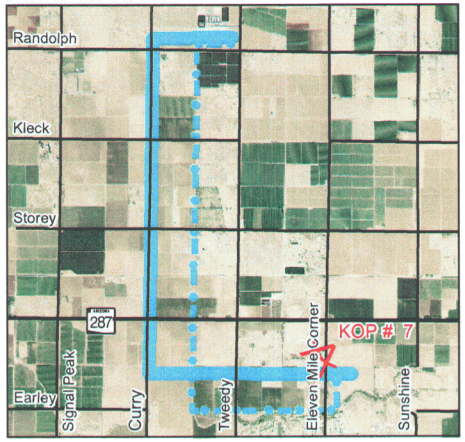
**Figure E-9**

## Existing Condition

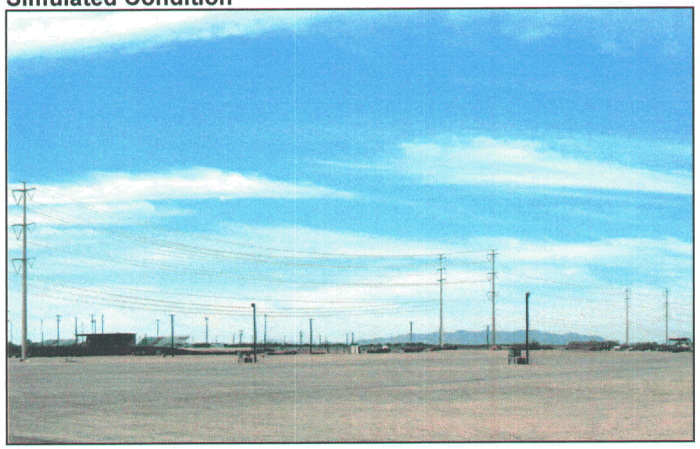


KOP 7 is located at the northwest corner of the southern exhibit hall at the Pinal County Fairgrounds. The view is to the southwest. The grand stands associated with the race track on the southern portion of the Fairgrounds are visible in the mid-ground on the left. The Casa Grande Mountains are visible in the background on the right.

## Photo Location




## Simulated Condition



Simulation of a 230kV double-circuit line with double-circuit 69kV under-build following the Preferred Route adjacent to the SRP 500/230kV line. The previously certificated SRP 500/230kV line is simulated on the right and would be constructed prior to or concurrent with the Applicant's Project.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: West-southwest

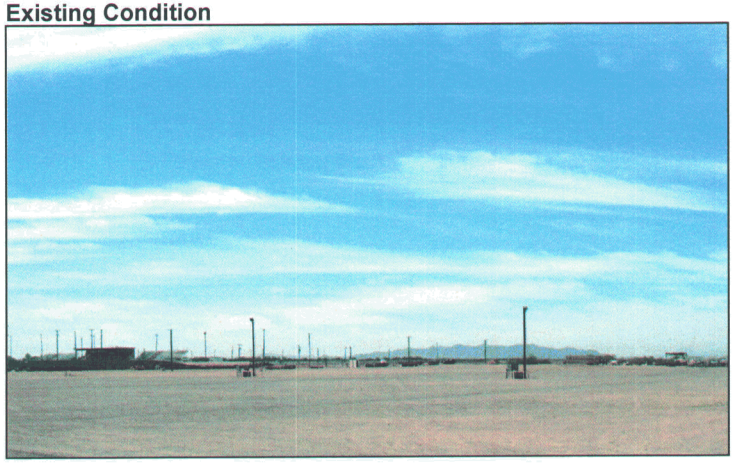
Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 150' tall, 900' spans
- SRP 500/230 structure 160' tall, 900' spans
- SRP route centerline is 50' from the half-section and the Project centerline is 115' from the SRP centerline

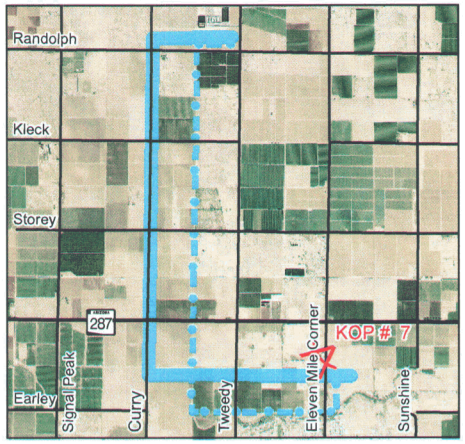
**Figure E-10**

## Existing Condition

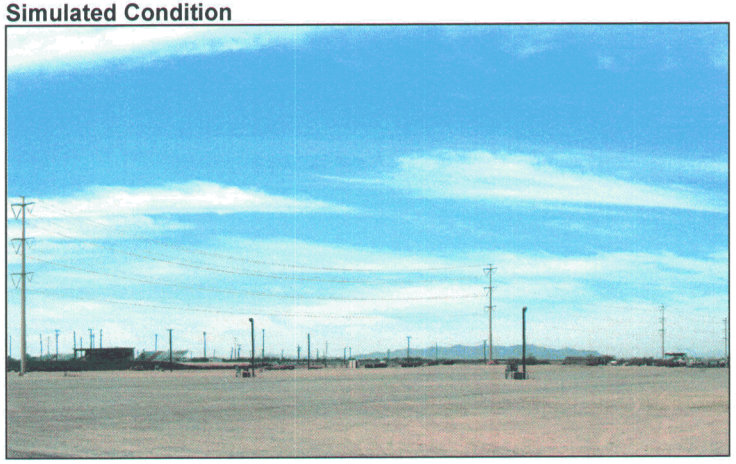


KOP 7 is located at the northwest corner of the southern exhibit hall at the Pinal County Fairgrounds. The view is to the southwest. The grand stands associated with the race track on the southern portion of the Fairgrounds are visible in the mid-ground on the left. The Casa Grande Mountains are visible in the background on the right.

## Photo Location




## Simulated Condition



Simulation of a 230kV double-circuit line with double-circuit 69kV under-build following the Alternate Route north of Earley Road. The previously certificated SRP 500/230kV line is simulated in the center of the photo and would be constructed prior to or concurrent with the Applicant's Project.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: West-southwest

Weather Conditions: Sunny with scattered clouds

Simulated Components:

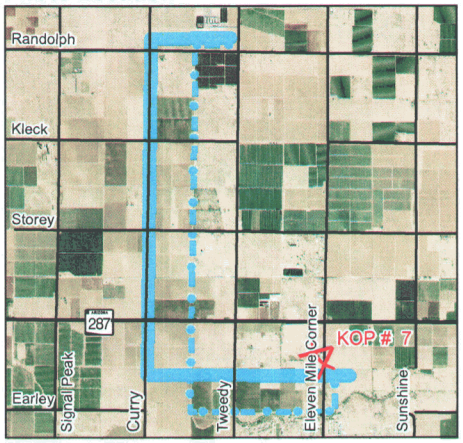
- Double-circuit 230kV with Double-circuit 69kV under-build, 150' tall, 900' spans
- SRP 500/230 structure, 160' tall, 900' spans
- SRP route centerline is 50' from the half-section and the Project centerline is 60' from Earley Road

**Figure E-11**

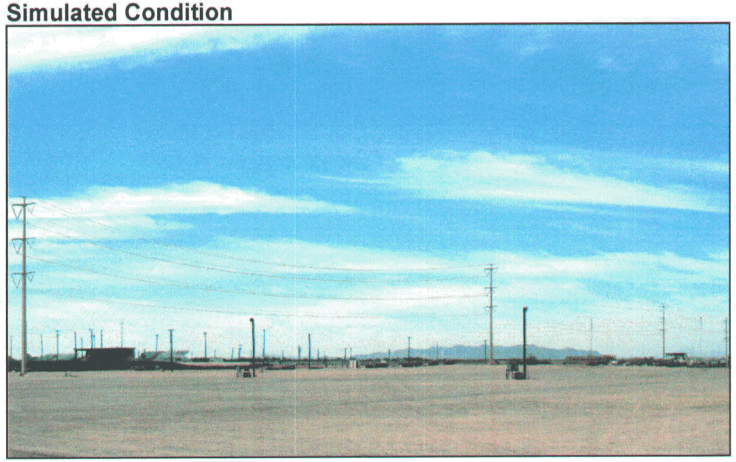
## Existing Condition

KOP 7 is located at the northwest corner of the southern exhibit hall at the Pinal County Fairgrounds. The view is to the southwest. The grand stands associated with the race track on the southern portion of the Fairgrounds are visible in the mid-ground on the left. Casa Grande Mountains are visible in the background on the right.

## Photo Location




## Simulated Condition



Simulation of a 230kV double-circuit line with double-circuit 69kV under-build along the western and southern property boundaries of the Pinal County Fairgrounds and located outside the property. The previously certificated SRP 500/230kV line is simulated in the center of the photo and would be constructed prior to or concurrent with the Applicant's Project.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: West-southwest

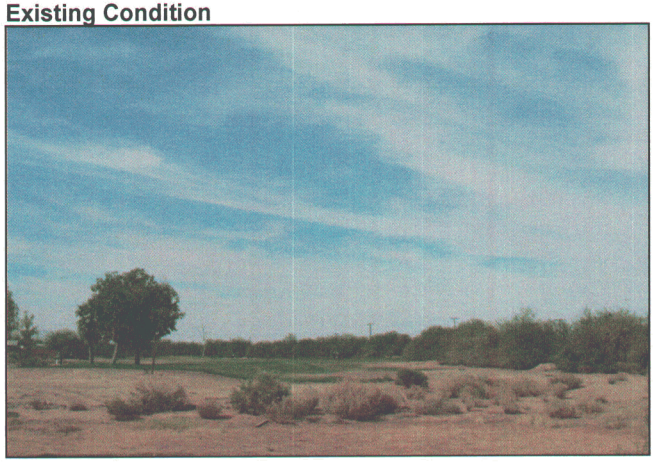
Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 150' tall, 900' spans
- SRP 500/230 structure, 160' tall, 900' spans
- SRP route centerline is 50' from the half-section and the Project centerline is 30' outside the Fairgrounds property line

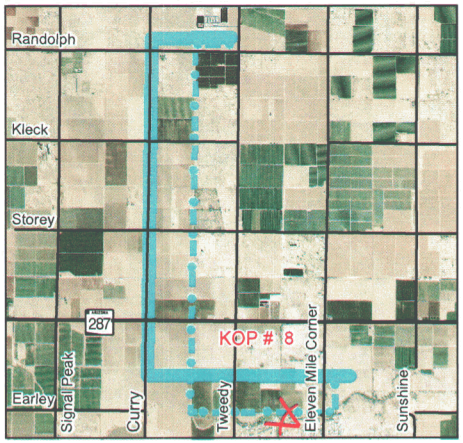
**Figure E-12**

## Existing Condition



KOP 8 is a view of to the west-northwest from the western end of West Fairway Cove Drive in the Tierra Grande development. A portion of the Tierra Grande Golf Course is visible in the center of the photo. Native vegetation along the south side of the Casa Grande Canal is also visible in the foreground, partially obscuring the existing 12kV distribution line along Earley Road.

## Photo Location




## Simulated Condition

Due to existing vegetation along the south side of the Casa Grande Canal, neither the Preferred Route, nor the SRP line would be visible from KOP 8.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: West-southwest

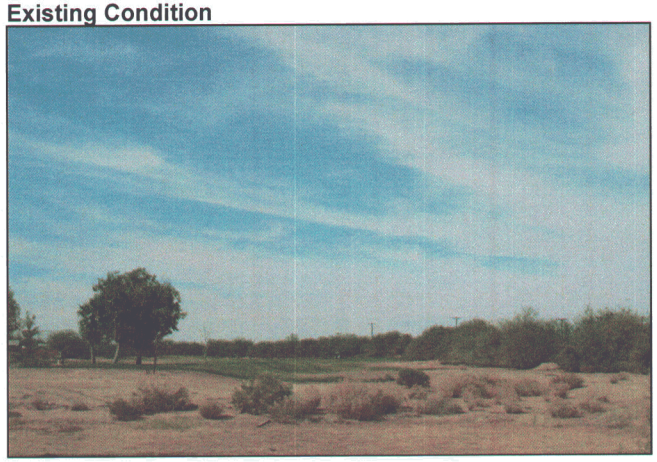
Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 150' tall, 900' spans
- SRP 500/230 structure, 160' tall, 900' spans
- SRP route centerline is 50' from the half-section and the Project centerline is 115' from the SRP centerline

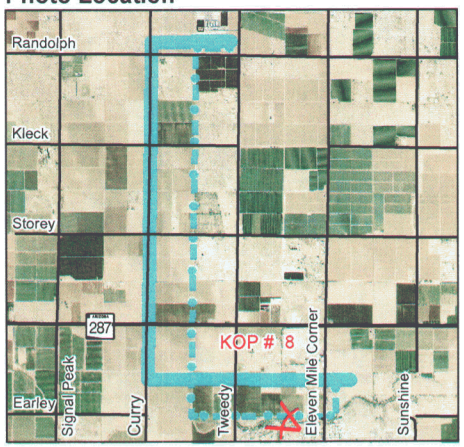
**Figure E-13**

## Existing Condition

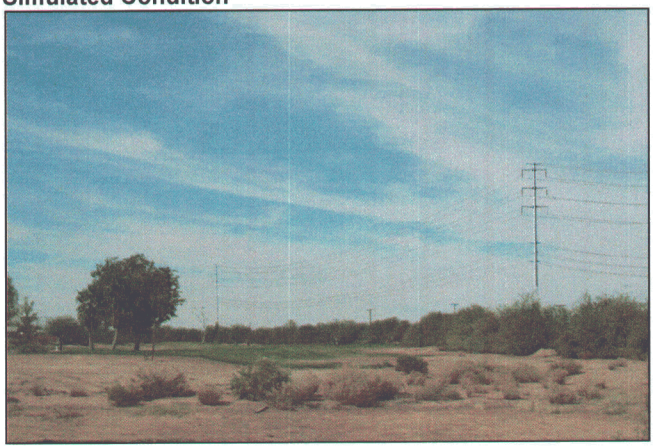


KOP 8 is a view of to the west-northwest from the western end of West Fairway Cove Drive in the Tierra Grande development. A portion of the Tierra Grande Golf Course is visible in the center of the photo. Native vegetation along the south side of the Casa Grande Canal is also visible in the foreground, partially obscuring the existing 12kV distribution line along Earley Road.

## Photo Location




## Simulated Condition



Simulation of a 230kV double-circuit line with double-circuit 69kV under-build. The simulation is of the Alternate Route configuration with the new line on the north side of Earley Road and north of the Casa Grande Canal. The new structures would be partially obscured by existing vegetation.

## Photo Information

Date Taken: October 23, 2007

Time Taken: Mid-afternoon

Focal Length: 50mm

Picture Direction: West-northwest

Weather Conditions: Sunny with scattered clouds

Simulated Components:

- Double-circuit 230kV with Double-circuit 69kV under-build, 140' tall, 800' spans
- Route centerline is 50' from Earley Road

**Figure E-14**

# EXHIBIT F
# RECREATIONAL PURPOSES AND ASPECTS

# EXHIBIT F
# RECREATIONAL PURPOSES AND ASPECTS

As stated in Arizona Administrative Code R14-3-219:

> *"State the extent, if any, the proposed site or route will be available to the public for recreational purposes, consistent with safety considerations and regulations, and attach any plans the Applicant may have concerning the development of the recreational aspects of the proposed site or route."*

## Recreational Resources

The existing recreational opportunities within the Project Study Area (PSA) are the Pinal County Fairgrounds, and the Tierra Grande Golf Course. The Wild Planet Paintball facility is also located in the PSA but is designated as commercial land use in **Exhibit A**. The locations of these recreational resources are identified on **Figure F-1** in relation to the Preferred and Alternate Routes.

The Pinal County Fairgrounds are located on approximately 120 acres in Section 25 T6S R7E. The property includes 45,000 square feet of exhibit halls, meeting rooms, and kitchen facilities. There are 50 permanent campsites, recreational vehicle (RV) hookups, and more than 900 portable sites available on the property. The facility is utilized for the Pinal County Fair, the Old Time Fiddler's Festival, public concerts, auto races, weddings, car shows, and livestock shows (Pinal County, 2007a).

The Tierra Grande Golf Course is located south of the Fairgrounds and Earley Road. The nine-hole golf course is open to the general public and located within the existing Tierra Grande development. The entire subdivision occupies approximately 4,500 acres.

The Wild Planet Paintball facility occupies approximately 20 acres of land and is located near the corner of Curry Road and Randolph Road. The facility is open on weekends and by appointment.

The Pinal County Open Space and Trails Master Plan (Pinal County, 2007b) also includes a proposed trail corridor within the PSA. This corridor follows the Juan Bautista de Anza Trail corridor designated by the National Park Service based on historical information. The historic trail was established in 1775 when Juan Bautista de Anza opened lines of emigration between Sonora, Mexico and Alta, California (see **Exhibit E**).

Neither the final route for this trail nor potential dates for development have been determined (Taylor, 2007). As stated in the Pinal County Open Space and Trails Master Plan, the Juan Bautista de Anza Trail, in conjunction with the Central Arizona Project (CAP) Canal and the Arizona Trail, interconnect Pinal, Pima, and Maricopa Counties from the north to west. The trail would generally parallel Curry Road in the southern half of the Preferred Route. Specific impacts would depend on the development objectives and final route of the adopted trail corridor. The Pinal County Trail Plan states that utility corridors should be considered as opportunities for trail corridors (Pinal County, 2007b).

## Potential Effects

### *Preferred Route*

The Preferred Route would cross the proposed trail corridor for a total of approximately 1.0 mile. As identified in the Pinal County Trail Plan, utility corridors are consistent with the plan. The Preferred Route would be adjacent to the western boundary of the Wild Planet Paintball facility, a linear distance of approximately 0.1 mile, and would not impact recreational opportunities.

### *Alternate Route*

The Alternate Route does not intersect the trail corridor. At its closest point, the Alternate Route would be 0.5 mile from the trail, as it is depicted on the Final Master Plan Map in the Pinal County Open Space and Trails Master Plan.

## Northern Corridor Area

There are no recreational opportunities within the Northern Corridor Area.

## Southern Corridor Area

The Pinal County Fairgrounds are located in the northeast corner of the Southern Corridor Area. Siting the Project parallel to the future SRP double-circuit 500/230kV transmission line (Preferred Route) would minimize impacts by sharing right-of-way where possible. Additionally, structures would be matched span for span. Impacts to existing recreational land use and views are described in **Exhibits A** and **E** respectively.

## LIST OF PREPARERS

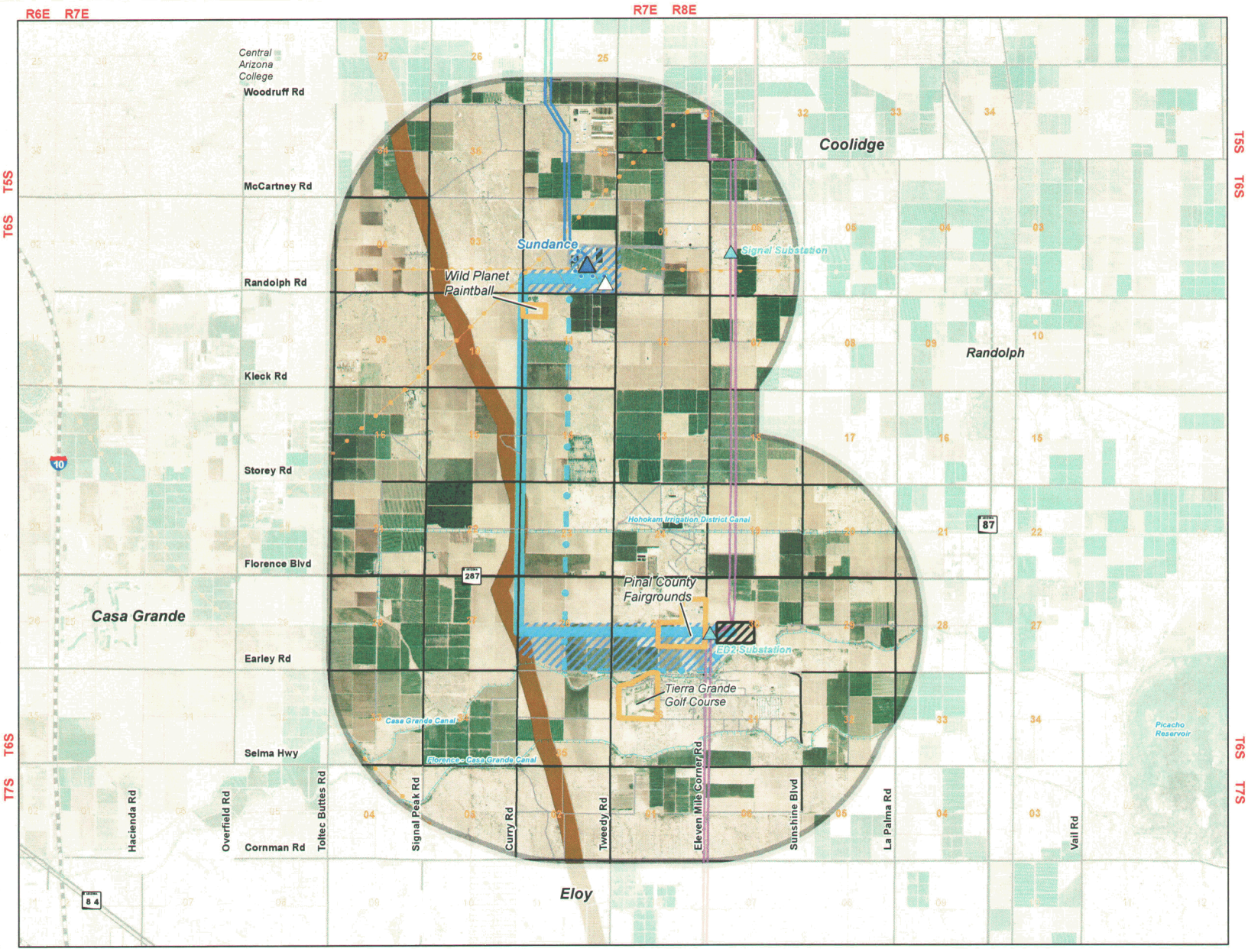
| | | |
|---|---|---|
| Mr. Tyler Rychener | 7 years of Experience | BS, MS |
| Ms. Lindsay Willrick | 1 year of Experience | BS |

## REFERENCES

Pinal County. 2007a. Pinal County Fairgrounds [Web Page] Located at: http://co.pinal.az.us/FairGrounds. Accessed November 8, 2007.

Pinal County. 2007b. Pinal County Open Space and Trails Master Plan. Prepared by Logan Simpson Design Inc.

Taylor, Ken. 2007. Pinal County Planning Department, Senior Planner, Project Manager for Pinal County Open Space and Trails Master Plan. Personal communication [*telephone call with Tyler Rychener on October 10, 2007*].




# Figure F-1

## Recreational Opportunities

***Sundance to Pinal South 230kV Transmission Project***

***Analysis Area: Pinal County, Arizona***

## December 2007

### *Legend*

- Preferred Route
- Tie Line
- Alternate Route
- Requested Corridor for Potential Sub-Routes
- New Substation at Sundance

### *Recreational Resources*

- Proposed Anza Trail from Pinal County (1000 ft Corridor)
- Recreational Area

### *Reference Features*

- Project Study Area
- Canal
- Future Pinal South Substation
- Gas Pipeline
- Sundance Generating Facility
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

N

Scale: 1:62,500

0 0.25 0.5 0.75 1 Miles

Data Sources

ARCADIS, 2007

Aerial Photo - May 2007

APS

# EXHIBIT G
## CONCEPTS OF TYPICAL FACILITIES

# EXHIBIT G
# CONCEPTS OF TYPICAL FACILITIES

As stated in Arizona Administrative Code R14-3-219:

*"Attach any artist's or architect's conception of the proposed plant or transmission line structures and switchyards, which Applicant believes may be informative to the Committee."*

This Exhibit includes figures illustrating the possible structure types that may be used for the Project.

| | |
|---|---|
| FIGURE G-1 | Single-circuit 230kV with Double-circuit 69kV Underbuild |
| FIGURE G-2 | Double-circuit 230kV with Double-circuit 69kV Underbuild |
| FIGURE G-3 | Double-circuit 230kV Single Pole Turning Structure with Double-circuit 69kV Underbuild |
| FIGURE G-4 | Single-circuit 230kV H-Frame Structure |

Figure G-: 1 Single-circuit 230kV with Double-circuit 69kV Underbuild

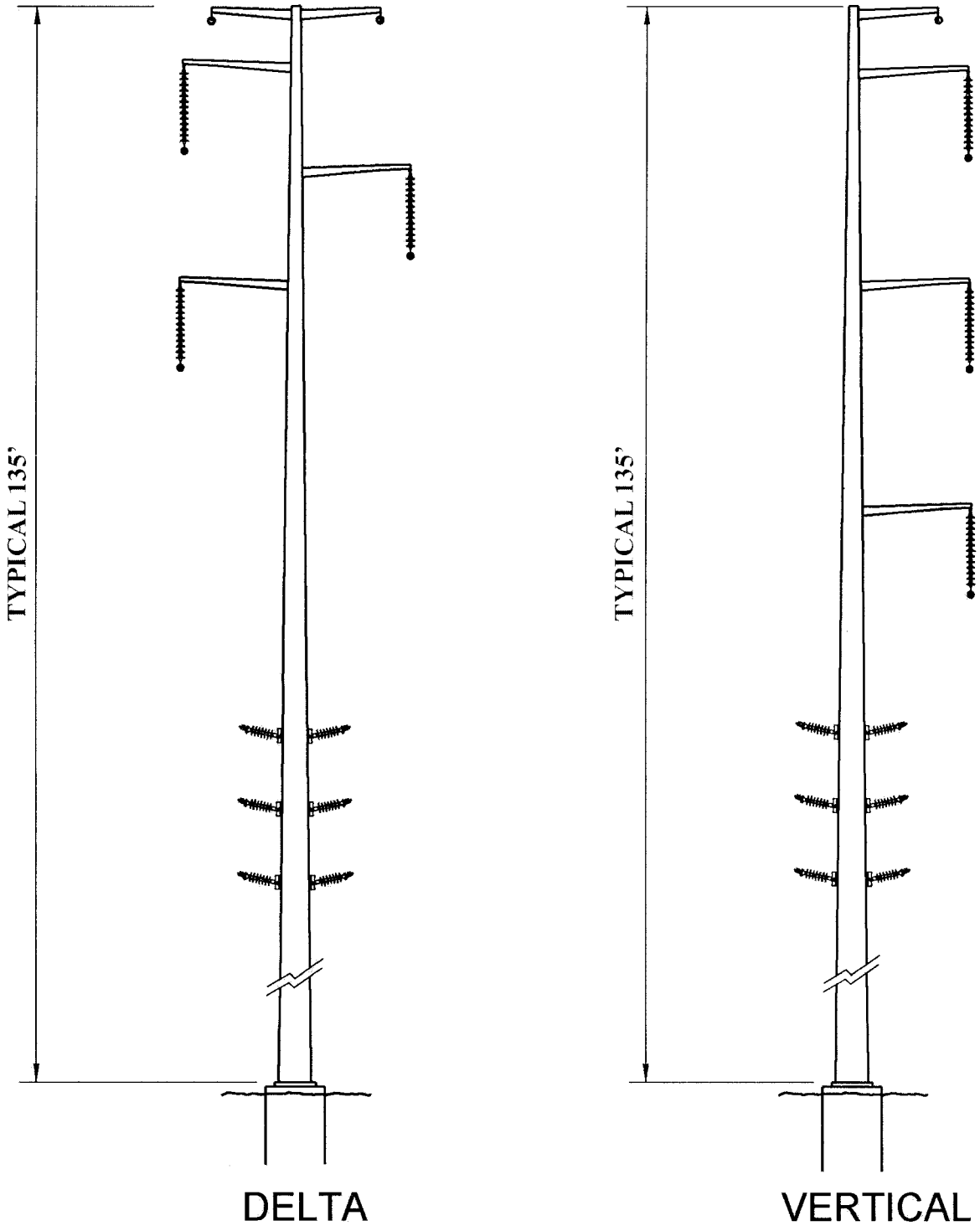


Figure G-2 Double-circuit 230kV with Double-circuit 69kV Underbuild

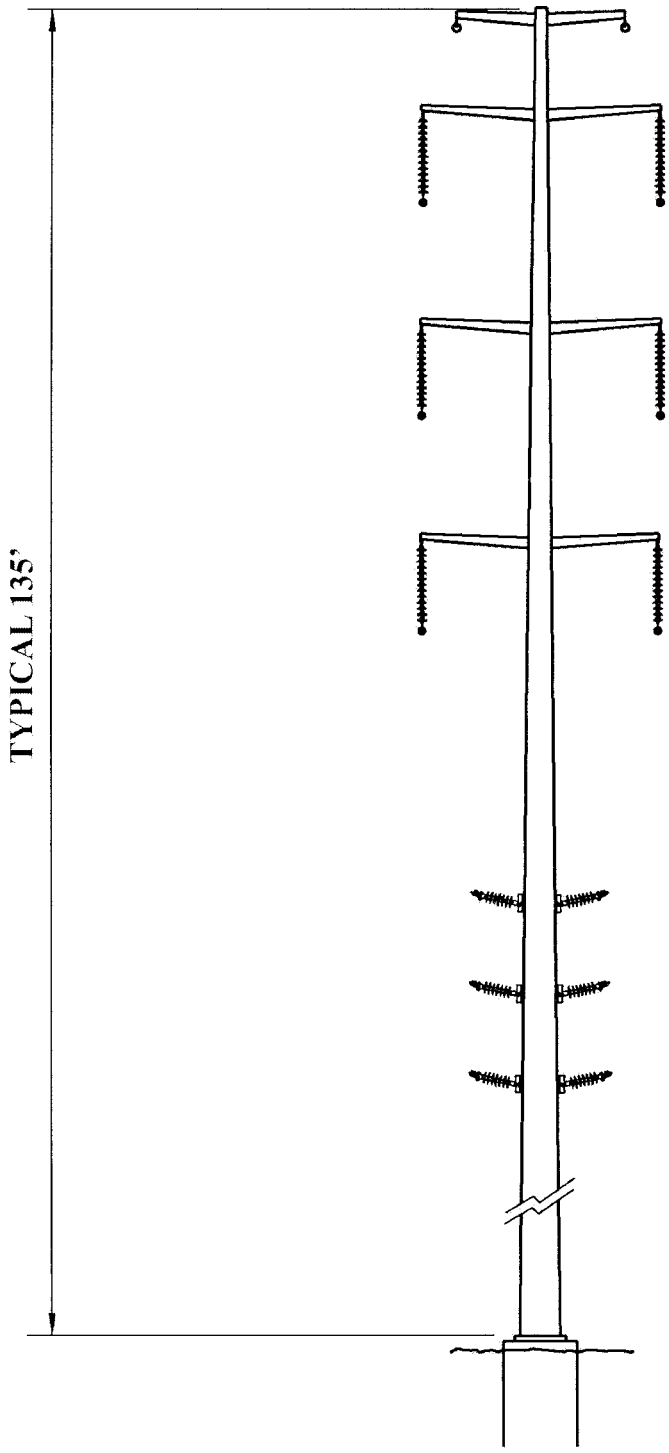


Figure G-3: Double-circuit 230kV Single Pole Turning Structure with Double-circuit 69kV Underbuild

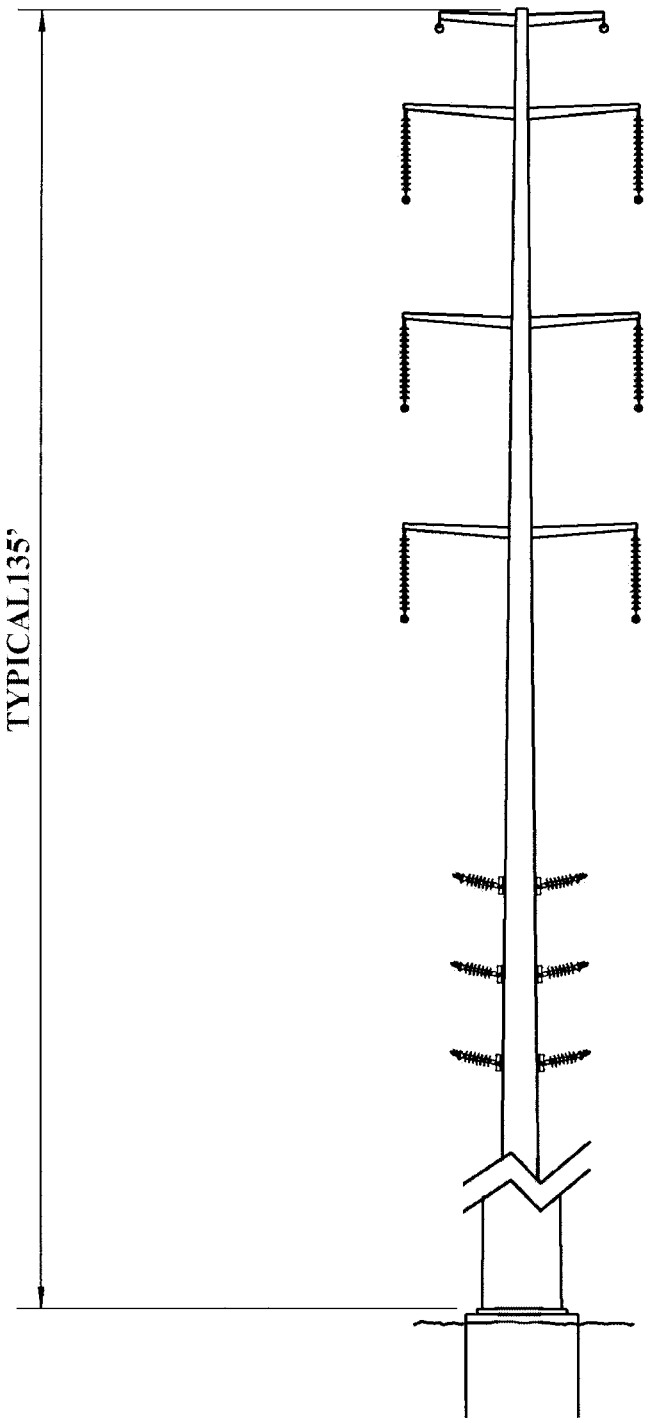
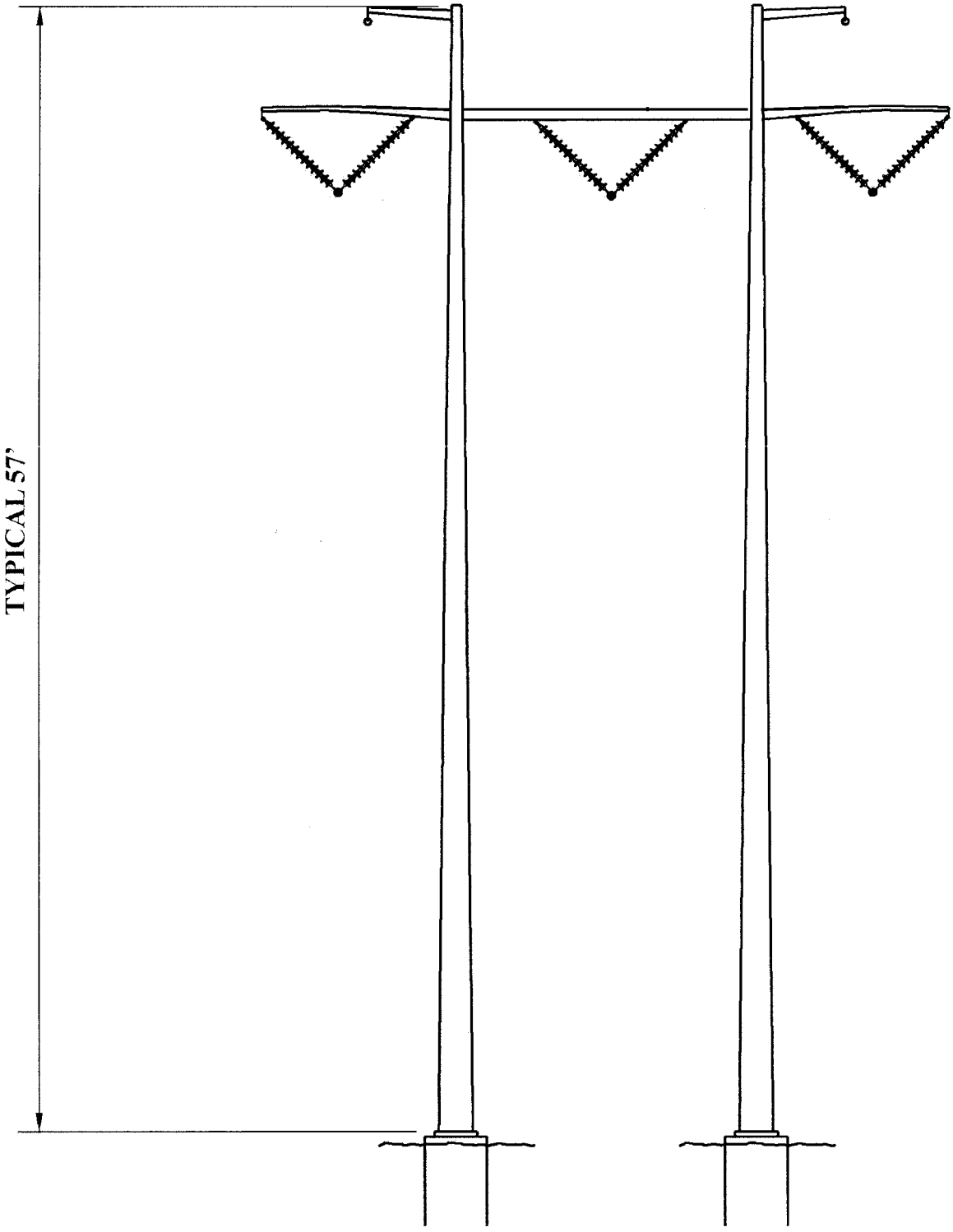


Figure G-4: Single-circuit 230kV H-Frame Structure



# EXHIBIT H
## EXISTING PLANS

# EXHIBIT H
# EXISTING PLANS

As stated in Arizona Administrative Code R14-3-219:

> *"To the extent Applicant is able to determine, state the existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site or route."*

The Project Study Area (PSA) has numerous types of planned projects. These include Planned Area Developments (PADs), transportation projects, and utility projects. These planned projects are identified in **Figure H-1** and are discussed below.

## Planned Area Developments (PADs)

PADs were identified through: Planning Workshops; Planning and Zoning meeting minutes for Pinal County, Coolidge, and Casa Grande; conversations with municipal planning departments; and through comments provided during the Project at Open Houses. PADs were differentiated into three categories based on their status in the permitting process. These categories were:

- Plat Approved PAD – Plat plan approved by the appropriate planning jurisdiction;
- Plat Submitted PAD – Tentative or final plat plan submitted to appropriate planning jurisdiction;
- PAD Submitted – PAD request submitted to appropriate planning jurisdiction; and,

A fourth category was identified as "Potential Future Development" to identify areas where. no formal PAD request had been submitted to the planning jurisdiction; however, public comment indicated the potential for future development.

A map of the PADs within the PSA color coded by category is presented in **Figure H-2.**

## Transportation

Regional transportation plans within the PSA that may be relevant to the Project have been developed by the Maricopa Association of Governments (2003) and the Pinal County Public Works Department (2007). Existing plans within the PSA include the designation of Macrae Road northeast of Sundance as a new arterial and the widening of Bartlett Road between Eleven Mile Corner Road and Skousen Road. During Planning Workshops, planners identified potential road improvements in the PSA that should be considered when siting transmission lines along section and half-section lines.

## Utilities

Future utility plans within the PSA include the future SRP double-circuit 500/230kV transmission line and the proposed Transwestern Phoenix lateral gas pipeline. The future SRP transmission line was certificated by the Arizona Corporation Commission (ACC) in Decision #68093. Within the PSA, this line will follow Earley Road to Curry Road, turn north along Curry Road, and turn

east along the half-section line between Earley Road and State Route (SR) 287. The line then travels east past the Pinal County Fairgrounds to the Pinal South Substation and continues along the half-section line out of the PSA. The proposed Transwestern gas pipeline will parallel the existing EPNG pipeline that runs east to west across the PSA, 1/4 mile north of Randolph Road.

## Potential Effects

### *Preferred Route*

#### *Planned Area Developments (PADs)*

The Preferred Route crosses one Plat Submitted PAD and two Potential Future Developments. The Preferred Route crosses a Potential Future Development, which occupies the southern half of the southeast ¼ of Section 3, T6S R7E, where the route turns south along the Curry Road alignment.

Between Kleck Road and SR 287, the Preferred Route crosses property which occupies portions of Sections 10, 14, 15, 22, 23, and 26, T6S R7E. In October 2007, the landowner notified the Applicant of their plans to develop this land; but no PAD application has been filed. Approximately 2.25 miles of the Preferred Route either cross or are adjacent to this property.

South of SR 287, the Preferred Route crosses a PAD which occupies portions of Sections 26, 27, 28, 32, 33, and 34, T6S R7E and Sections 3, 4, and 5, T7S R7E. The Pinal County Planning and Zoning Commission recommended approval of the PAD on December 16, 2004 (case #PZ-PD-030-04); however, a decision was not determined as of the filing of this Application. Approximately 1.0 mile of the Preferred Route either crosses or is adjacent to this property.

#### *Transportation*

The Applicant did not identify any transportation plans that would be impacted by the Preferred Route.

#### *Utilities*

The Preferred Route would parallel both the Transwestern gas pipeline and the future SRP transmission line. The Applicant will work with both Transwestern and SRP to ensure that the new line is constructed at an appropriate distance from the other facilities.

### *Alternate Route*

#### *PADs*

The Alternate Route crosses two Plat Submitted PADs and three Potential Future Development areas. Approximately 1/2 mile south of Randolph Road, the Alternate Route crosses a PAD in the southern ¼ of the northeast ¼ of Section 11, T6S R7E. This PAD filed for tentative plat approval with the Pinal County Planning and Zoning Commission on January 18, 2007 (case #S-032-06). Approximately 0.1 mile of the Alternate Route is adjacent to this property.

Immediately south of the previously discussed PAD, are two Potential Future Developments; one north of Kleck Road, and one south of Kleck Road. PAD applications have not been submitted for either property. Approximately 0.5 mile of the Alternate Route is adjacent to the property northwest of Tweedy and Kleck Roads and an additional 0.5 mile is adjacent to the property to the south of Kleck Road.

Immediately south of these properties to the half-section line north of Earley Road, the Alternate Route crosses portions of the Potential Future Development area which was discussed under the Preferred Route section. Approximately 2.0 miles of the Alternate Route cross or are adjacent to this property.

The Alternate Route is also adjacent to the Plat Submitted PAD that was discussed in the Preferred Route section and that is located near SR 287 and Curry Road. Approximately 0.5 mile of the Alternate Route is adjacent to this property.

### *Transportation*

The Applicant did not identify any transportation plans that would be impacted by the Alternate Route.

### *Utilities*

Special consideration would be required for the crossing of the future SRP transmission line. The Applicant would work with SRP to engineer this crossing to the satisfaction of both utilities.

## *Northern Corridor Area*

Plans within the Northern Corridor Area include the Transwestern gas pipeline located along the northern edge of the corridor and a PAD located along the western edge of the corridor.

## *Southern Corridor Area*

Plans in the Southern Corridor Area include the future SRP transmission line, the previously discussed Plat Submitted PAD, and a Potential Future Development. Positioning the Project parallel with the future SRP transmission line would reduce impacts to all three plans by sharing right-of-way and matching spans with the future SRP transmission line to the extent possible and matching spans with the future SRP transmission line.

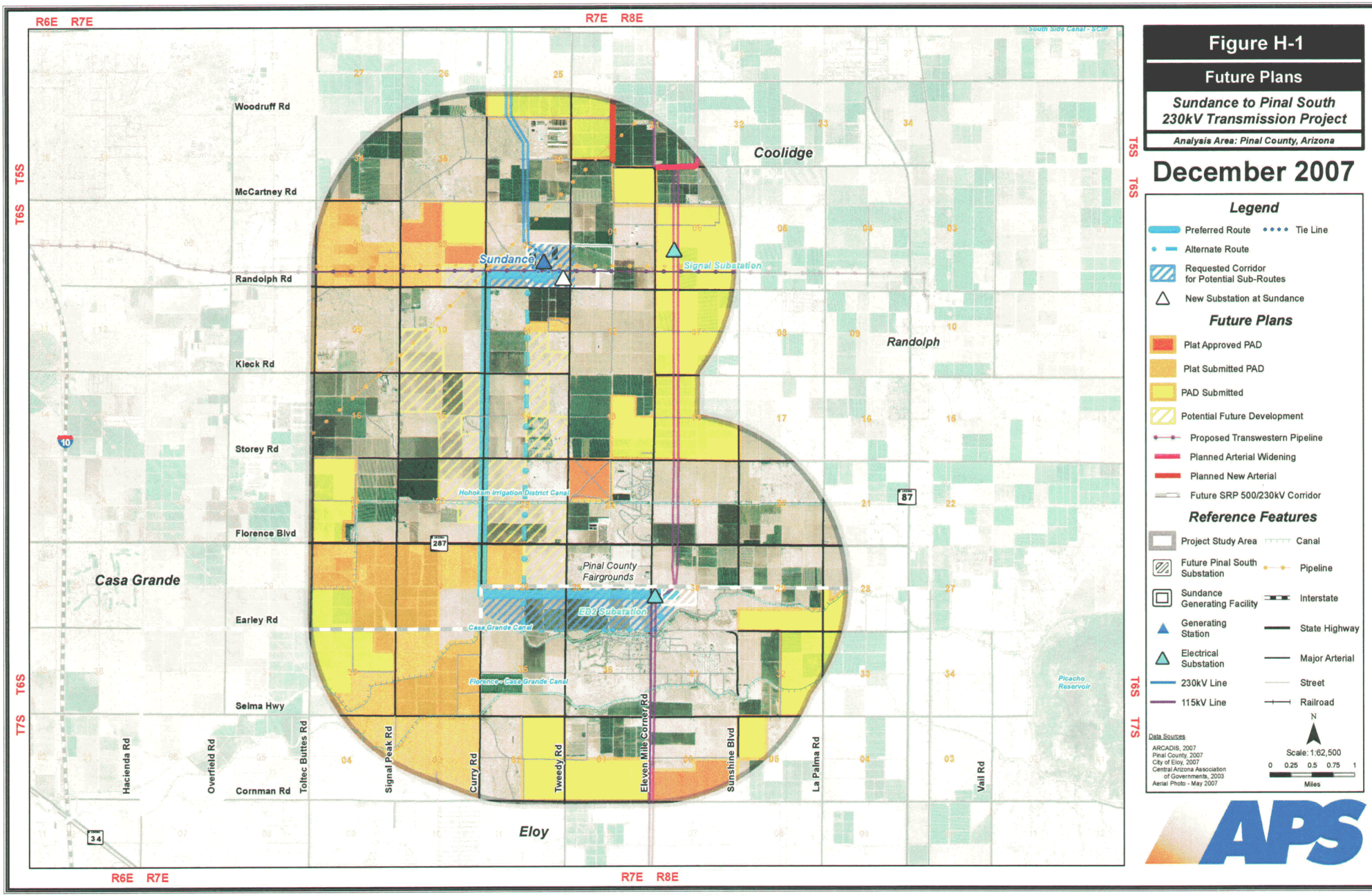
## LIST OF PREPARERS

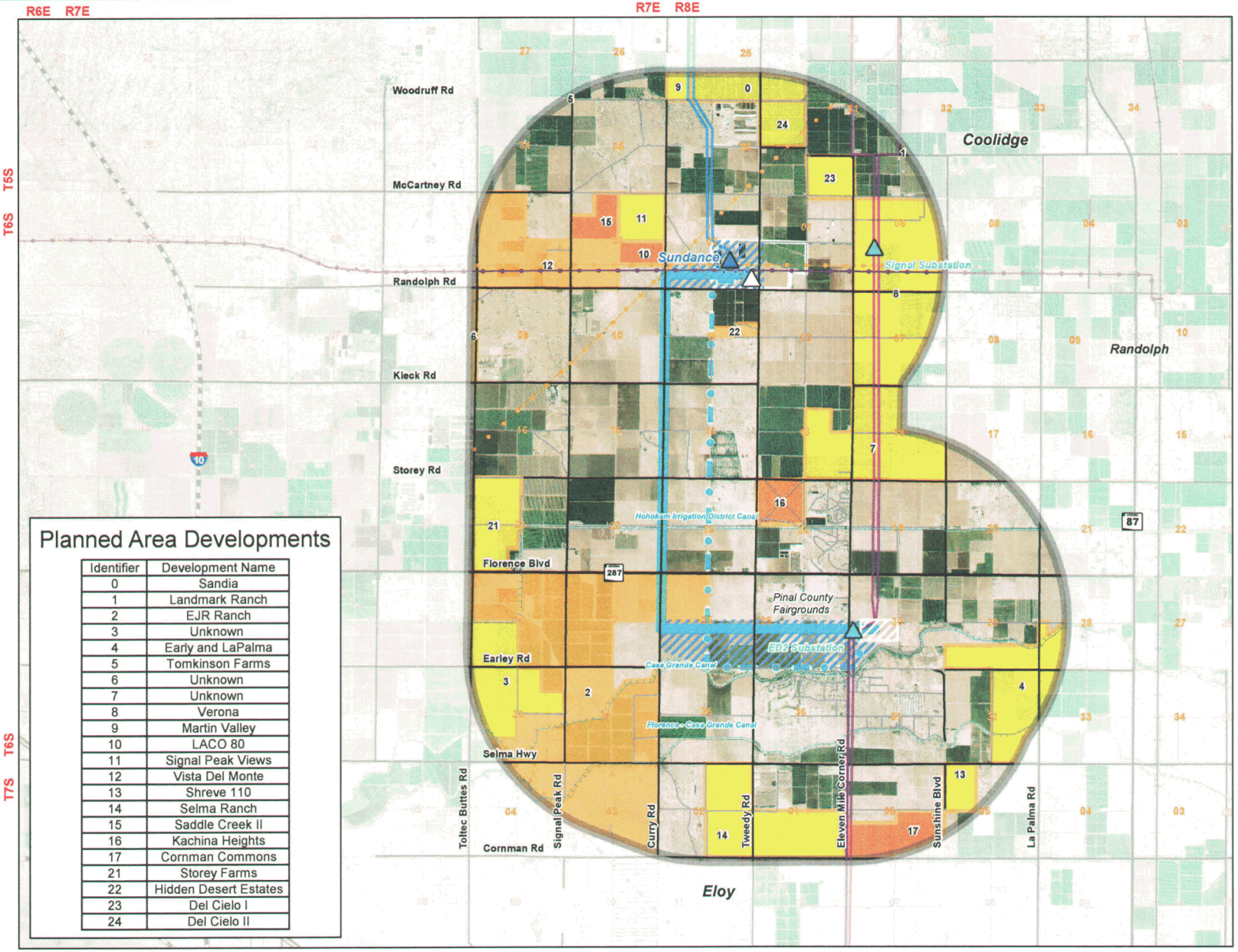
| | | |
|---|---|---|
| Mrs. Kenda Pollio | 17 years of Experience | BS, MS, AICP |
| Mr. Tyler Rychener | 7 years of Experience | BS, MS |

## REFERENCES

Maricopa Association of Governments. 2003. Southeast Maricopa / Northern Pinal County Area Transportation Study Final Report. Prepared by Parsons Brinkerhoff.

Pinal County Public Works Department. 2007. Transportation Advisory Committee 5 Year Transportation Plan. [Web Page] Located at: http://co.pinal.az.us/PubWorks/Eng_Planning/FY2007012%20Transp%20Plan_080107.pdf. Accessed November 8, 2007.


R6E R7E
R7E R8E
T5S
T6S
T7S
Woodruff Rd
McCartney Rd
Randolph Rd
Kleck Rd
Storey Rd
Florence Blvd
Earley Rd
Selma Hwy
Cornman Rd
Hacienda Rd
Overfield Rd
Toltec Buttes Rd
Signal Peak Rd
Curry Rd
Tweedy Rd
Eleven Mile Corner Rd
Sunshine Blvd
La Palma Rd
Vail Rd
Coolidge
Randolph
Casa Grande
Eloy
Sundance
Signal Substation
Hohokam Irrigation District Canal
Pinal County Fairgrounds
EDZ Substation
Casa Grande Canal
Florence - Casa Grande Canal
South Side Canal - SCIP
Picacho Reservoir
10
87
287
34
Figure H-1
Future Plans
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
December 2007
Legend
Preferred Route
Tie Line
Alternate Route
Requested Corridor for Potential Sub-Routes
New Substation at Sundance
Future Plans
Plat Approved PAD
Plat Submitted PAD
PAD Submitted
Potential Future Development
Proposed Transwestern Pipeline
Planned Arterial Widening
Planned New Arterial
Future SRP 500/230kV Corridor
Reference Features
Project Study Area
Canal
Future Pinal South Substation
Pipeline
Sundance Generating Facility
Interstate
Generating Station
State Highway
Electrical Substation
Major Arterial
230kV Line
Street
115kV Line
Railroad
Data Sources
ARCADIS, 2007
Pinal County, 2007
City of Eloy, 2007
Central Arizona Association of Governments, 2003
Aerial Photo - May 2007
N
Scale: 1:62,500
0 0.25 0.5 0.75 1
Miles
APS




## Planned Area Developments

| Identifier | Development Name |
|---|---|
| 0 | Sandia |
| 1 | Landmark Ranch |
| 2 | EJR Ranch |
| 3 | Unknown |
| 4 | Early and LaPalma |
| 5 | Tomkinson Farms |
| 6 | Unknown |
| 7 | Unknown |
| 8 | Verona |
| 9 | Martin Valley |
| 10 | LACO 80 |
| 11 | Signal Peak Views |
| 12 | Vista Del Monte |
| 13 | Shreve 110 |
| 14 | Selma Ranch |
| 15 | Saddle Creek II |
| 16 | Kachina Heights |
| 17 | Cornman Commons |
| 21 | Storey Farms |
| 22 | Hidden Desert Estates |
| 23 | Del Cielo I |
| 24 | Del Cielo II |

# Figure H-2

## Planned Area Developments

***Sundance to Pinal South 230kV Transmission Project***

***Analysis Area: Pinal County, Arizona***

# December 2007

### *Legend*

- Preferred Route
- Tie Line
- Alternate Route
- Requested Corridor for Potential Sub-Routes
- New Substation at Sundance

### *Future Plans*

- Plat Approved PAD
- Plat Submitted PAD
- PAD Submitted
- Proposed Transwestern Pipeline

### *Reference Features*

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Sundance Generating Facility
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

Data Sources
ARCADIS, 2007
Pinal County, 2007
City of Eloy, 2007
Central Arizona Association of Governments, 2003
Aerial Photo - May 2007

N

Scale: 1:62,500

0 0.25 0.5 0.75 1
Miles

APS

# EXHIBIT I
# ANTICIPATED NOISE/INTERFERENCE WITH COMMUNICATION SIGNALS

# EXHIBIT I
# ANTICIPATED NOISE/INTERFERENCE WITH COMMUNICATION SIGNALS

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

"*Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities.*"

Certain electromagnetic effects are inherently associated with overhead transmission of electrical power at high voltages. These effects are produced by the electric and magnetic fields of the transmission line with one of the primary effects being corona discharge. Corona effects are manifest as audible noise, radio interference, and television interference. These particular effects will be minimized by transmission line location, transmission line design, and construction practices.

## Corona

Corona is a luminous discharge due to ionization of the air surrounding a conductor and is caused by a voltage gradient, which exceeds the breakdown strength of air. Corona is a function of the voltage gradient at the conductor surface. This voltage gradient is controlled by engineering design and is a function of voltage, phase spacing, height of conductors above ground, phase geometry, and meteorological conditions. In particular, irregularities on the surface of the conductor, such as nicks, scratches, contamination, insects, and water droplets, increase the amount of corona discharge. Consequently, during periods of rain and foul weather, corona discharges increase. For the expected transmission design for this Project, the maximum calculated voltage gradient at the conductor surface is 11.0 kilovolt root mean square per centimeter (kVrms/cm). For comparison purposes, the breakdown strength of air is 21.1 kVrms/cm at 25 degrees Celsius and 76 millimeters (mm) barometric pressure.

Corona represents power loss on the transmission line and creates transmission line noise. Successful operation of 230kV lines with similar gradients indicates that this transmission line will not create adverse corona effects.

## Transmission Line Audible Noise

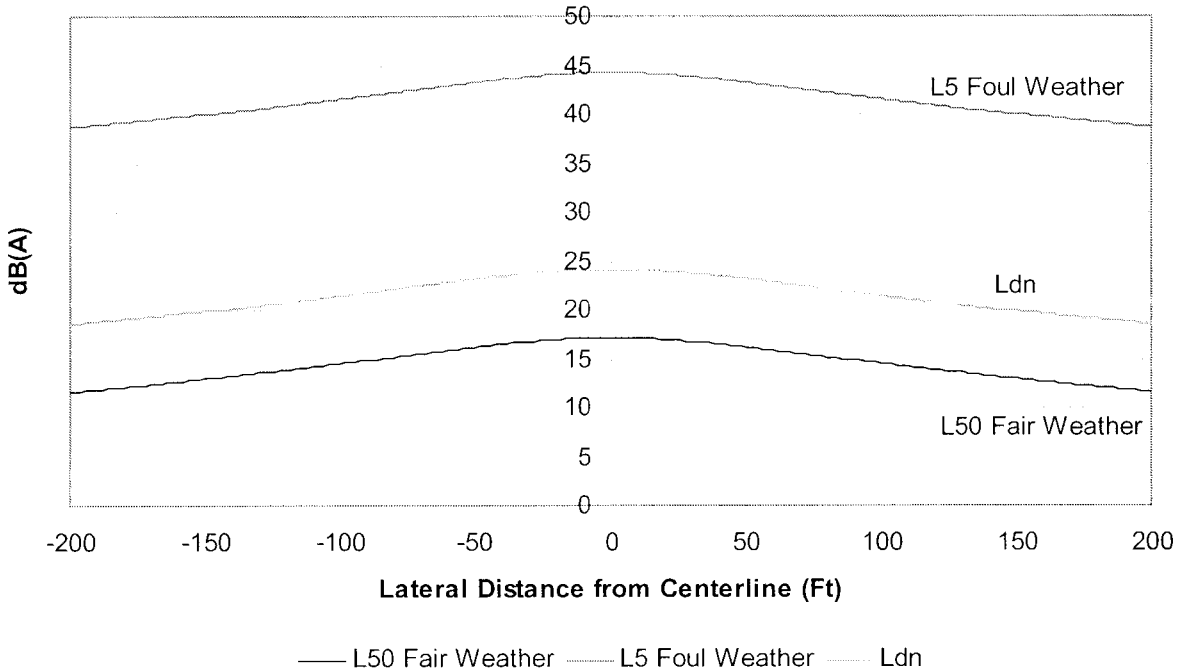
Audible noise (AN) is created by corona discharge along the transmission line. As a result, the amount of AN is directly related to the amount of corona, which is in turn affected by meteorological conditions (most notably rain). Transmission line AN is categorized into broadband high-frequency sounds, which can be described as hissing or sputtering, and low frequency tones, which are best described as humming sounds.

The highest calculated AN levels for the transmission line design during foul weather (rain) may reach 43.3 decibels (dB) measured on an "A" weighted scale at the edge of the right-of-way (ROW). This noise level will occur during heavy rain (L5 – Rain), the sound of which will serve to mask the noise. During moderate rain and wet conductor conditions the noise level may reach 29.3 dB(A) (L50 – Rain). During fair weather, the AN at the edge of the ROW is significantly reduced with a maximum value of 16.2 dB(A) (L50 – Fair). **Plot 1** shows the L5 foul weather and L50 fair weather expected AN profiles for the line. The average day/night calculated noise level profile (Ldn) is also shown.

Due to the expected low AN levels, the line noise will normally be inaudible at the edge of the ROW during fair weather. Considering the relatively low frequency of foul weather, the location of the line with respect to neighboring land uses, and the calculated AN levels during foul weather, no serious AN problems are expected even during foul weather.

**Plot 1: Sundance - Pinal South Audible Noise Plots**

Case 2-06: Double Circuit 230 kV Line, Double Circuit 69 kV Line Underbuilt



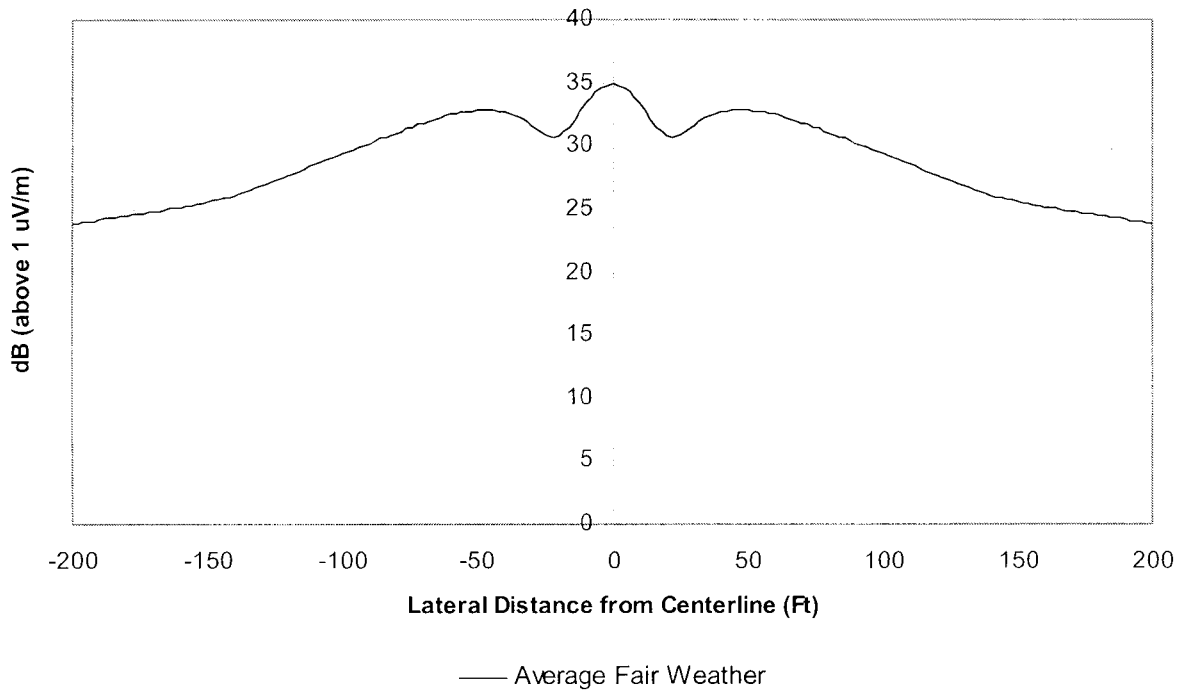

## Radio Interference

Radio interference is the reception of spurious energy not generated by the transmitting station. In general, this energy affects the amplitude modulated (AM) radio band but not the frequency modulated (FM) radio band. Transmission line radio interference is caused by corona and by gap discharges. Gap discharges are electrical discharges across a small gap with the most common cause being loose hardware. Gap discharges comprise a large percentage of all interference problems and are easily remedied. Experience shows that gap discharges are not a problem with steel structures, but are more prevalent with wood structures due to the expansion and contraction of the wood causing hardware to loosen.

Radio interference impacts caused by corona depend on various factors including distance from the line to the receiver, radio signal strength, ambient radio noise level, receiving antenna orientation, and weather conditions. A common practice for determining the expected level of radio interference is to calculate the transmission line radio interference at a frequency of 1 megahertz (MHz).

Comparison of the calculated radio noise levels for the transmission line design shows a fair weather radio noise level of 28.2 dB (above 1 microvolts per meter [μV/m]) at a distance of 100 feet from the outside phase (**Plot 2**). Experience shows that there are generally no problems with radio interference when calculated noise interference levels are below 40 dB (above 1 μV/m) at 100 feet from the outside phase (Institute of Electrical and Electronic Engineers [IEEE], 1980). During inclement weather, transmission line noise levels increase to levels in the range of 49.8 dB, above 1 μV/m 100 feet from the outside phase. Even though radio reception quality is reduced during periods of rainy weather, the impact is expected to be minimal due to the low frequency of inclement weather. Analysis of other transmission lines of similar design traversing similar terrain has shown radio interference to be minimal.

Plot 2: Sundance - Pinal South Fair Weather Radio Noise Profile




## Television Interference

Traditional television broadcasts occur in three ranges:

- 54 to 88 MHz (Channels 2 to 6)
- 174 to 216 MHz (Channels 7 to 13)
- 470 to 890 MHz (Channels 14 to 83)

Transmission line interference reduces with increasing frequency above 100 MHz. Consequently, television interference (TVI) only affects the lower VHF band (Channels 2 through 6) and no interference

will be experienced in the upper very high frequency (VHF) (Channels 7 through 13) and ultra high frequency (UHF) bands (Channels 14 through 83) even during foul weather. Television interference noise levels can potentially affect AM television band signals; therefore, the picture quality, which is AM, can be affected, but not the sound quality as these signals are FM.

Where transmission line generated television interference has been found to be a problem, it is generally the result of induced voltage on fences, conductors, and hardware, which are adjacent to the ROW. In these situations, the interference can be easily corrected by grounding the objects or by realigning, relocating, or providing higher gain television antennas. As in the past, the Applicant is prepared to assist affected parties in resolving TVI problems resulting from the operation of our facilities. However, because all analog television broadcasts will cease in 2009 and will be replaced with digital broadcasts, TVI problems are expected to cease being an issue because digital television does not experience the interference problems that analog television does.

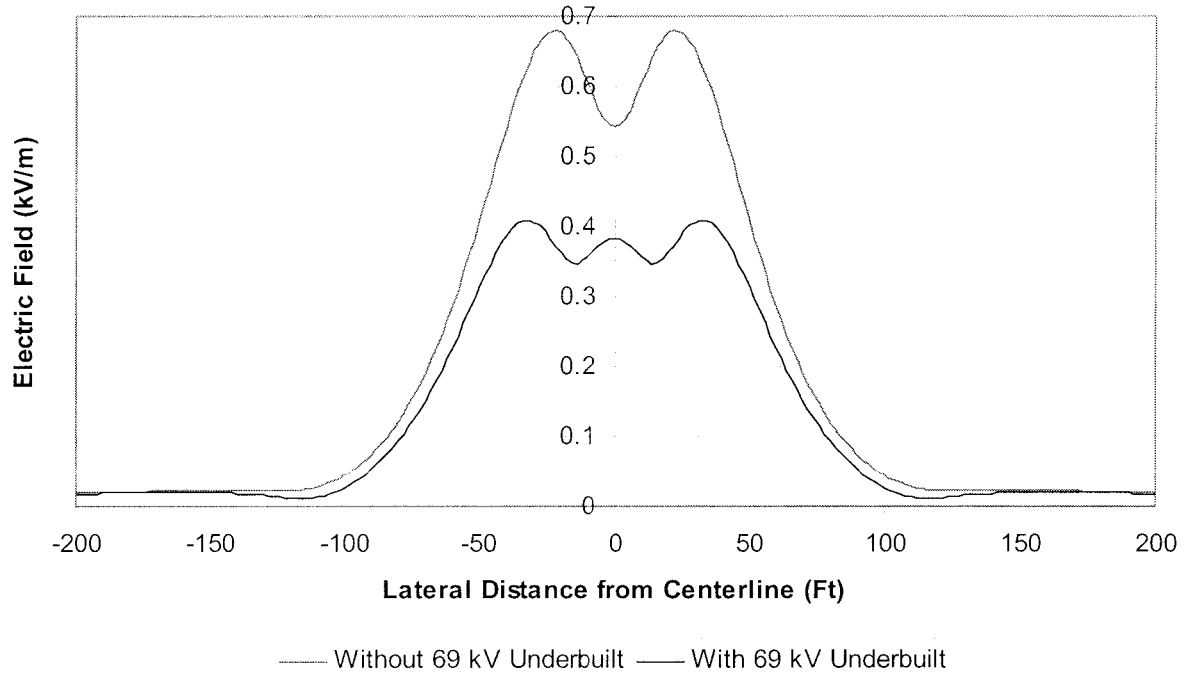
TVI levels for this line are expected to be consistent with values calculated for other 230kV transmission lines which traverse similar terrain. No objectionable noise or interference with television signals are anticipated.

## Electrical and Magnetic Field Effects

Electric and magnetic field or electromagnetic field (EMF) effects are primarily electric and magnetic induction effects whereby voltages and currents are induced in nearby conductive objects by the voltage and current on the line.

Electrostatic induction is the capacitive coupling of a voltage onto insulated objects near the transmission line. The induced voltage is a function of the electric field associated with the line, which in turn is a function of the line voltage. Other factors which affect the level of induced voltage include insulation, object orientation and dimensions, and line height. When a person reaches to touch a conducting object which has been charged by electrostatic induction, a spark discharge will occur similar to that experienced by a person reaching for a doorknob after walking on a nylon carpet with the difference that sparking will continue to occur as long as the person's hand remains close enough to the object. Based on computer modeling, the electric fields associated with the proposed transmission lines will be consistent with the electric field values of other similarly configured 230kV transmission lines in the state. The transmission line will be designed to limit the value of short-circuit current from a conductive object to 5 milliamps (mA) or below, which is the maximum design limit permitted by the National Electrical Safety Code. **Plot 3** shows the expected electric field for the line with phase optimization modeled. Note that the expected electric field is significantly below the 5 kV/m limit outside the ROW and 10 kV/m inside the ROW as specified by IEEE Standards (IEEE C95.6). Addition of underbuilt 69kV sub-transmission lines (as is expected) further reduces the electric field.

**Plot 3: Electric Field Plot, Sundance - Pinal South Line**




The magnetic fields associated with transmission lines can also induce voltages and currents in conductive objects (e.g., fences, communication lines, railroads, pipelines, etc.), which are close to and run parallel to the transmission line. The magnetic field level is a function of the current level in the transmission line, which in turn is a function of the line loading.

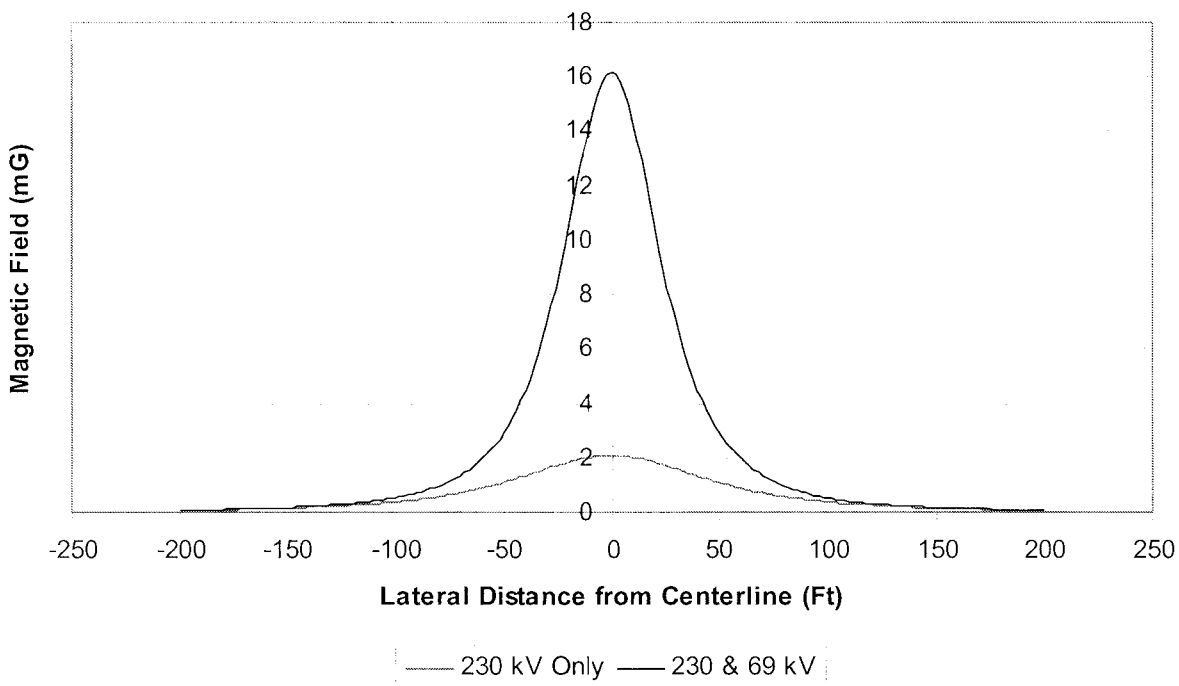
In addition to the EMF induction issues described above, scientific and public interest regarding potential health effects of human exposure to 60 Hz EMFs has led to extensive study for more than 20 years. One recent example of such research was a study completed in 2007 by the Word Health Organization (WHO, 2007). The report, titled "Extremely Low Frequency Fields Environmental Health Criteria Monograph No. 238," details the results of a health risk assessment of extremely low frequency (ELF) EMF up to 100 kiloHertz (kHz). The WHO study found that scientific evidence demonstrating a consistent pattern of increased risk for childhood leukemia due to chronic low-intensity power frequency magnetic field exposure is based on epidemiological studies. The report goes on to state that "Virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF magnetic fields and changes in biological function or disease status."(WHO, 2007) The report concludes that "Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern." The results of the WHO report support previous findings by the National Institute of Environmental Health Science (NIEHS) and International Agency for Research on Cancer (IARC) that the use of electricity does not pose a major unrecognized health danger.

As noted above, the WHO Report did concur with the overall conclusions of the 2002 IARC report on EMFs. The 2002 IARC report did not conclude that power frequency fields present a specific health risk;

however, IARC did state that, with respect to childhood leukemia, power frequency magnetic fields are "possibly carcinogenic to humans." This finding was based on limited human evidence and inadequate evidence in experimental animals (IARC, 2002).

The actual EMFs associated with these power lines will depend on the construction type, the amount of current in the lines, height of the conductors, and other nearby sources of fields. Based on computer modeling of various construction options and operating conditions, the EMFs associated with these lines are comparable to other already existing lines of this voltage in the state. Further, where there are multiple transmission circuits in the same corridor, phase management of the subject line will be utilized to minimize the resulting magnetic fields. **Plot 4** shows the calculated magnetic fields for expected flows on the lines using optimum phasing. **Plot 4** simulation cases were modeled with 75 percent of the expected heavy summer peak flow on the 230kV. Actual flows are expected to be below this value more than 90 percent of the time. Flows on the 69kV sub-transmission lines were modeled at 400 amps each. While there are no electric or magnetic field regulatory limits established in Arizona or at the federal level, the expected peak magnetic field for this project (2 to 16 mG, measured at the centerline of the project as noted in Plot 4), is similar to other power lines of this voltage in Arizona, and for comparison purposes is similar to many household appliances (e.g. a vacuum cleaner, microwave oven and others) at a distance of 2 to 3 feet from the appliance. Plot 4 also shows how quickly the field decreases with distance from the power line.

**Plot 4: Sundance - Pinal South Magnetic Field Plot**




## REFERENCES

Institute of Electrical and Electronic Engineers (IEEE). 1980. "Review of Technical Considerations on Limits to Interference from Power Lines and Stations", IEEE Radio Noise and Corona Subcommittee Report, RI Limits Task Force, Working Group #3, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-99, No. 1, Jan./Feb. 1980, pages 365-388.

IEEE. 2002. C95.6 "IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0 – 3 kHz.".

National Institute of Environmental Health Science (NIEHS). 1999. Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields, National Institute of Environmental Health Sciences, National Institutes of Health, NIH Publication No. 99-4493, May.

International Agency for Research on Cancer (IARC). 2002. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 80, Non-Ionizing Radiation, Part 1: Static and Extremely Low Frequency (ELF) Electric and Magnetic Fields, 2002: Lyon, France.

World Health Organization (WHO). 2007. Extremely Low Frequency Fields Environmental Health Criteria Monograph No. 238. World Health Organization, Geneva, Switzerland, ISBN 978-92-4-157238-5

# EXHIBIT J
## SPECIAL FACTORS

# EXHIBIT J
# SPECIAL FACTORS

As stated in Arizona Administrative Code R14-3-219:

*"Describe any special factors not previously covered herein, which Applicant believes to be relevant to an informed decision on its application."*

## Public Process

The Applicant initiated a public process for this Project which included extensive outreach efforts for the purpose of distributing information and soliciting input from the public and interested stakeholders. The public process was initiated in conjunction with the Project routing study.

The routing study and public process were conducted in two phases as follows:

- Phase I – Project Need, Benefit and Initial Routing Opportunities / Sensitivities and Alternative Developments
- Phase II – Routing Alternatives

A series of briefings and meetings were utilized to engage the stakeholders and the public in the process and were coordinated for each phase described above. The briefings/meetings included:

- Jurisdictional and Stakeholder Briefings
- Planning Workshops
- Open House Meetings

## Additional Public Process Tools

In addition to briefings, workshops, and the Open House meetings, the Project Team worked diligently to provide additional opportunities for members of the public to participate during each phase of the public process. These opportunities included the following:

- Project Newsletters: The Applicant mailed these to all property owners in the Project Study Area (PSA) and compiled an inquiry database for the Project. The Applicant also posted announcements at strategic locations throughout the community.
- Project website: The Applicant maintains a Project website, *www.aps.com/siting,* which includes figures, schedules, comment forms and general Project information.
- Comment forms are available on-line and at public Open Houses.
- A toll-free telephone (1-866-472-4484) to contact the APS Project Manager was established.

- Newspaper announcements regarding the Project and upcoming public Open Houses were placed in the Coolidge Examiner and Casa Grande Dispatch.

## Phase I – Public Process

The goal of the Phase I public process was to introduce the Project to jurisdictional officials and staff, interested stakeholders, and the public. The Applicant presented information about the need and benefits of the Project. Routing opportunities, sensitivities, and potential alternatives were discussed during Phase I of the process.

### *Phase I – Jurisdictional and Stakeholder Briefings*

The focus of the stakeholder briefings was to provide information on the need for the Project and to gain local input. The Applicant met individually with elected officials from Pinal County and the Cities of Casa Grande, Coolidge, and Eloy. In addition, the Applicant attended meetings held by community planning groups including the Pinal County Governmental Alliance, the Central Arizona Economic Development Council, and the Pinal County Fairgrounds. A list of all Project briefings and presentations from Phase I is included in **Exhibit J-1**.

### *Phase I - Planning Workshop*

Following the briefings, the Applicant held a Planning Workshop to coordinate with planning staff from the jurisdictions within the PSA. The Planning Workshop was held on July 10, 2007. During the workshop, the Applicant presented information explaining the Project need as well as anticipated system and regional benefits. The PSA was presented, and participants in the Planning Workshop discussed potential routing Opportunities and Sensitivities. The Applicant also took this opportunity to discuss the development of jurisdictions providing comment on whether or not suggested routes would be consistent with their respective general plans.

Comments received from meeting attendees included initial opinions regarding suitable route options. The Planning Workshop invitation, a list of invitees and attendees, handouts, and presentation figures are included in **Exhibit J-2.**

### *Phase I - Open House Meeting*

The Project team held an Open House for Phase I on August 14, 2007. The Applicant mailed a Project newsletter providing background information to property owners within the PSA as well as inviting them to the Open House. Additionally, Open House announcements were posted at public gathering places (e.g., post offices, community centers and local markets) and on the Project website. Articles about the Project were also published in local newspapers. **Exhibit J-3** includes the Open House invitation, the Project newsletter, the Open House announcement poster, and a summary of comment forms received from the Phase I Open House attendees.

Information on Project need, possible route Opportunities and Sensitivities and the boundaries of the PSA were presented for public input. The Applicant also provided a map of Initial Alternative Alignments. Project team members were available to explain the process and share the results of the Planning Workshop exercise. A Geographic Information System (GIS) station was available for the public to view their own property in relation to Opportunities and Sensitivities in the PSA. There were 14 attendees at the Open House. All of the information available at the Open House

was posted on the Project website immediately following the Open House and remains available for review.

### *Phase II – Public Process*

### *Phase II – Jurisdictional and Stakeholder Briefings*

In Phase II, an additional round of briefings was conducted for elected officials and stakeholder organizations that expressed a desire to remain engaged in the Project. The purpose of these briefings was to share the results of the Phase I briefings and the Open House, and to discuss Phase II. During Phase II, the Applicant attended meetings with entities including the Pinal County Fairgrounds and the Arizona State Land Department (ASLD). A complete list of the stakeholder briefings that occurred during this phase is included in **Exhibit J-1**.

### *Phase II - Planning Workshop*

The Phase II Planning Workshop was held on September 25, 2007. The purpose of the Phase II Planning Workshop was to share the results of the Phase I briefings and Open House. The Applicant presented the Initial Alternative Alignments map that was presented at the first Open House and discussed feedback from the public and other stakeholders as a result of Phase I. The Applicant then discussed criteria that were used to narrow the initial alternatives down to four routes: one along Curry Road and one along the Curry-Tweedy half-section. Attendees of the Planning Workshop were than asked to comment on the selection process and their preference between the two identified routes. The invitation, a list of invitees and attendees, handouts, figures, and comments received at the Phase II Planning Workshop, are included in **Exhibit J-2**.

### *Phase II - Open House Meeting*

The Phase II Open House was held on October 23, 2007. As in Phase I, the Applicant mailed an invitation to the Phase II Open House, and a Project newsletter including a summary of Phase I information, to property owners within the PSA. Additionally, Open House announcements were posted at public gathering places (e.g., post offices, community centers and local markets) and on the Project website.

At the Phase II Open House, the routes presented at the Planning Workshop were presented to the public. Although the Project team had received comments from the planners, the goal of the Open House was to gain additional input from the public. A GIS station was used in the Phase II Open House to present the routes and accurately portray proximity to specific properties. The Open House invitation, the Project newsletter, the Open House announcement poster, and a summary of comments received from the Phase II Open House are included in **Exhibit J-3.**

Similar to the first Open House, all of the information available at the second Open House was posted on the project website immediately following the Open House and remains available for review.

**Exhibit J-4** includes screen captures of the Project website documenting materials that were available to the public at different stages of the Project. Also included in **Exhibit J-4** are copies of articles relating to the Project that were printed in area newspapers.

As follow-up to Phase II, the Applicant met with jurisdictions and property owners as requested. In December 2007, the Applicant sent out an announcement to notify the public as to which route was selected as the Preferred and Alternate Routes, the date the Application was filed with the Arizona Corporation Commission, and the date of the hearing.

## LIST OF PREPARERS

| | | |
|---|---|---|
| Mrs. Kenda Pollio | 17 years of Experience | BS, MS, AICP |
| Mr. Tyler Rychener | 7 years of Experience | BS, MS |
| Ms. Lindsay Willrick | 1 year of Experience | BS |

# EXHIBIT J-1
# BRIEFINGS, MEETINGS, AND PRESENTATIONS

| Exhibit J-1<br>Consultation and Presentation | | |
|---|---|---|
| **Date** | **Meeting Name or Type** | **Topic** |
| **PHASE 1** | | |
| 2/8/07 | APS / Western Coordination | Introduction of APS intent to develop new 230kV line from Sundance to P. South |
| 3/6/07 | APS / SRP Coordination | Introduction of APS intent to develop new 230kV line from Sundance to P. South |
| *March-May* | *Internal APS Coordination and Project Start-up Activities* | *N/A* |
| 6/8/07 | Pinal Partnership | Discussion of project w/ attendees representing jurisdictions in the PSA |
| 6/14/07 | APS / Western Coordination | Project status update |
| 6/19/07 | CATS-HV Study Group Briefing | Introduction of APS intent to develop new 230kV line from Sundance to P. South |
| 6/20/07 | Pinal County Comprehensive Plan Update | Discussion of project in relation to Pinal County Plan update efforts |
| 6/21/07 | APS/ED-2 Coordination | Discussion of project and potential ED-2 participation |
| 6/22/07 | Pinal County Government Alliance | Introduction of APS intent to develop new 230kV line from Sundance to P. South |
| 7/10/07 | Planning Workshop #1 (Pinal County, Coolidge, Casa Grande, Eloy) | Introduction of project, discussion of criteria, initial routes for consideration, and schedule |
| 7/12/07 | Central Arizona Economic Development Council | Project status update |
| 7/12/07 | Pinal County Comprehensive Plan Update | Discussion of project in relation to Pinal County Plan update efforts |
| 7/13/07 | Pinal Partnership | Discussion of project w/ attendees representing jurisdictions in the PSA |
| 7/23/07 | APS / SRP Coordination | Project status update and discussion of Pinal County Fairgrounds |
| 7/25/07 | Mayoral briefings (Coolidge, Casa Grande, Eloy) | Overview of project and status update |
| 8/6/07 | APS / Pinal County Coordination | Discussion of Pinal County Fairgrounds issues |
| 8/14/07 | Open House #1 | Overview of project purpose and need, construction and environmental considerations, initial routes under consideration |

| Exhibit J-1<br>Consultation and Presentation | | |
|---|---|---|
| **Date** | **Meeting Name or Type** | **Topic** |
| **PHASE 2** | | |
| **Date** | **Meeting Name or Type** | **Topic** |
| 8/23/07 | APS / Pinal County Coordination | Discussion of Pinal County Fairgrounds issues |
| 8/30/07 | APS / Arizona State Land Department Coordination | Overview of project and status update |
| 8/30/07 | APS / SRP Coordination | Discussion of Pinal County Fairgrounds issues |
| 9/7/07 | APS / ED-2 Coordination | Discussion of ED-2 interest in project participation |
| 9/11/07 | APS / Transwestern Coordination | Overview of project and status update |
| 9/11/07 | APS / El Paso Corporation Coordination | Overview of project and status update |
| 9/12/07 | Pinal County Comprehensive Plan Update | Discussion of project in relation to Pinal County Plan update efforts |
| 9/13/07 | Pinal Partnership | Discussion of project w/ attendees representing jurisdictions in the PSA |
| 9/18/07 | APS / SRP Coordination | Review of line siting considerations |
| 9/23/07 | Meeting with local landowner representative | Overview of project and status update |
| 9/25/07 | Planning Workshop #2 (Pinal County, Coolidge, Casa Grande, Eloy) | Review of project overview and need, discussion of routes identified, upcoming schedule |
| 10/2/07 | APS / Western Coordination | Project status update |
| 10/09/07 | Meeting with local landowner and representative | Discussion of project and local landowner concerns |
| 10/23/07 | Open House #2 | Overview of project purpose and need, construction and environmental considerations, routes being carried forward into the CEC |
| 11/01/07 | Briefings with ACC Commissioners Pierce, Hatch-Miller, and Mundell | Overview of project and status update |
| 11/09/07 | Briefing with ACC Commissioner Mayes | Overview of project and status update |
| 11/13/07 | Briefing with Pinal County Supervisor Dave Snider | Project status update |
| 11/21/07 | APS / Pinal County Coordination | Discussion of Pinal County Fairgrounds issues |
| 11/26/07 | Meeting with local landowner and representative | Discussion of project and local landowner concerns |
| 11/28/07 | Pre-filing meeting with Chairman Woodall and potential intervening parties | Project status update and timeframe for Application filing and hearings |

# EXHIBIT J-2
# PLANNING WORKSHOP MATERIALS

Phase I – April 25, 2007

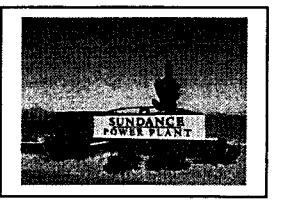
Phase II – August 15, 2007

# PHASE I

Tuesday, July 10, 2007

# PLANNING WORKSHOP INVITATION

Sundance to Pinal South 230 kV Transmission Project




# Planning Workshop

APS is initiating the process of identifying alignment alternatives for a new proposed 230 kV transmission line that will connect the existing Sundance Generating Station to the recently permitted Pinal South Substation in Pinal County (Sundance to Pinal South 230kV Transmission Project).

APS along with its environmental consultant, Arcadis, is hosting a Workshop for the planning and development staff of potentially affected jurisdictions in the study area. The project team is seeking your input regarding existing and future planning considerations as part of our data collection and public outreach efforts. The workshop is intended to allow for an informal exchange of ideas and information regarding APS' development plans and jurisdictional planning efforts.

We look forward to your input!

**Date:** **Tuesday, July 10, 2007**
**Time:** **11:00 – 1:00**
**Location:** **City of Coolidge Police Dept. Council Chambers**
**911 S. Arizona Blvd. Coolidge, AZ 85228**

For more information regarding the project, please visit:
http://siting.aps.com/ (click on the link for Current Projects)

**Lunch will be served.**
**Please RSVP to Leslie McFadden on or before July 02, 2007**
**602-659-3214**

APS

Tuesday, July 10, 2007

# PLANNING WORKSHOP
# INVITEE AND ATTNEDEE LIST

**APS Sundance to Pinal South 230kV Transmission Project Stakeholders Planning Workshop**
**Tuesday, July 10, 2007 11:00 am – 1:00 pm**
**Location: City of Coolidge Police Department Council Chambers**
**911 S. Arizona Blvd. Coolidge, AZ 85228**

| Contacts | Affiliation | Attendance at Workshop |
|---|---|---|
| Dianne Kresich | ADOT, Regional Planning Team Supervisor | |
| Maxine Leather | CAAG, Executive Director | |
| Bill Leister | CAAG, Transportation Director | Yes |
| Helen Neuharth | City of Casa Grande, Chamber/CEO | Yes |
| Jim Thompson | City of Casa Grande, City Manager | |
| Leila Demaree | City of Casa Grande, City Planner | |
| Rick Miller | City of Casa Grande, Planning Director | |
| Mary Lou Martinez | City of Coolidge | Yes |
| Pat Smith | City of Coolidge | Yes |
| Jill Dusenberry | City of Coolidge, Assistant to City manager | Yes |
| Sherry Ulmer | City of Coolidge, Chamber/Executive Director | |
| Robert Flately | City of Coolidge, City Manager | Yes |
| Sue Laybourn | City of Coolidge, City Planner | |
| Alton Bruce | City of Coolidge, Developmental Director | Yes |
| Don Peters | City of Coolidge, Public Works Director | |
| Belinda Akes | City of Eloy, Chamber/Executive Director | |
| Joe Blanton | City of Eloy, City Manager | Yes |
| Joe Ortiz | Pinal County | Yes |
| David Snider | Pinal County Supervisor | |
| Ken Buchanan | Pinal County, Assistant County Manager | |
| Terry Doolittle | Pinal County, Manager | |
| Terry Haifley | Pinal County, Parks & Recreation/Fairground Director | |
| David Kuhl | Pinal County, Planning and Development | |
| Jerry Stabley | Pinal County, Planning Manager | |
| Greg Stanley | Pinal County, Public Works Director | |
| Dennis Rittenback | Pinal County, Senior Planner | Yes |

Tuesday, July 10, 2007

# PLANNING WORKSHOP AGENDA

**Sundance to Pinal South 230kV Transmission Project**
**July 10, 2007**
Planning Workshop Agenda

**In Attendance:**

| | |
|---|---|
| Helen Neuharth | Casa Grande Chamber of Commerce |
| Joe Blanton | City of Eloy |
| Dennis Rittenback | Pinal County |
| Bob Flatley | City of Coolidge |
| Alton Bruce | City of Coolidge |
| Bill Leister | CAAG |
| Joe R. Ortiz | Pinal County |
| Jill Tousenberry | City of Coolidge |
| Pat Smith | City of Coolidge |
| Mary Lou Martinez | City of Coolidge |

**Purpose:**

I. Meeting objectives
   a. Provide an update about APS's proposed project and answer any questions regarding potential routes, process, and next steps
   b. Gather feedback on routes identified and existing and future planning considerations in the project study area

II. Project purpose and need
   a. Additional system studies have further indicated that a new 230kV corridor will improve existing and future reliability considerations associated with the Sundance Plant

III. Proposed facilities
   a. Double-circuit 230kV transmission line, designed to accommodate 69kV under-build
   b. Substation interconnection facilities at Sundance and Pinal South
   Steel monopole structures
   c. Typical structure height of ~135'
   d. 100' to 130' of right-of-way
   e. APS is in discussion with Electrical District #2 (ED-2) for the potential use of the APS line, including the possible co-location of 69kV facilities

IV. Overview baseline data collection

V. Overview of siting process

VI. Schedule
   a. First public Open House August 2007
   b. Task 3: Detailed data inventory July 2007 – August 2007
   c. Task 4: Impact Assessment and Mitigation Planning August 2007 - October 2007
   d. Second Public Open House (October)
   e. Task 5: Siting Report Preparation July 2007 - September 2007
   f. Final Series of Briefings / Outreach late October / November
   g. Task 6: Prepare and File ACC Siting
   h. Committee Hearings TBD, CEC Application September 2007 - November 2007

Tuesday, July 10, 2007

# PLANNING WORKSHOP PRESENTATION MATERIALS

# Sundance to Pinal South 230kV Transmission Project

## Overview

As part of APS' continuing effort to meet the increasing demand for electricity, the APS Transmission and Facility Siting Department has initiated a process to identify possible alternative routes for a new 230 kilovolt (kV) transmission line to connect the Sundance Generating Station and the future Pinal South Substation. APS intends to prepare and submit an application for a Certificate of Environmental Compatibility (CEC) to the Arizona Corporation Commission (ACC) in 2007.

## Location

Both the Sundance Generating Station and the future Pinal South Substation are located in unincorporated Pinal County as illustrated on the map on the back of this fact sheet.

## Project Need

The proposed project will accomplish the following objectives:

- Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area
- Allow APS to schedule the full output capability of the Sundance facility, currently estimated at 420 megawatts during peak summer conditions
- Economically provide a new 230kV path for existing and potential future generation at the Sundance facility

## Outreach

APS will provide project information, as well as opportunities for the public to ask questions and provide comments throughout the siting process. APS will also brief potentially affected jurisdictions, communities, and agencies, as well as business and civic leaders. Project information will be available to the public through the following sources:

- Project Web site, http://siting.aps.com
  *Select "Current Projects" and then click on the link for the "Sundance to Pinal South 230kV Transmission Project"*
- APS Transmission and Facility Siting Project Information Line, **1-866-472-4484**
  *Press 2 to be directly connected with the APS Project Manager*
- Project Newsletters
- Public Open House(s)

## Schedule

The time required to site transmission lines varies by project. The following schedule is anticipated for this project:

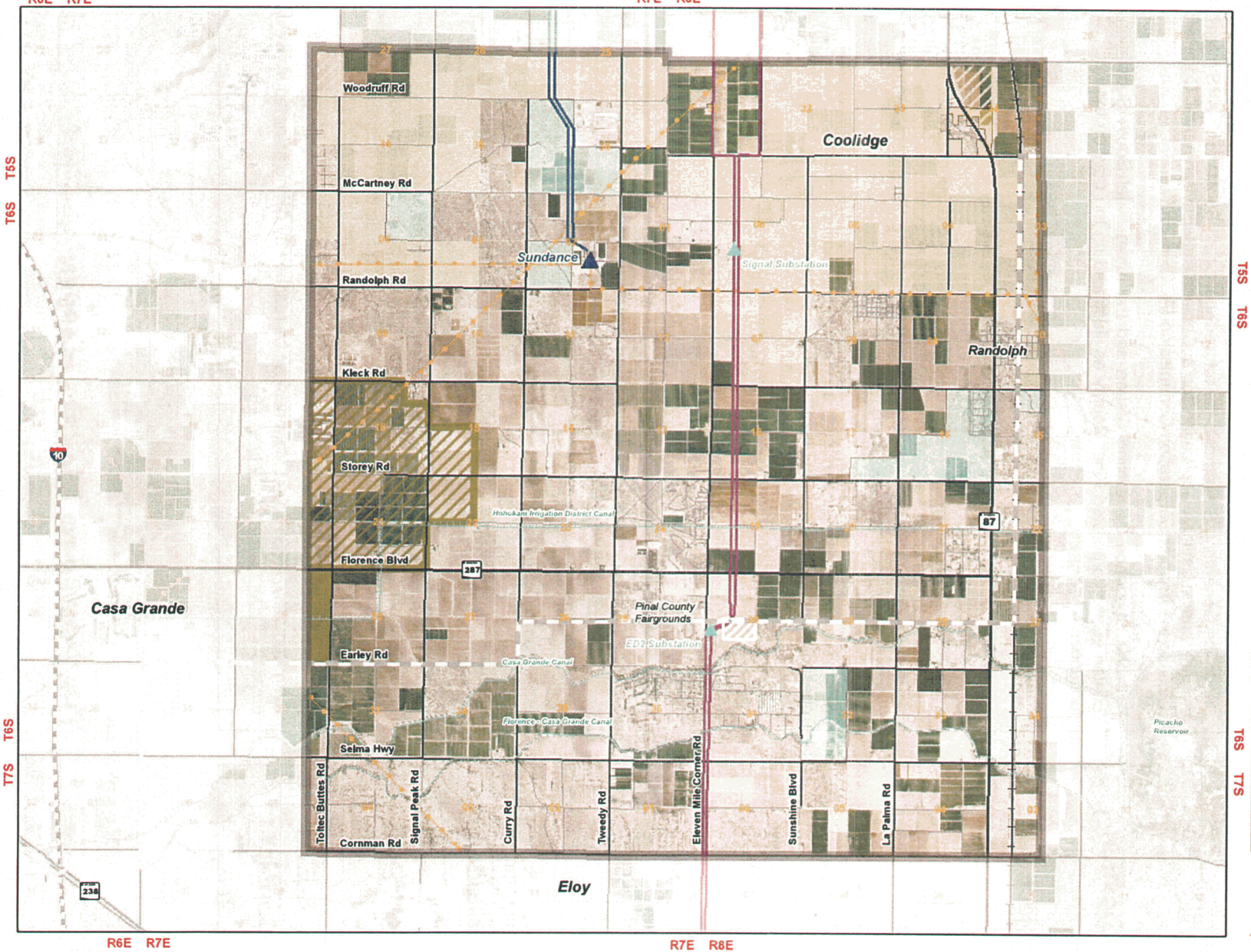
| | |
|---|---|
| • Early Summer 2007 | Meetings with jurisdictions and agencies |
| • Summer 2007 | Initial newsletter and public open house |
| • Late Summer 2007 | Complete analysis and identify preferred route |
| • Fall 2007 | File CEC application and initiate ACC process |
| • Summer 2011 | Transmission line in-service |

## Contact

Greg Bernosky, APS Project Manager can be reached by phone as noted above or by email at Gregory.Bernosky@aps.com

APS

THE POWER TO MAKE IT HAPPEN




# Project Study Area

**Sundance to Pinal South 230kV Transmission Project**

*Analysis Area: Pinal County, Arizona*

## July 2007

### Legend

**City of Coolidge**
- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**
- Municipal Boundary
- Proposed Annexation

**Land Ownership**
- Bureau of Land Management
- Arizona State Trust

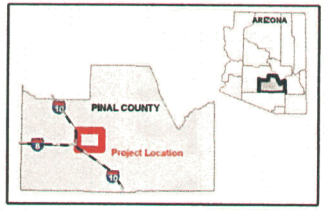
**Reference Features**
- Project Study Area
- Future Pinal South Substation
- Future SRP 500/230kV Line
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

N

0 0.25 0.5 0.75 1
Miles

Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters

Data Sources:
City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - SRP, April 2006




APS

# Sundance to Pinal South

230kV Transmission Project

*Planning Workshop*

*July 10, 2007*

## Sundance to Pinal South 230kV Project

- **Today's Meeting Topics**
  - Introductions
  - Project purpose and need / proposed facilities / schedule
  - Study area and existing resource data
  - Siting criteria and sensitivities
  - On-going public outreach efforts

## Sundance to Pinal South 230kV Project

- **Meeting Objective**
  - Provide general information about APS' proposed project and answer any questions regarding process and next steps
  - Gather information regarding the existing and future planning considerations in the project study area

## Sundance to Pinal South 230kV Project

- **APS Transmission and Facility Siting**
  - Greg Bernosky, APS Project Manager
  - Responsible for managing the project team **during the siting phase** including:
    - *Transmission Planning*
    - *Lands and Realty*
    - *Construction*
    - *Communications*
  - Work with environmental consultant to prepare CEC Application
  - Supported by APS' Southeast Division
  - ***I can be contacted directly by phone or e-mail for questions / comments***

# Sundance to Pinal South

230kV Transmission Project

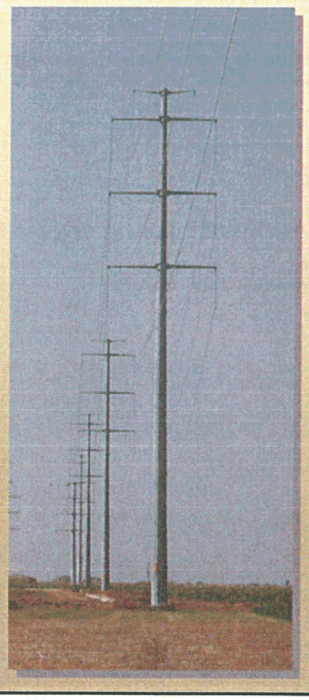
***Project Purpose and Need***
***Proposed Facilities***
***Project Schedule***

## Sundance to Pinal South 230kV Project

- **Project Purpose and Need**
  - Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area
  - Allow APS to schedule the full output of the Sundance facility, currently estimated at 420 MW, during peak summer conditions
  - Economically provide a new 230kV path for existing and potential future generation at the Sundance facility

## Sundance to Pinal South 230kV Project

- **Project Description**
  - Double-circuit 230kV transmission line
  - Substation interconnection facilities at Sundance and Pinal South
  - Steel monopole structures
  - Typical structure height of ~135'
  - 100' to 130' of right-of-way

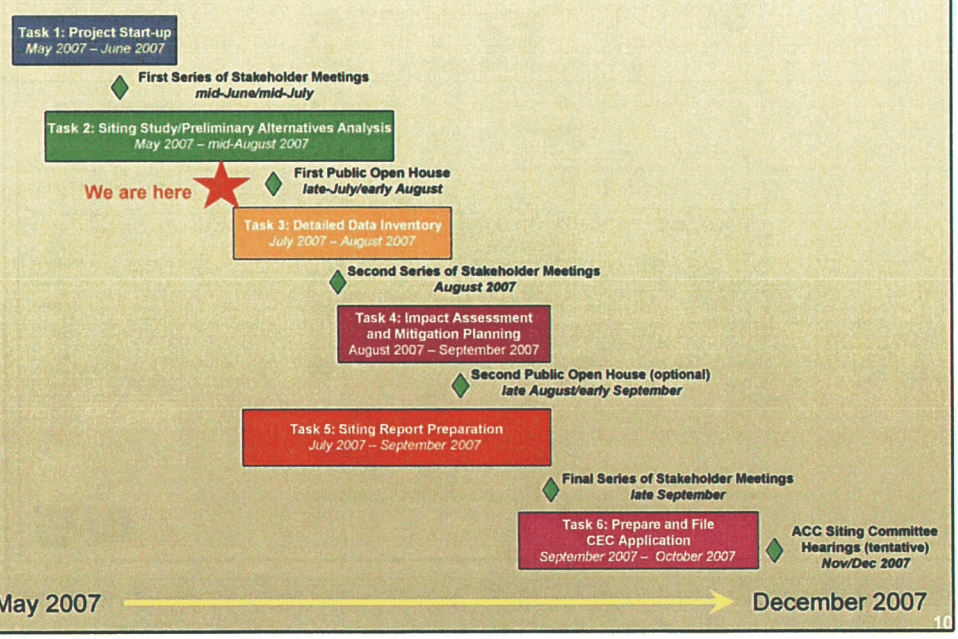


# Sundance to Pinal South 230kV Project

## Overall Project Schedule

- Pinal South Substation (SRP) **2011**
- Transmission Line In-Service **2011**
- Construction Initiation **2009**
- Land Acquisition **2008**

# Siting Project Schedule

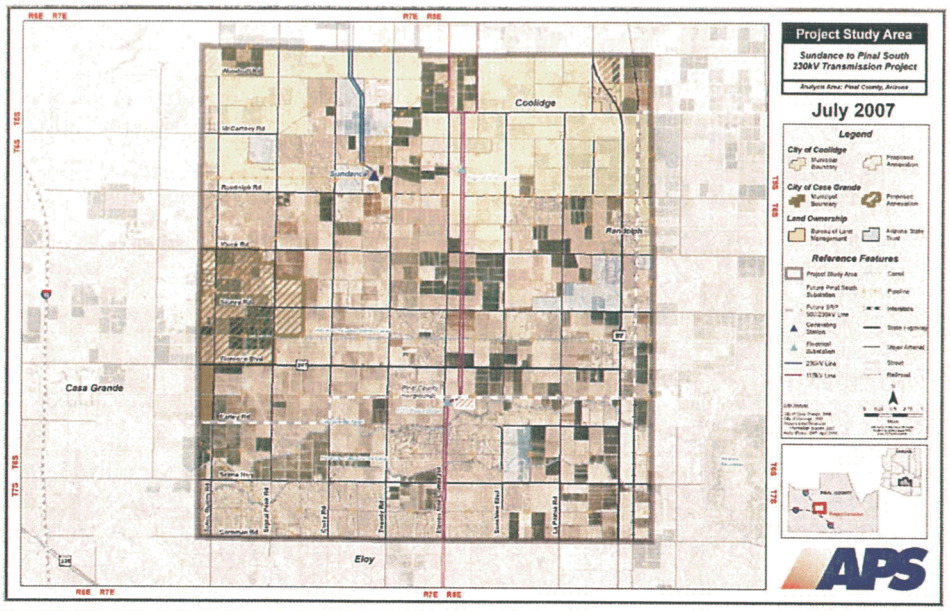


# Sundance to Pinal South

## 230kV Transmission Project

*Study Area and Existing Resource Data*

11

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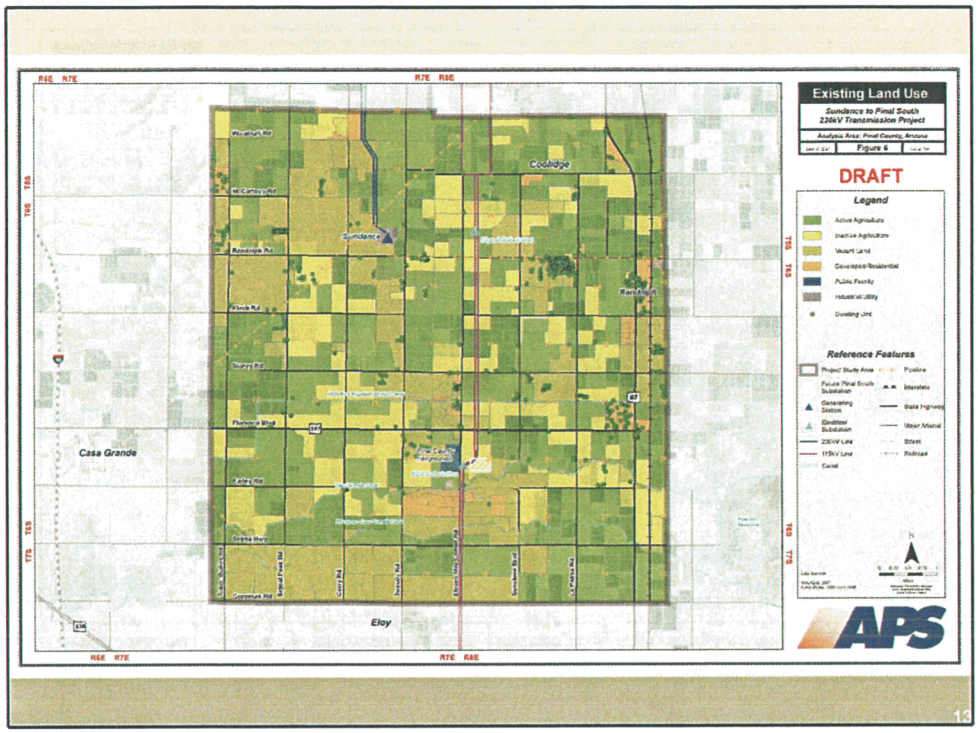
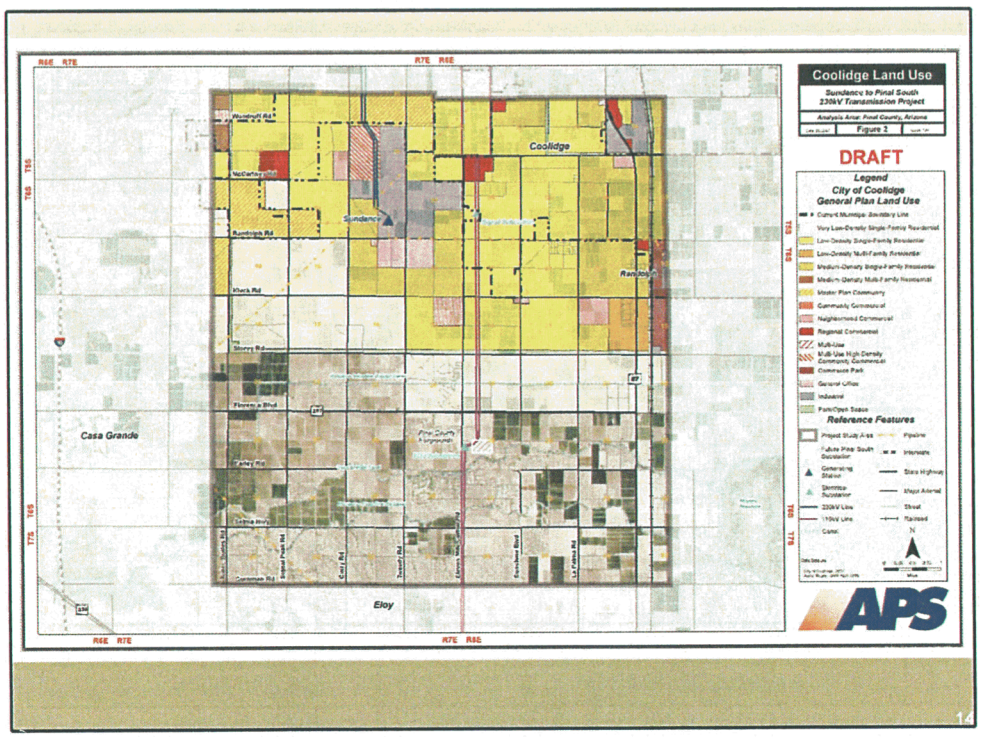

Existing Land Use
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
Figure 6
DRAFT
Legend
Active Agriculture
Inactive Agriculture
Vacant Land
Developed/Residential
Public Facility
Industrial/Utility
Dwelling Unit
Reference Features
Project Study Area
Pipeline
Future Pinal South Substation
Interstate
Generating Station
State Highway
Grandaal Substation
Major Arterial
230kV Line
Street
115kV Line
Railroad
Canal
Coolidge
Sundance
Casa Grande
Eloy
Randolph Rd
Black Rd
Storey Rd
Florence Blvd
Farley Rd
Selma Hwy
Gantzel Rd
Sunshine Blvd
R6E R7E
R7E R8E
T6S T7S
T7S T8S
87
84
347
238


Coolidge Land Use
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
Figure 2
DRAFT
Legend
City of Coolidge General Plan Land Use
Current Municipal Boundary Line
Very Low-Density Single-Family Residential
Low-Density Single-Family Residential
Low-Density Multi-Family Residential
Medium-Density Single-Family Residential
Medium-Density Multi-Family Residential
Master Plan Community
Community Commercial
Neighborhood Commercial
Regional Commercial
Multi-Use
Multi-Use High-Density Commercial
Commerce Park
General Office
Industrial
Park/Open Space
Reference Features
Project Study Area
Pipeline
Future Pinal South Substation
Interstate
Generating Station
State Highway
Grandaal Substation
Major Arterial
230kV Line
Street
115kV Line
Railroad
Canal
Coolidge
Sundance
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Randolph Rd
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Sunshine Blvd
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R7E R8E
T6S T7S
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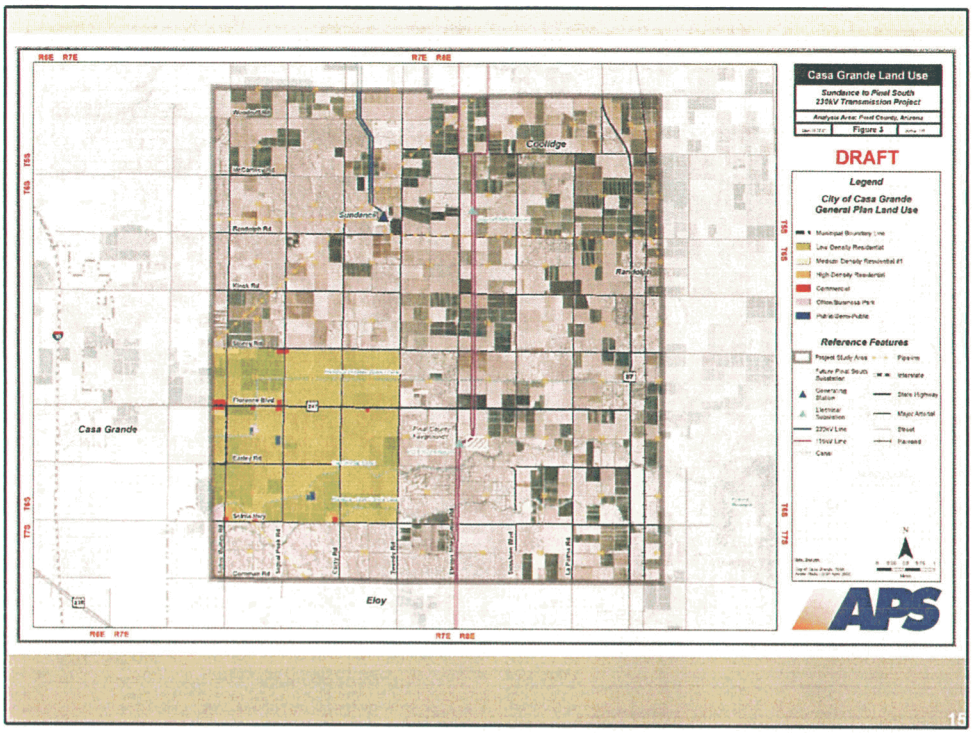
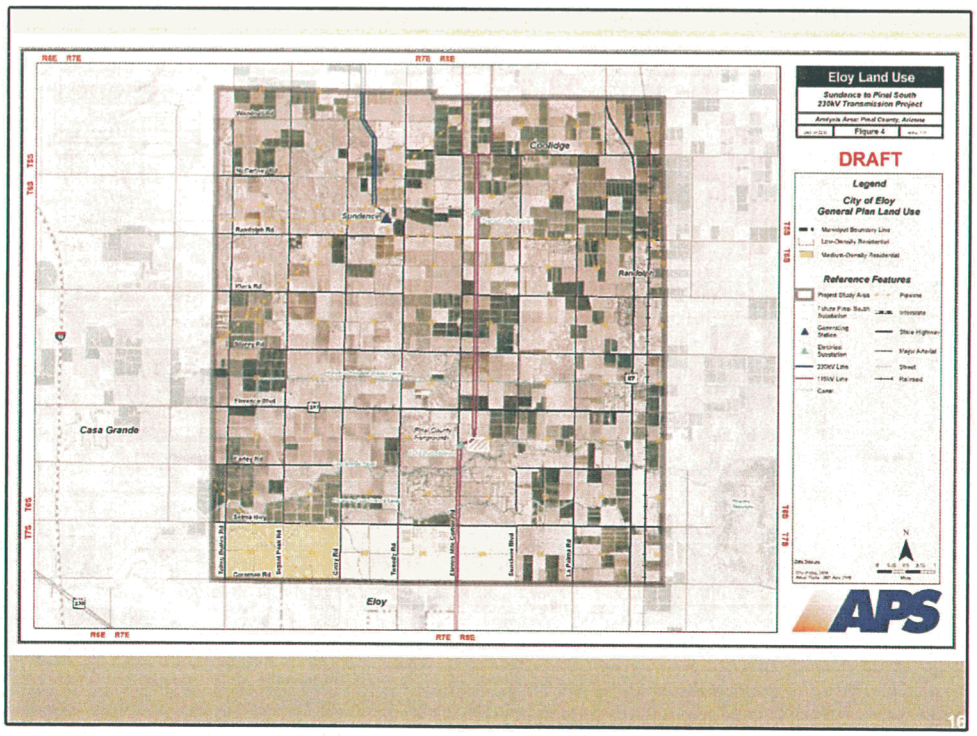
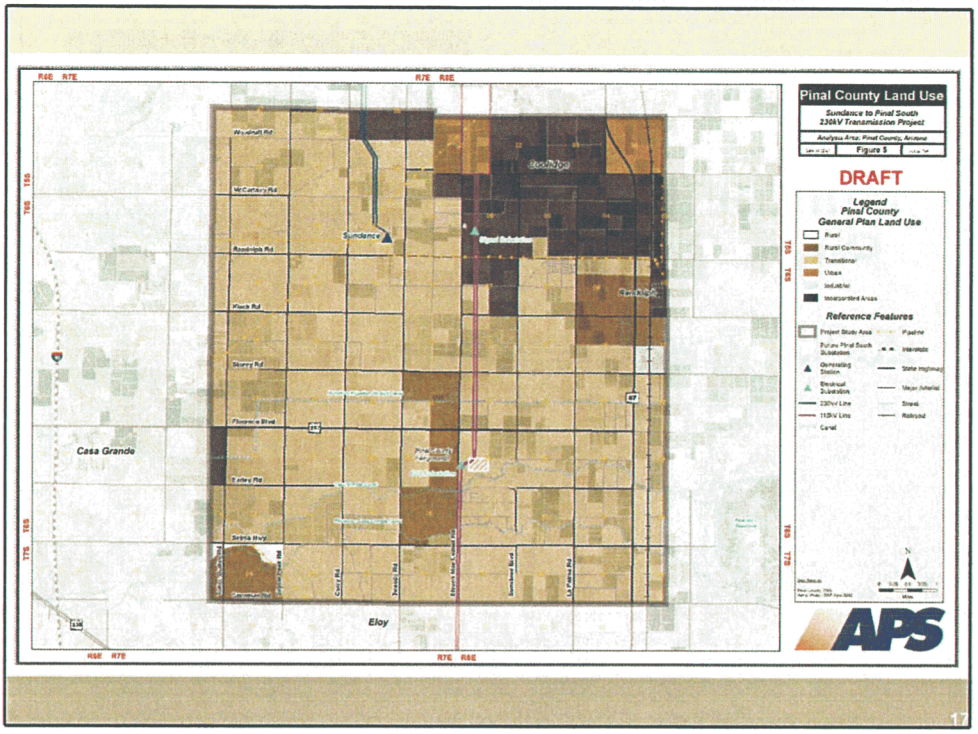
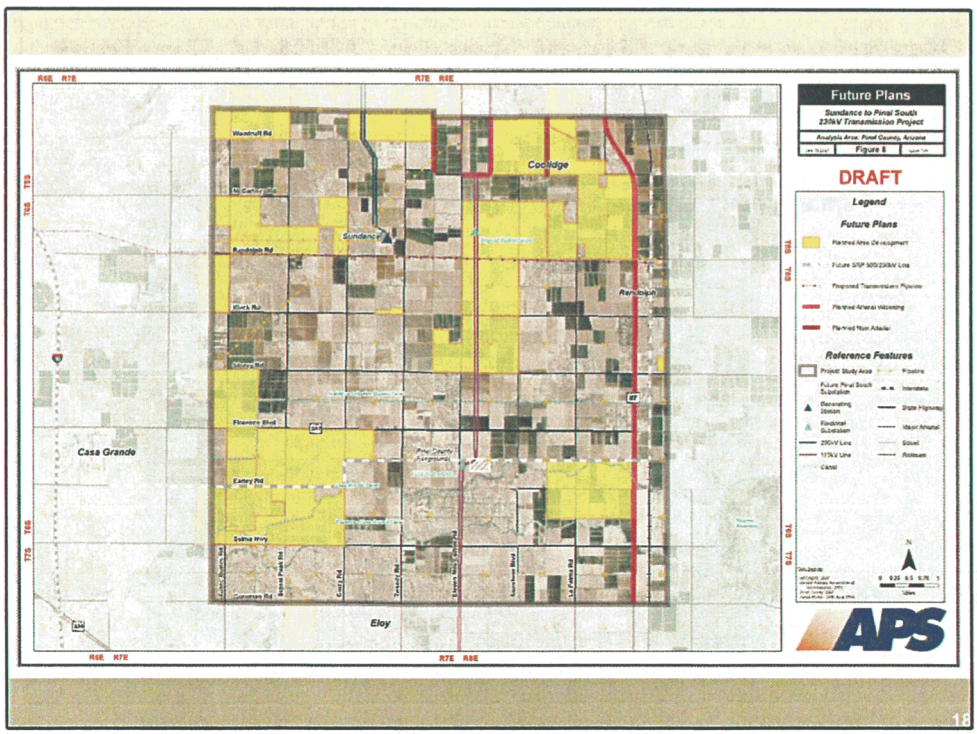
347
238


Casa Grande Land Use
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
Figure 3
DRAFT
Legend
City of Casa Grande General Plan Land Use
Reference Features
Casa Grande
Coolidge
Eloy
Sundance
Randolph
APS


Eloy Land Use
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
Figure 4
DRAFT
Legend
City of Eloy General Plan Land Use
Reference Features
Casa Grande
Coolidge
Eloy
Sundance
Randolph
APS


Pinal County Land Use
Sundance to Pinal South 230kV Transmission Project
Analysis Area, Pinal County, Arizona
Figure 5
DRAFT
Legend
Pinal County General Plan Land Use
Reference Features
Casa Grande
Eloy
Coolidge
Sundance
Randolph
APS
17


Future Plans
Sundance to Pinal South 230kV Transmission Project
Analysis Area, Pinal County, Arizona
Figure 6
DRAFT
Legend
Future Plans
Reference Features
Casa Grande
Eloy
Coolidge
Sundance
Randolph
APS
18

# Sundance to Pinal South

## 230kV Transmission Project

*Siting Criteria and Areas of Sensitivity*

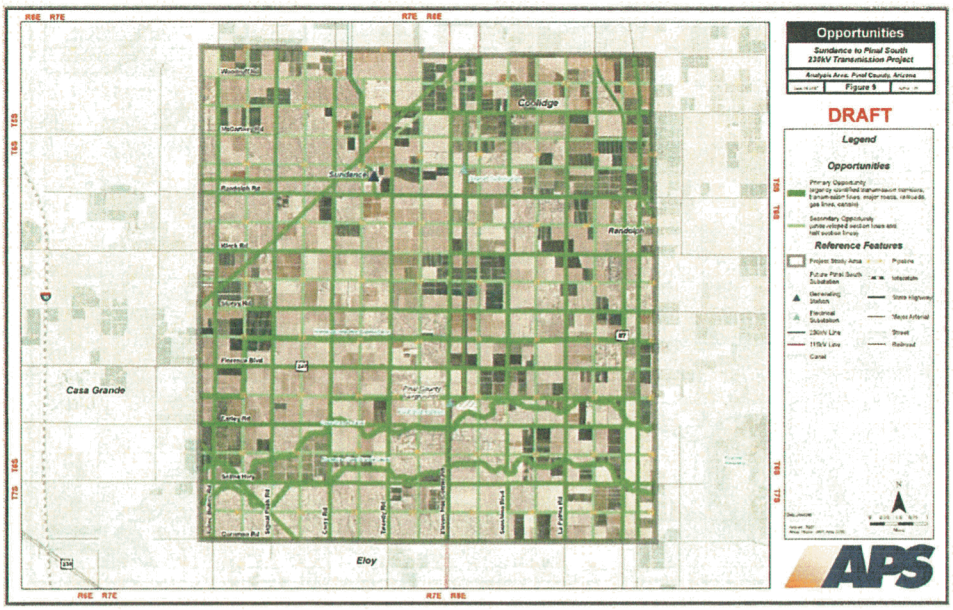
19

# Sundance to Pinal South 230kV Project

## Siting Criteria / Opportunities

| | |
|---|---|
| Primary | Designated Utility Corridors |
| | Existing Transmission Lines and Rights-of-Way |
| | Existing Canals |
| | Existing Railroads |
| | Existing Roads / Highways (County Road Level or Greater) |
| | Existing Pipelines |
| | Future Approved Utilities (Transmission Lines, etc.) |
| | Developed Section Lines and Major Property Lines |
| Secondary | Existing Small Canals and Drainage Features |
| | Undeveloped Section and Half-Section Lines |

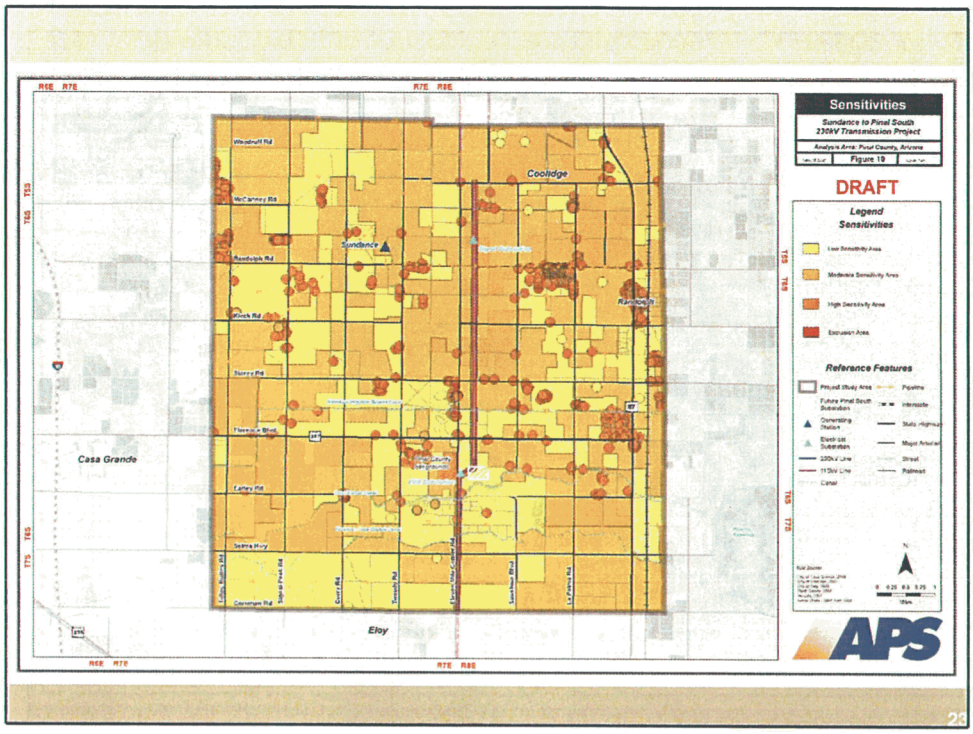
20




# Sundance to Pinal South 230kV Project

## Areas of Sensitivity / Constraints

| | |
|---|---|
| Exclusion | Educational Facilities |
| High | Existing Residences and Residential Developments |
| | Regional Parks and Recreation Facilities |
| | Constrained Transmission Line Corridors |
| Medium | Agricultural land uses |
| | Commercial land uses |
| | Public/quasi-public land uses |
| | Planned Area Developments |
| Low | General Plan land uses |
| | Vacant land |


Sensitivities
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
Figure 10
DRAFT
Legend
Sensitivities
Low Sensitivity Area
Moderate Sensitivity Area
High Sensitivity Area
Exclusion Area
Reference Features
Project Study Area
Pipeline
Future Pinal South Substation
Interstate
Generating Station
State Highway
Electrical Substation
Major Arterial
230kV Line
Street
115kV Line
Railroad
Canal
Coolidge
Sundance
Casa Grande
Eloy
Woodruff Rd
McCartney Rd
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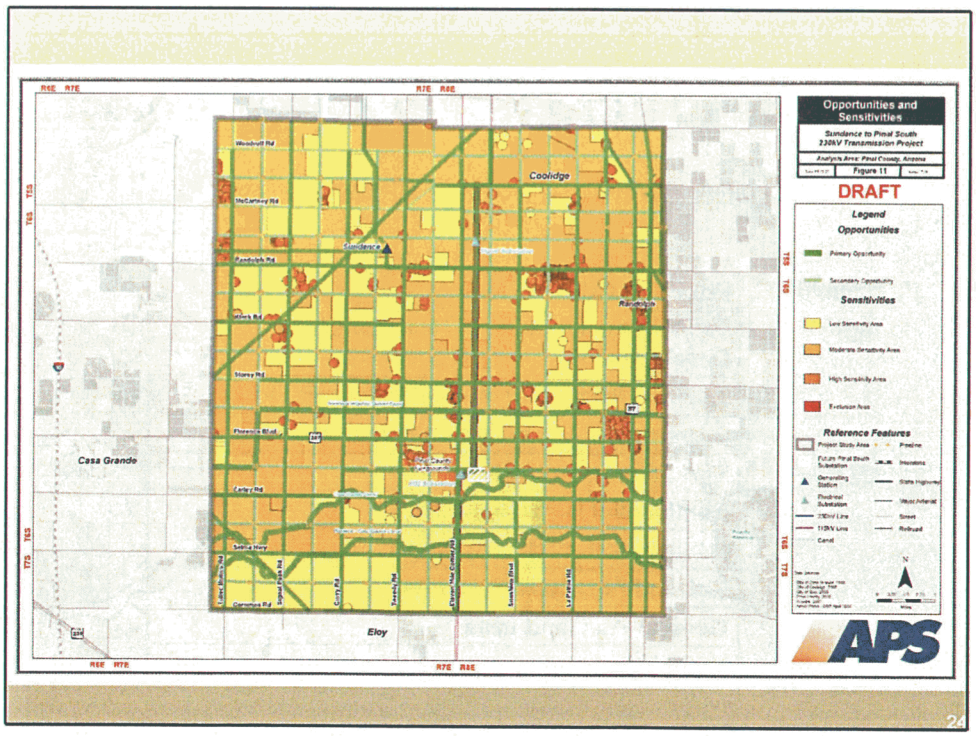
Kenworthy Rd
Storey Rd
Phoenix Blvd
Earley Rd
Selma Hwy
Gantzman Rd
Lone Butte Rd
Sunland Gin Rd
Curry Rd
Peters Rd
Thorne Hwy Corridor Rd
Sunshine Blvd
Lt Farms Rd
Rainville Rd
R6E R7E
R7E R8E
T6S T5S
T7S T6S
APS


Opportunities and Sensitivities
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
Figure 11
DRAFT
Legend
Opportunities
Primary Opportunity
Secondary Opportunity
Sensitivities
Low Sensitivity Area
Moderate Sensitivity Area
High Sensitivity Area
Exclusion Area
Reference Features
Project Study Area
Pipeline
Future Pinal South Substation
Interstate
Generating Station
State Highway
Electrical Substation
Major Arterial
230kV Line
Street
115kV Line
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Canal
Coolidge
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Kenworthy Rd
Storey Rd
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Selma Hwy
Gantzman Rd
Lone Butte Rd
Sunland Gin Rd
Curry Rd
Peters Rd
Thorne Hwy Corridor Rd
Sunshine Blvd
Lt Farms Rd
Rainville Rd
R6E R7E
R7E R8E
T6S T5S
T7S T6S
APS

# Sundance to Pinal South

230kV Transmission Project

***On-going Public Outreach Efforts***

25

## Sundance to Pinal South 230kV Project

- Briefings with local elected officials
- Central Arizona Regional Economic Development Foundation
- Public Open House – early August 2007
- APS project manager or website
  - Greg Bernosky, APS Project Manager
    - (602) 493-4448 or 1-866-472-4484
    - Gregory.Bernosky@aps.com
  - http://siting.aps.com "Current Projects"

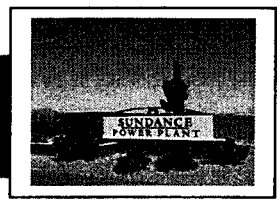
26

# PHASE II

Tuesday, September 25, 2007

# PLANNING WORKSHOP INVITATION

Sundance to Pinal South 230kV Transmission Project




# Invitation to Planning Workshop #2

APS is evaluating alignment alternatives for a proposed 230kV transmission line in Pinal County that will connect the existing Sundance Generating Station to the recently permitted Pinal South Substation (to be built).

APS is hosting this second Workshop for the planning and development staff of potentially affected jurisdictions in the study area. The project team is seeking jurisdictional input on potential routes for the project that have been identified based on technical, jurisdictional, and public considerations. The workshop is intended to allow for your input on the alternatives identified and a continued informal exchange of ideas and information regarding APS' development plans and regional planning efforts.

We look forward to your input!

| | |
|---|---|
| **Who:** | **Planners and Developers of Potentially Affected Jurisdictions** |
| **Date:** | **Tuesday, September 25, 2007** |
| **Time:** | **11:00 – 1:00** |
| **Location:** | **City of Coolidge Police Dept. Council Chambers<br>911 S. Arizona Blvd. Coolidge, AZ 85228** |

For more information regarding the project, please visit:
http://siting.aps.com/ (click on the link for Current Projects)

**Lunch will be served.**
**Please RSVP to Leslie McFadden on or before September 20th, 2007**
**602-659-3214**

APS

Tuesday, September 25, 2007

# PLANNING WORKSHOP
# INVITEE AND ATTENDEE LIST

**APS Sundance to Pinal South 230kV Transmission Project Stakeholders Planning Workshop**
**Tuesday, July 10, 2007 11:00 am – 1:00 pm**
**Location: City of Coolidge Police Department Council Chambers**
**911 S. Arizona Blvd. Coolidge, AZ 85228**

| Contacts | Affiliation | Attendance at Workshop |
|---|---|---|
| Dianne Kresich | ADOT, Regional Planning Team Supervisor | |
| Maxine Leather | CAAG, Executive Director | |
| Bill Leister | CAAG, Transportation Director | |
| Helen Neuharth | City of Casa Grande, Chamber/CEO | |
| Jim Thompson | City of Casa Grande, City Manager | |
| Leila Demaree | City of Casa Grande, City Planner | |
| Rick Miller | City of Casa Grande, Planning Director | |
| Sherry Ulmer | City of Coolidge, Chamber/Executive Director | |
| Robert Flately | City of Coolidge, City Manager | |
| Sue Laybourn | City of Coolidge, City Planner | |
| Alton Bruce | City of Coolidge, Developmental Director | Yes |
| Don Peters | City of Coolidge, Public Works Director | |
| Luis Barahona | City of Eloy | Yes |
| Belinda Akes | City of Eloy, Chamber/Executive Director | |
| Joe Blanton | City of Eloy, City Manager | |
| Byron Jackson | City of Eloy, Mayor | |
| David Wilson | Electical District No. 2 | Yes |
| David Snider | Pinal County Supervisor | |
| Ken Buchanan | Pinal County, Assistant County Manager | Yes |
| Terry Doolittle | Pinal County, Manager | |
| Terry Haifley | Pinal County, Parks & Recreation/Fairground Director | |
| David Kuhl | Pinal County, Planning and Development | |
| Jerry Stabley | Pinal County, Planning Manager | |
| Michelle Green | Pinal County, Project Manager | |
| Greg Stanley | Pinal County, Public Works Director | |
| Dennis Rittenback | Pinal County, Senior Planner | Yes |

Tuesday, September 25, 2007

# PLANNING WORKSHOP AGENDA

**APS Sundance to Pinal South 230kV Transmission Project**
**September 25, 2007**
Planning Workshop Agenda

**In Attendance:**

| | |
|---|---|
| Greg Bernosky | Arizona Public Service |
| David Wilson | Electrical District No. 2 |
| Dennis Rittenback | Senior Planner, Pinal County |
| Alton Bruce | Developmental Director, City of Coolidge |
| Ken Buchanan | Assistant County Manager, Pinal County |
| Luis Barahona | City of Eloy |
| Kenda Pollio | KP Environmental |
| Tyler Rychener | ARCADIS |
| Lindsay Willrick | ARCADIS |

**Purpose:**

I. Meeting objectives
   a. Provide an update about APS's proposed project and answer any questions regarding potential routes, process, and next steps
   b. Gather feedback on routes identified and existing and future planning considerations in the project study area

II. Project purpose and need
   a. Additional system studies have further indicated that a new 230kV corridor will improve existing and future reliability considerations associated with the Sundance Plant

III. Proposed facilities
   a. Double-circuit 230kV transmission line, designed to accommodate 69kV under-build
   b. Substation interconnection facilities at Sundance and Pinal South
   Steel monopole structures
   c. Typical structure height of ~135'
   d. 100' to 130' of right-of-way
   e. APS is in discussion with Electrical District #2 (ED-2) for the potential use of the APS line, including the possible co-location of 69kV facilities

IV. Data analysis overview

V. Alternative routes identified
   a. See slide presentation for maps and overview of routes

VI. Schedule
   a. Task 4: Impact Assessment and Mitigation Planning August 2007 - October 2007
   b. Second Public Open House (October)
   c. Task 5: Siting Report Preparation July 2007 - September 2007
   d. Final Series of Briefings / Outreach late October / November
   e. Task 6: Prepare and File ACC Siting
   f. Committee Hearings TBD, CEC Application September 2007 - November 2007

Tuesday, September 25, 2007

# PLANNING WORKSHOP PRESENTATION MATERIALS

# Sundance to Pinal South

## 230kV Transmission Project

**Planning Workshop #2**

**September 25, 2007**

1

## Today's Meeting Topics

1. Meeting objectives
2. Project purpose and need
3. Proposed facilities
4. Data analysis overview
5. Alternative routes identified
6. Schedule

*Sundance to Pinal South 230kV Project*

2

## Meeting Objectives

- Provide an update about APS' proposed project and answer any questions regarding potential routes, process, and next steps
- Gather feedback on routes identified and existing and future planning considerations in the project study area



## Project Purpose and Need

- Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area
- Allow APS to schedule the full output of the Sundance facility, currently estimated at 420 MW, during peak summer conditions
- Economically provide a new 230kV path for existing and potential future generation at the Sundance facility

## Project Purpose and Need

- *Additional system studies have further indicated that a new 230kV corridor will improve existing and future reliability considerations associated with the Sundance Plant*



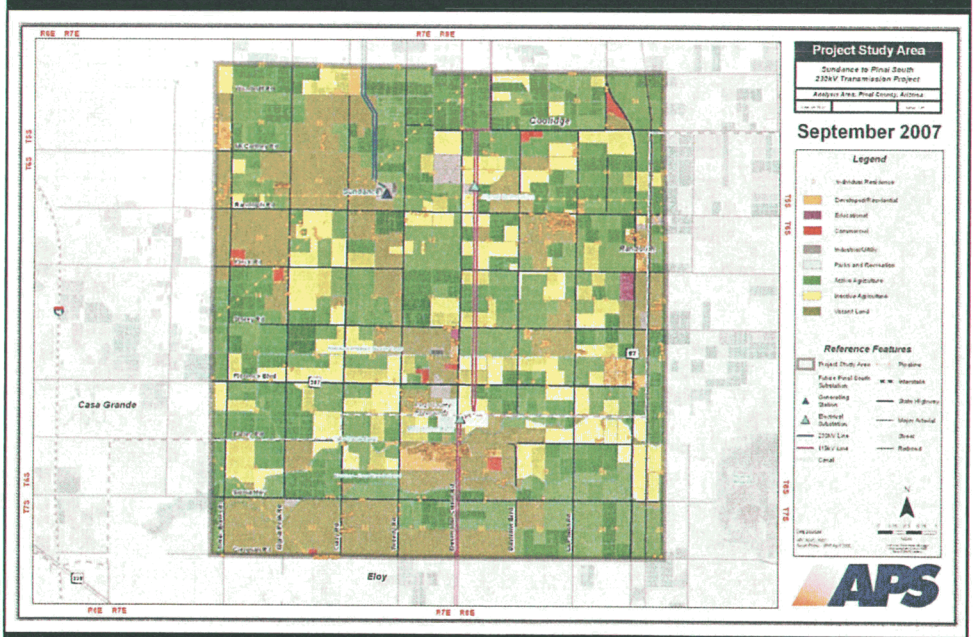
## Project Description

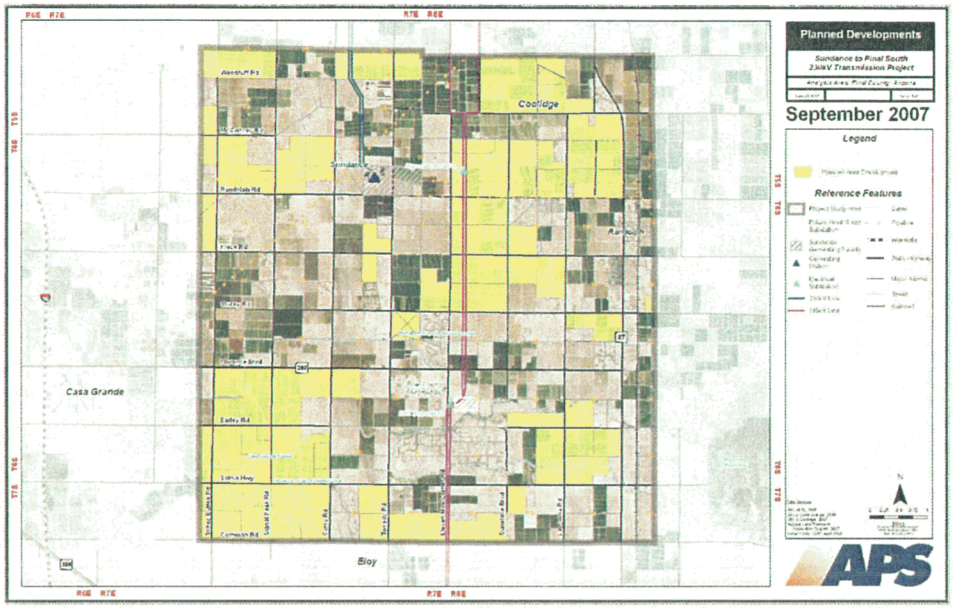
- Double-circuit 230kV transmission line, designed to accommodate 69kV under-build
- Substation interconnection facilities at Sundance and Pinal South
- Steel monopole structures
- Typical structure height of ~135'
- 100' to 130' of right-of-way

# Project Description

- *APS is in discussion with Electrical District #2 (ED-2) for the potential use of the APS line, including the possible co-location of 69kV facilities*





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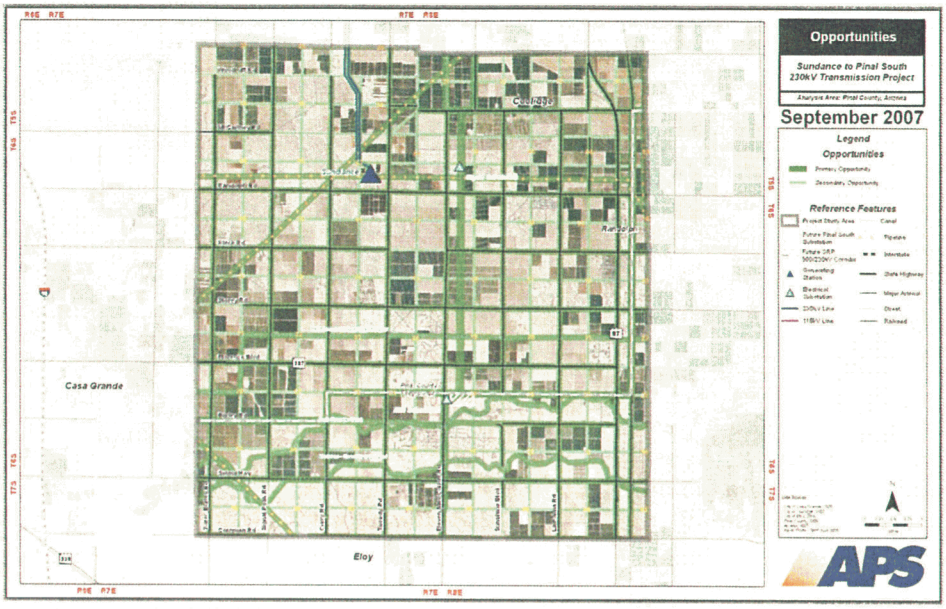
# Siting Criteria / Opportunities

| | |
|---|---|
| Primary | Designated Utility Corridors |
| | Existing Transmission Lines and Rights-of-Way |
| | Existing Canals |
| | Existing Railroads |
| | Existing Roads / Highways (County Road Level or Greater) |
| | Existing Pipelines |
| | Future Approved Utilities (Transmission Lines, etc.) |
| | Developed Section Lines and Major Property Lines |
| Secondary | Existing Small Canals and Drainage Features |
| | Undeveloped Section and Half-Section Lines |

*Sundance to Pinal South 230kV Project* APS

10



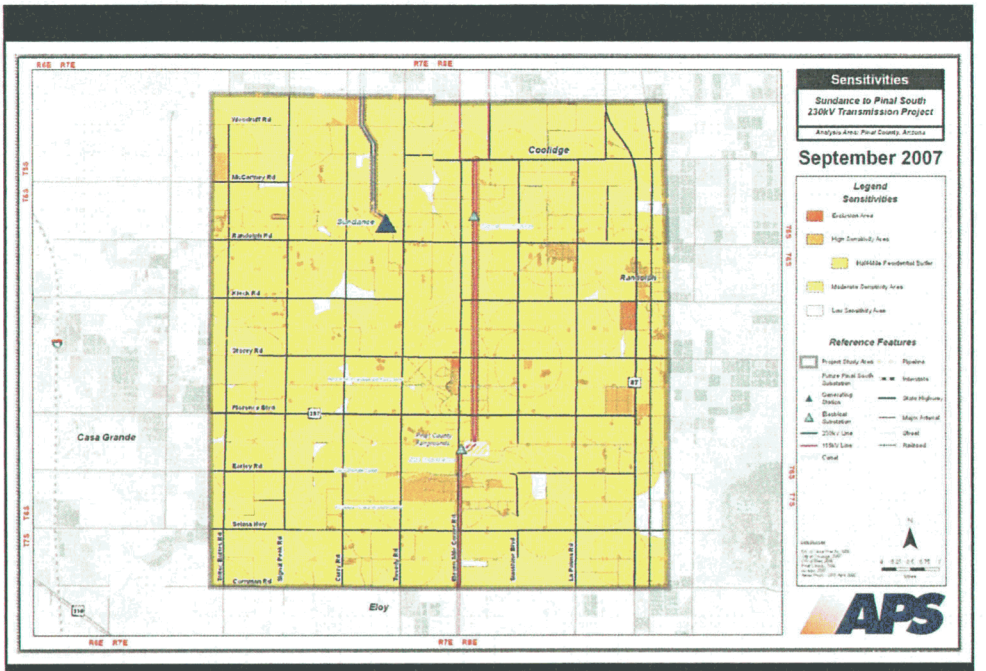

11

# Areas of Sensitivity / Constraints

| | |
|---|---|
| Exclusion | Educational Facilities |
| High | Existing Residences and Residential Developments (half-mile buffer) |
| | Regional Parks and Recreation Facilities |
| | *Constrained Transmission Line Corridors |
| Medium | Agricultural Areas (Active) |
| | Biological Sensitive Areas |
| | Commercial Land Uses |
| | Public/Quasi-Public Land Uses |
| | Planned Area Developments |
| Low | General Plan Land Uses |
| | Industrial and Utility Land Uses |
| | Vacant Land or Inactive Agricultural Areas |

*A "**constrained transmission line corridor**" is an area with existing transmission lines where the addition of a new line (or lines) could negatively impact system reliability

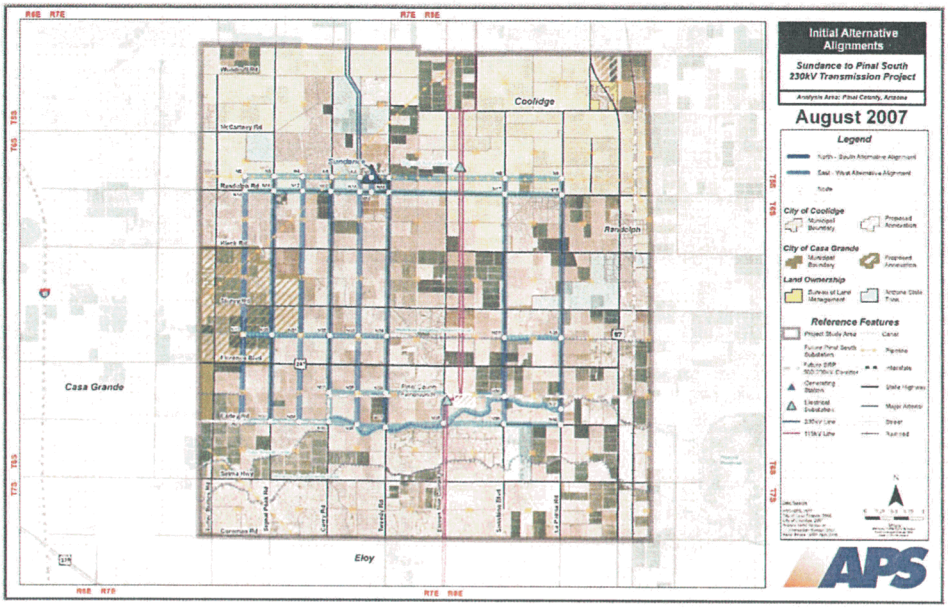
12


Sensitivities
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
September 2007
Legend
Sensitivities
Reference Features
Coolidge
Casa Grande
Eloy
Sundance
Randolph
APS

13

Opportunities and Sensitivities
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
September 2007
Legend
Opportunities
Sensitivities
Reference Features
Coolidge
Casa Grande
Eloy
Sundance
APS

14




15

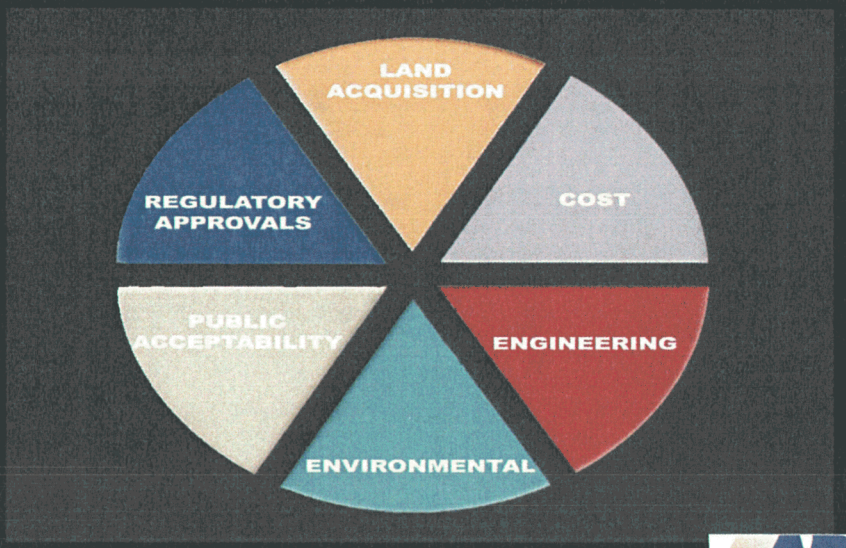
# Post-Open House Comments

- Co-location of electrical facilities when possible
- Pinal County Fairgrounds crossing concerns
- Coordination / consideration of PADs
- Proximity to existing residences
- Other stakeholder input
  - Arizona State Land Department
  - El Paso Natural Gas

*Sundance to Pinal South 230kV Project* APS

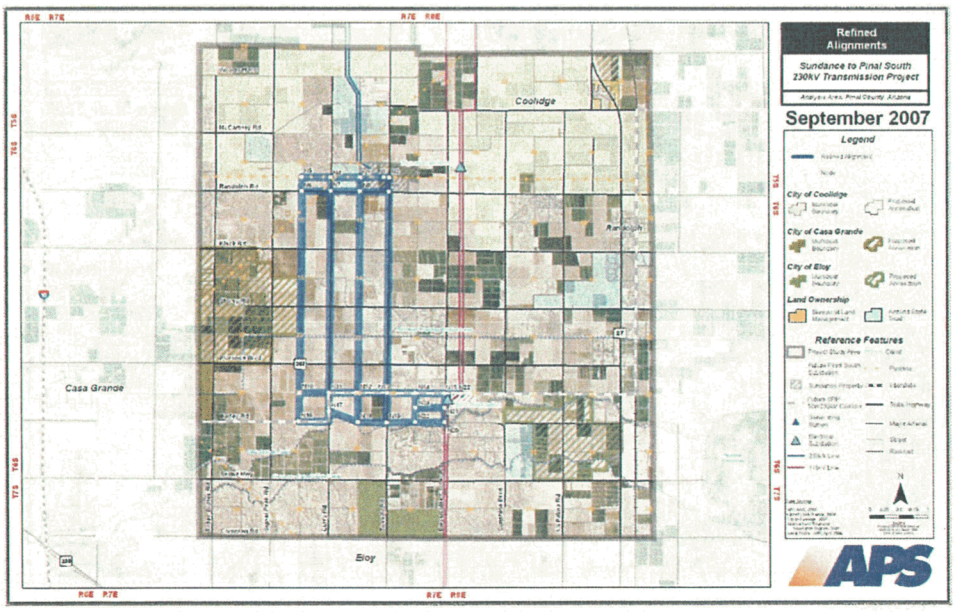
16

# Transmission Line Siting Considerations




*Sundance to Pinal South 230kV Project*

17

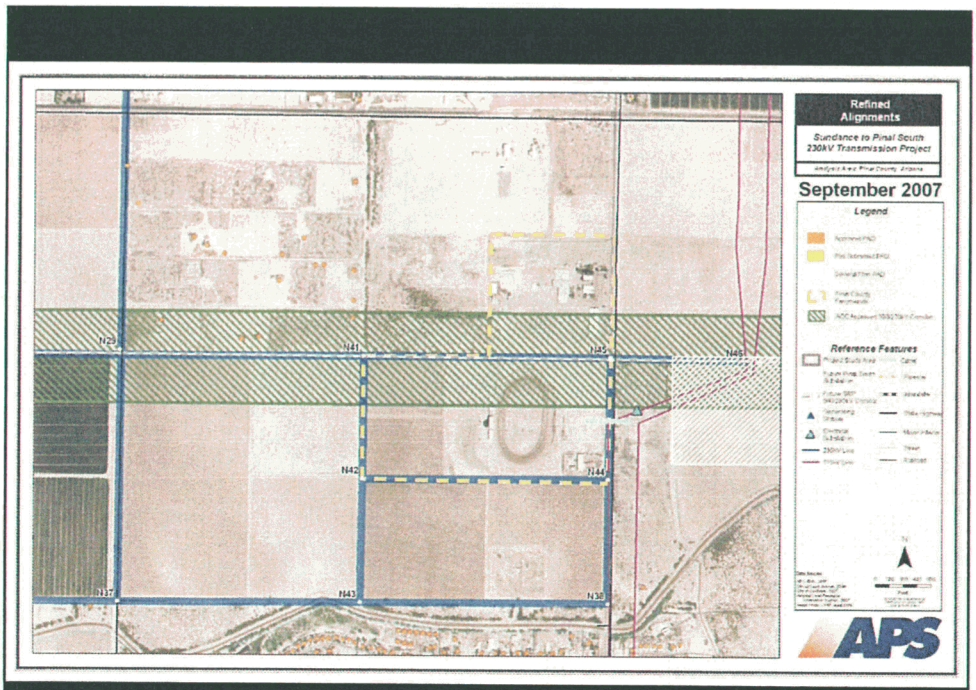



18

## Environmental Considerations

- Location of schools and other exclusion areas
- Proximity of existing residences
- Future planned land use
- Biologically and culturally sensitive areas
- Potential visual impacts

19 *Sundance to Pinal South 230kV Project*

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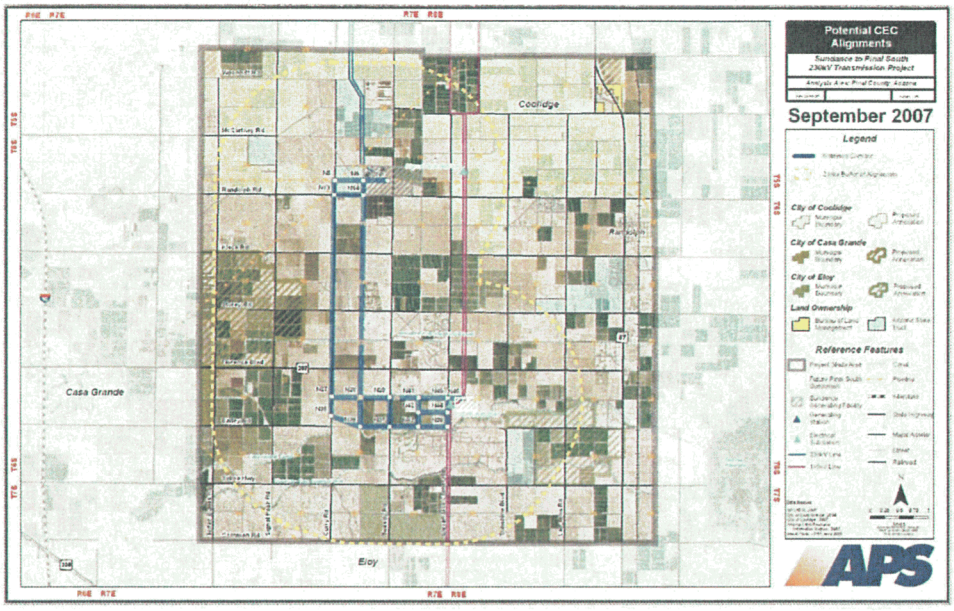


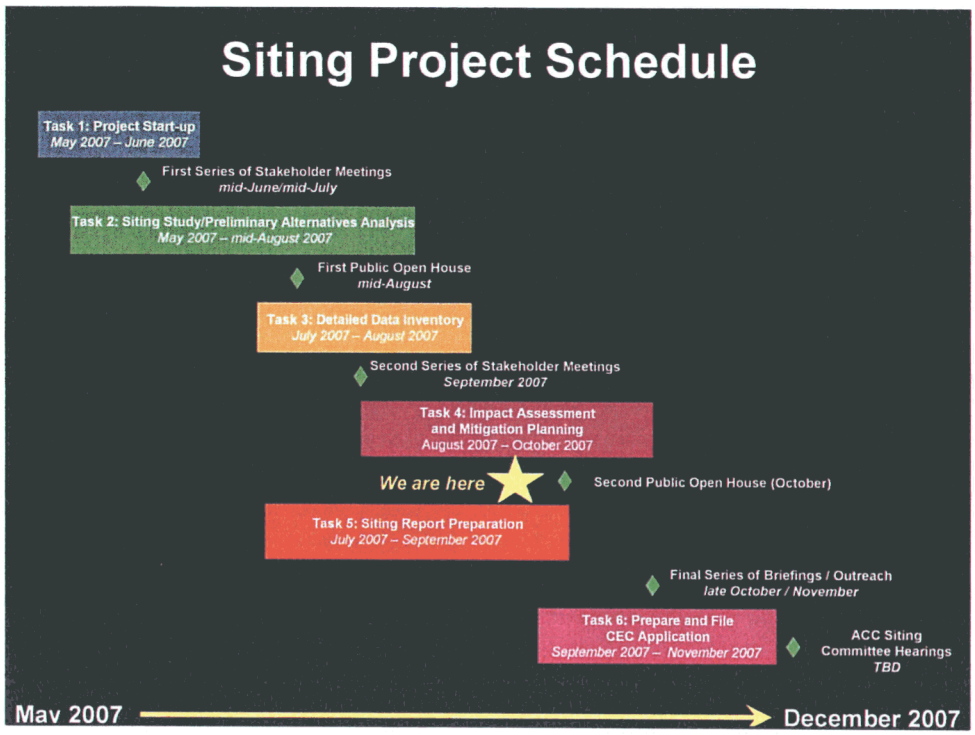

21

## Development Schedule

- Pinal South Substation (SRP) **2011**
- Transmission Line In-Service **2011**
- Construction Initiation **2009**
- Land Acquisition **2008**

*Sundance to Pinal South 230kV Project* APS

22




## Continued Public Outreach

- Briefings with local elected officials and designees, planning organizations, and potentially affected stakeholders
- Local media announcements
- 2nd Project Newsletter – October 2007
- 2nd Public Open House – October 2007
- Project Web site
- APS Project Manager available via telephone

24 *Sundance to Pinal South 230kV Project* APS

# Sundance to Pinal South
## 230kV Transmission Project

**Planning Workshop #2**

**September 25, 2007**

25

# EXHIBIT J-3
# OPEN HOUSE MATERIALS

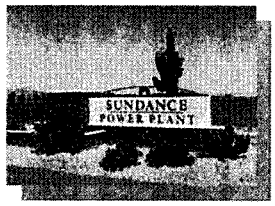
Phase I – April 25, 2007

Phase II – August 15, 2007

# PHASE I

# FACT SHEET

# Sundance to Pinal South 230kV Transmission Project




## Overview

As part of APS' continuing effort to meet the increasing demand for electricity, the APS Transmission and Facility Siting Department has initiated a process to identify possible alternative routes for a new 230 kilovolt (kV) transmission line to connect the Sundance Generating Station and the future Pinal South Substation. APS intends to prepare and submit an application for a Certificate of Environmental Compatibility (CEC) to the Arizona Corporation Commission (ACC) in 2007.

## Location

Both the Sundance Generating Station and the future Pinal South Substation are located in unincorporated Pinal County as illustrated on the map on the back of this fact sheet.

## Project Need

The proposed project will accomplish the following objectives:

- Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area
- Allow APS to schedule the full output capability of the Sundance facility, currently estimated at 420 megawatts during peak summer conditions
- Economically provide a new 230kV path for existing and potential future generation at the Sundance facility

## Outreach

APS will provide project information, as well as opportunities for the public to ask questions and provide comments throughout the siting process. APS will also brief potentially affected jurisdictions, communities, and agencies, as well as business and civic leaders. Project information will be available to the public through the following sources:

- Project Web site, http://siting.aps.com
  *Select "Current Projects" and then click on the link for the "Sundance to Pinal South 230kV Transmission Project"*
- APS Transmission and Facility Siting Project Information Line, **1-866-472-4484**
  *Press 2 to be directly connected with the APS Project Manager*
- Project Newsletters
- Public Open House(s)

## Schedule

The time required to site transmission lines varies by project. The following schedule is anticipated for this project:

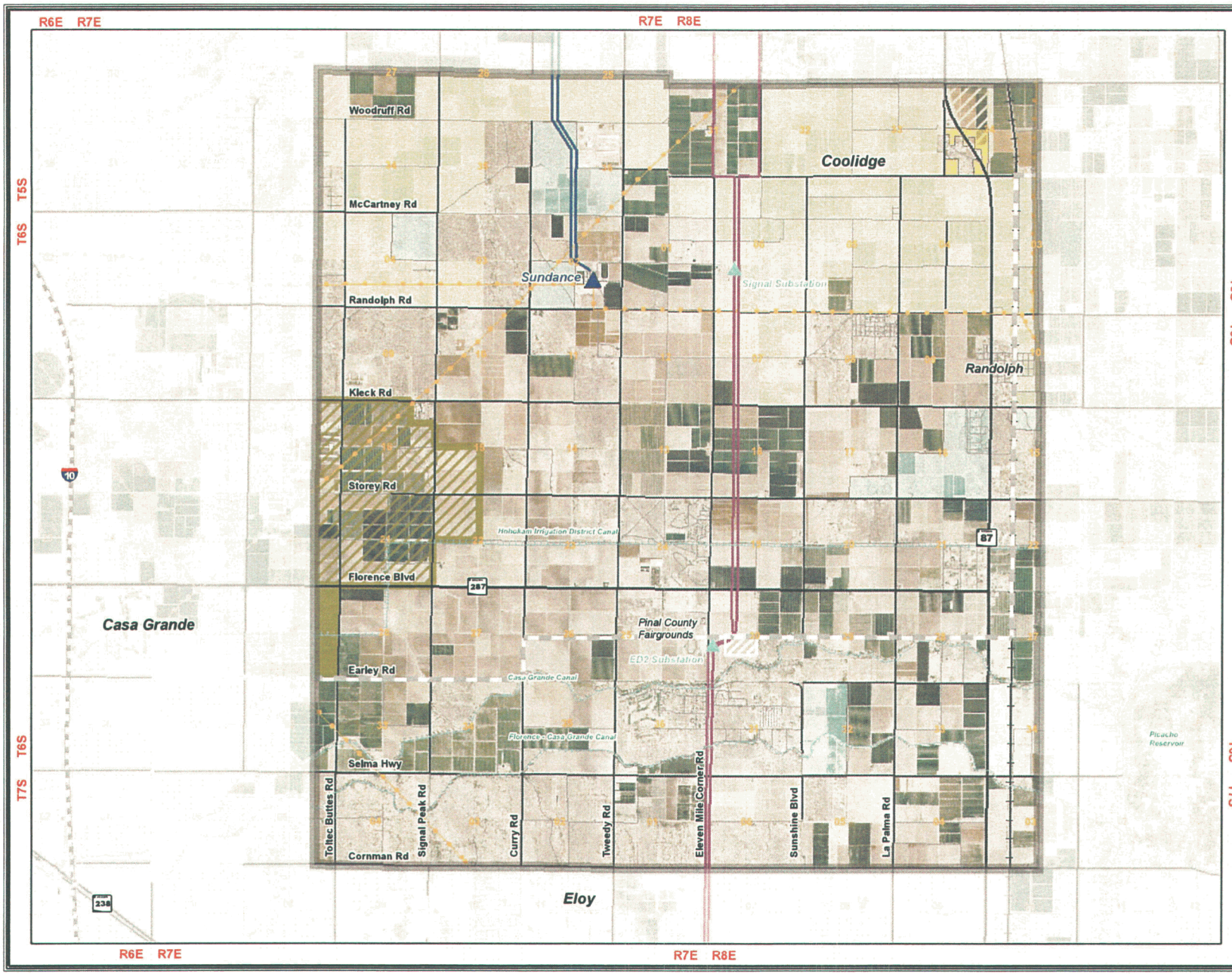
| | |
|---|---|
| • Early Summer 2007 | Meetings with jurisdictions and agencies |
| • Summer 2007 | Initial newsletter and public open house |
| • Late Summer 2007 | Complete analysis and identify preferred route |
| • Fall 2007 | File CEC application and initiate ACC process |
| • Summer 2011 | Transmission line in-service |

## Contact

Greg Bernosky, APS Project Manager can be reached by phone as noted above or by email at Gregory.Bernosky@aps.com

APS

THE POWER TO MAKE IT HAPPEN




# Project Study Area

**Sundance to Pinal South 230kV Transmission Project**

*Analysis Area: Pinal County, Arizona*

## July 2007

### Legend

**City of Coolidge**
- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**
- Municipal Boundary
- Proposed Annexation

**Land Ownership**
- Bureau of Land Management
- Arizona State Trust

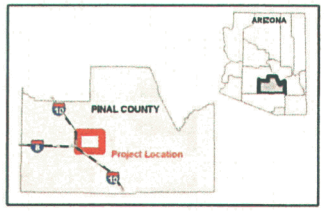
**Reference Features**
- Project Study Area
- Future Pinal South Substation
- Future SRP 500/230kV Line
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

N

0 0.25 0.5 0.75 1
Miles

Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters

Data Sources
City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - SRP, April 2006




APS

Tuesday, August 14, 2007

# OPEN HOUSE INVITATION FLYER

# You're Invited to a Public Open House!

APS has initiated a process of identifying alignment alternatives for a new 230 kilovolt (230 kV) transmission line that will connect the existing Sundance Generating Station to the recently permitted Pinal South Substation, both located in unincorporated Pinal County.

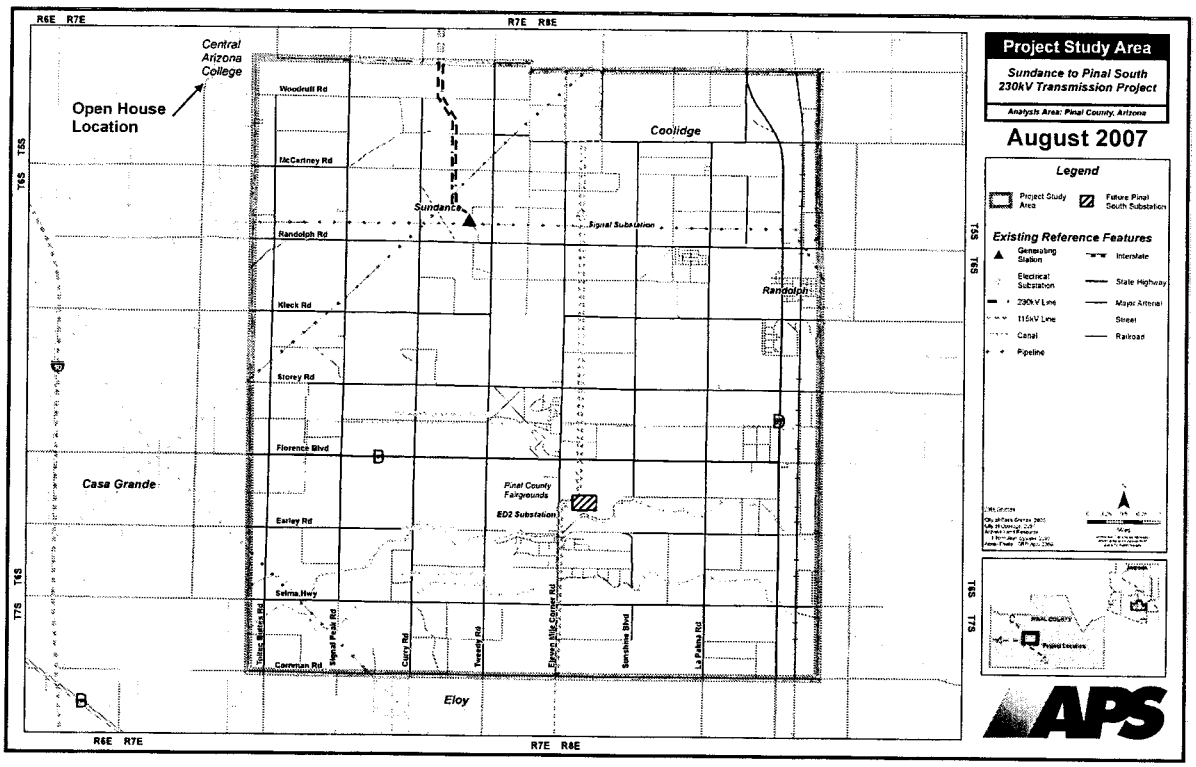
APS along with its environmental consultant, Arcadis, is hosting an Open House to inform the public about the project, discuss potential route options under consideration, and to gather your comment and input on the project. The Open House is intended to allow for an informal exchange of ideas and information regarding APS development plans.

Mark your calendars to attend the Open House.

## Tuesday, August 14, 2007
## 5:30 to 7:30 p.m.
## Central Arizona College – Residence Life Classroom
## 8470 N. Overfield Road
## Coolidge, Arizona 85228

*(From the main entrance to the campus, take the first left into the residence life parking lot and follow the signs to the meeting room.)*

We look forward to the opportunity to discuss this project with you and hope to see you at the Open House. The public may attend any time between 5:30 and 7:30 p.m. to talk one-on-one with project team members and review detailed project information. For more information about the Sundance to Pinal South 230kV Transmission Project, go to **http://siting.aps.com** and select the link for "Current Projects," or call **1-866-472-4484** and select Option 2 for Greg Bernosky, the APS Project Manager.



Tuesday, August 14, 2007

# OPEN HOUSE NEWSLETTER

APS
Mail Station 8508
P.O. Box 53999
Phoenix, AZ 85072

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U.S. POSTAGE
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PHOENIX, AZ
PERMIT NO. 90

IMPORTANT INFORMATION FOR PROPERTY OWNERS

# Please Attend the Sundance to Pinal South 230kV Transmission Project

## Public Information Open House

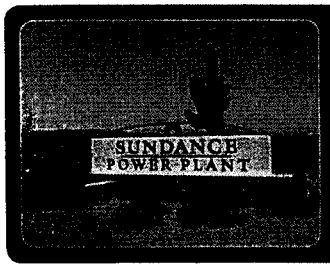
**Tuesday, August 14, 2007**
**5:30–7:30 P.M.**

Central Arizona College – Residence Life Classroom
8470 N. Overfield Road
Coolidge, Arizona 85228

(From the main entrance of the campus, take the first left into the residence life parking lot and follow the signs to the meeting room)

**For more information please visit our Web site at http://siting.aps.com and select the link for Current Projects**

APS




# Sundance to Pinal South 230kV Transmission Project

August 2007 • Issue 1

## APS Proposes New Transmission Facilities

APS proposes to build a new double-circuit 230 kilovolt (kV) transmission power line between the existing Sundance Generating Station and the future Pinal South Substation, both located in unincorporated Pinal County. The new power line will supply bulk power generated at the Sundance facility to the regional electrical system at times when additional capacity is needed to meet demand.

The Sundance Generating Station is a "peaking plant," which means the facility only generates power when system conditions require additional electricity be available, most commonly during the summer months. This project will allow APS to deliver or "schedule" the full output of the plant both now and in the future should additional generation units be developed at the Sundance facility. This will also relieve constraints associated with the existing transmission lines originating at Sundance. Furthermore, the project will also increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area.

## Project Description

The proposed Sundance to Pinal South 230kV transmission line will be approximately 5 to 7 miles in length and will be constructed on steel monopoles, typically between 130 to 150 feet high. The project will originate at the existing Sundance Generating Station and terminate at the future Pinal South Substation, located along Eleven Mile Corner Road, south of Florence Boulevard (State Route 287). A map illustrating the project study area is provided inside.

A right-of-way of 100 to 130 feet in width will be acquired in advance of construction, which is anticipated to begin in 2009. The planned in-service date of the transmission line is Summer of 2011.

## State Siting Process

In accordance with Arizona Revised Statute (ARS § 40-360), APS is required to obtain approval from the Arizona Corporation Commission (ACC) prior to constructing any new high voltage power line over 115kV In compliance with those regulations, APS will prepare an application for a Certificate of Environmental Compatibility (CEC) for the project. Once the siting process and public outreach

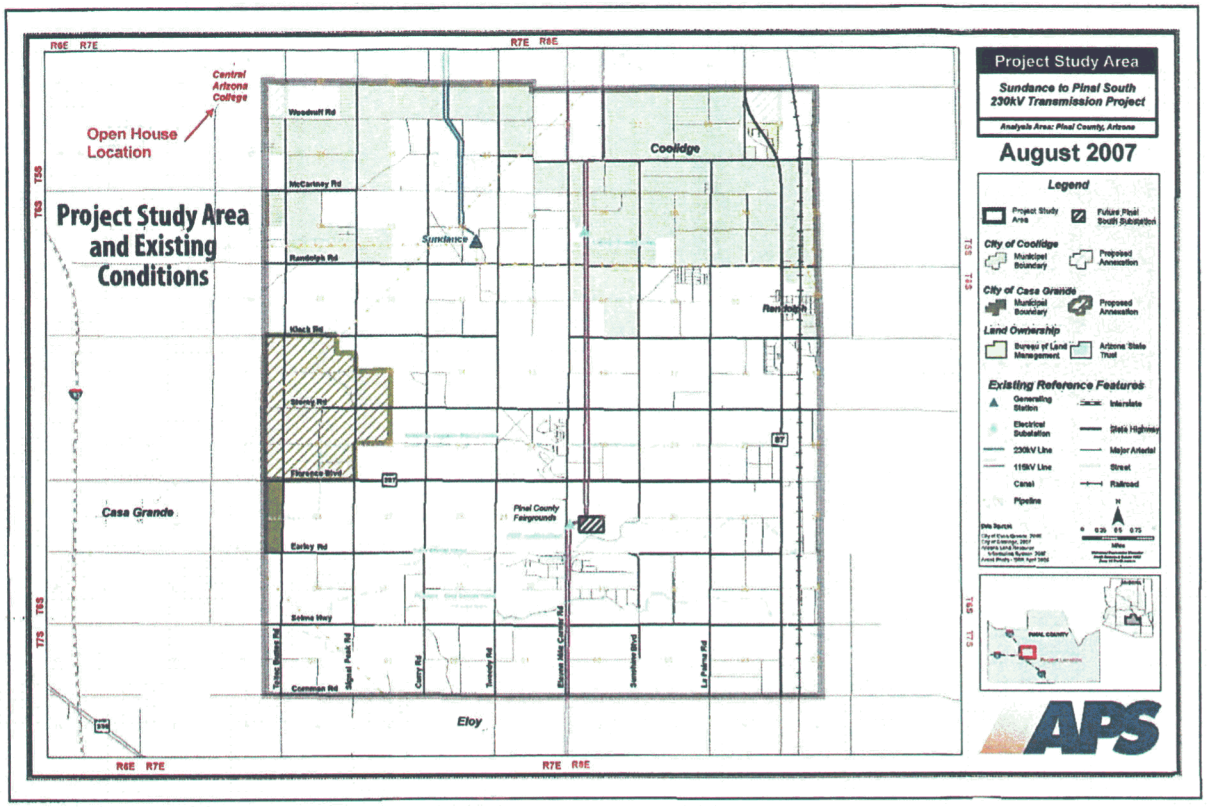
*(Continued on inside)*

## In This Issue

- APS Proposes New Transmission Facilities
- Project Description
- State Siting Process
- Environmental Process
- Opportunities for Public Information and Comment
- Project Schedule
- Informational Open House

**Questions?**
**Call 1-866-472-4484**
**Select Option 2**
**for Greg Bernosky,**
**Project Manager**

APS




*"APS appreciates your input and feedback regarding this project and looks forward to the opportunity to discuss this project with you at the open house."*

Greg Bernosky, Project Manager

has been completed, the application will be filed with the Arizona Power Plant and Transmission Line Siting Committee (Committee). The Committee will review the application and hold public hearings on the project. The CEC application includes information on the proposed project's purpose and need, description, cost, federal and state compliance efforts, associated environmental issues and public outreach efforts. Once the Committee has completed its public hearings, they will make a formal recommendation on the project to the ACC. The ACC makes the final determination on the approval of the project, including the location of the transmission line route to be constructed.

## Environmental Process

APS has retained Arcadis, an environmental consulting firm, to conduct the required environmental analysis on the project. Several environmental factors are considered in the analysis, including existing and planned land uses, landscape scenic quality and views, historic and archaeological features, and plant and wildlife species. Resource specialists in each of the aforementioned areas will assess the potential impacts of the project on the route alternatives that have been identified. Arcadis will be responsible for conducting four primary tasks:

1) Regional study area characterization and identification of preliminary transmission line alternatives;

2) Detailed inventory of resources in the study area;

3) Impact assessment and mitigation planning; and

4) Assist in the preparation of the CEC application for the State process.

The results of the environmental studies will be one of several pieces of information APS will use in evaluating the various alternative routes.

## Opportunities for Public Information and Comment

APS will provide information as well as opportunities for the public to ask questions and provide comment, through a variety of channels on this project. At a minimum, APS will use the following means to convey project information:

- Project Web site (http://siting.aps.com and select the link for "Current Projects")
- Project Newsletters (mailed directly to APS customers and landowners in the project area)
- Project Manager Contact (602-493-4448 or 1-866-472-4484 and select Option 2 for Greg Bernosky, Project Manager)
- Open Houses
- Arizona Power Plant and Transmission Line Siting Committee public hearings
- ACC open hearing

In addition, APS will continue to brief affected stakeholders, communities and agencies as well as business and civic leaders throughout the process.

## Project Schedule

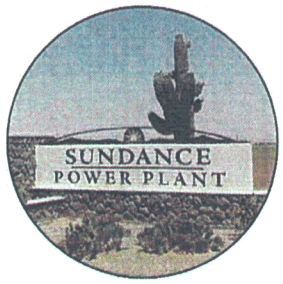
The process and time required to site power lines varies from project to project. APS anticipates completing the public outreach on this project in the late summer/early fall of 2007. After this outreach is complete, APS will file the application for a CEC for the project, the preferred route and any acceptable alternative routes with the ACC.

Upon conclusion of Committee hearings and consideration by the ACC, a final decision on the project is expected by late 2007.

## Informational Open House

APS will hold a public open house on this project on Tuesday, August 14th, in the Residence Life Classroom of the Central Arizona College, 8470 N. Overfield Road in Coolidge. The public may attend any time between 5:30 and 7:30 p.m. to talk one-on-one with project team members and review detailed project information.

We look forward to the opportunity to discuss this project with you and hope to see you at the open house. If you have any questions or comments on the project, please visit our Web site at http://siting.aps.com or contact APS Project Manager Greg Bernosky toll free at 1-866-472-4484 (select Option 2 for this project).



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Phoenix, AZ 85072

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**INFORMACION IMPORTANTE PARA DUEÑOS DE PROPIEDADES**

**Favor de asistir a la Reunión pública informativa sobre el**

## Proyecto de transmisión de 230kV, de Sundance a Pinal South

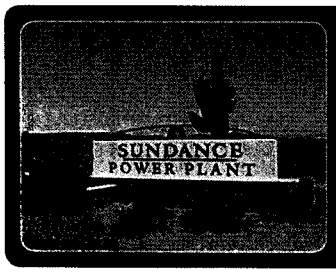
**Martes, 14 de agosto de 2007**
**5:30–7:30 P.M.**

Colegio Central Arizona – Salón Residence Life
8470 N. Overfield Road
Coolidge, Arizona 85228

(de la entrada principal del plantel, tome la primera calle a la izquierda hacia el estacionamiento de residence life y siga los señalamientos hasta el salón de juntas)

**Para más información, visite nuestro sitio electrónico, http://siting.aps.com y seleccione el enlace de "Current Projects" (Proyectos actuales)**

APS




# Proyecto de transmisión de 230kV Sundance a Pinal South

Agosto 2007 • Número 1

## APS propone nuevas instalaciones de transmisión

APS propone la construcción de una nueva línea de transmisión de energía de circuito doble de 230 kilovoltios (kV), entre la estación existente de generación Sundance y la futura subestación Pinal South, ambas localizadas en el Condado Pinal desincorporado. La nueva línea de energía proveerá energía al por mayor generada en las instalaciones Sundance al sistema eléctrico regional cuando se necesite capacidad adicional para responder a la demanda.

La estación de generación Sundance es una planta que únicamente genera energía cuando las condiciones del sistema requieren electricidad adicional disponible, esto ocurre, por lo general, durante los meses de verano. Este proyecto permitirá a APS distribuir o "programar" la producción completa de la planta tanto ahora como en el futuro si se desarrollan unidades de generación adicionales en la instalación Sundance. Esto también aliviará los impedimentos asociados con las líneas de transmisión existentes originadas en Sundance. Más aún, el proyecto permitirá aumentar la capacidad local, la cual mejorará la fiabilidad y continuidad del servicio para la carga eléctrica en el área.

## Descripción del proyecto

La línea de transmisión propuesta, de 230kV, que corre de Sundance a Pinal South, tendrá una longitud aproximada de 5 a 7 millas y se construirá a base de postes individuales de acero, típicamente de una altura de entre 130 a 150 pies. El proyecto se originará en la estación de generación existente Sundance y terminará en la futura subestación Pinal South, localizada a lo largo de Eleven Mile Corner Road, al sur de Florence Boulevard (Ruta estatal 287). En el interior encontrará un mapa con la ilustración del área de estudio del proyecto.

Se adquirirá un derecho de paso de 100 a 300 pies de ancho antes de la construcción, misma que se espera comience en 2009. La fecha programada para el inicio de servicio de la línea de transmisión es el verano de 2011.

## Proceso estatal de localización

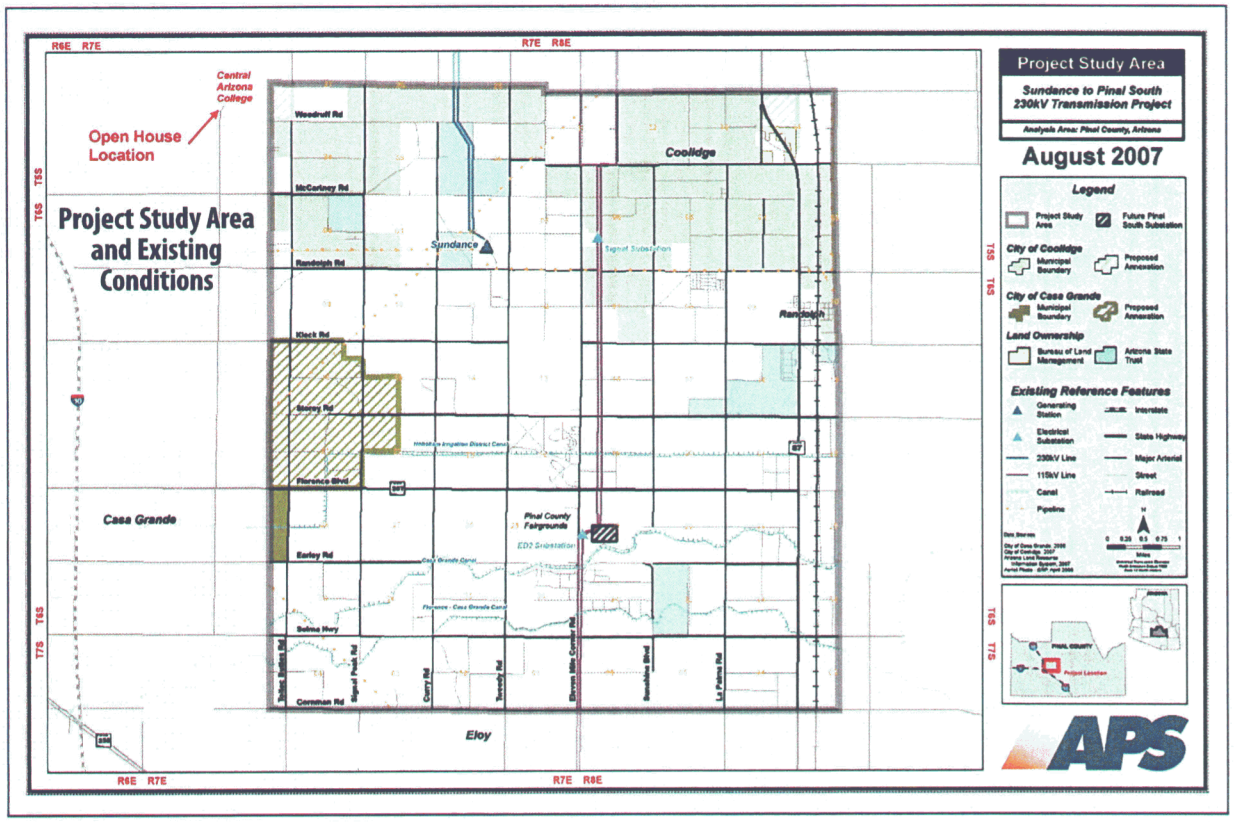
De acuerdo con los Estatutos Revisados de Arizona (ARS § 40-360), APS debe obtener autorización por parte de la Comisión de Corporaciones de Arizona (ACC) antes de construir cualquier línea de alto voltaje de más de 115kV. Conforme a estas regulaciones, APS preparará una solicitud para obtener un Certificado de

### En este número


- APS propone nuevas instalaciones de transmisión
- Descripción del proyecto
- Proceso estatal de localización
- Proceso ambiental
- Oportunidades de participación pública
- Calendario del proyecto
- Reunión pública informativa


**¿Preguntas? Llame al 1-866-472-4484 Seleccione la opción 2 para Greg Bernosky, Administrador del proyecto**

APS




*"APS aprecia su participación y comentarios con relación a este proyecto y espera tener la oportunidad de discutir los detalles con usted en la reunión pública".*

Greg Bernosky, Administrador del proyecto

Compatibilidad Ambiental (CEC) para el proyecto. Una vez que el proceso de localización y la consulta popular hayan concluido, la solicitud será presentada ante el Comité de Localización de Plantas de Energía y Líneas de Transmisión de Arizona. Este comité revisará la solicitud y llevará a cabo audiencias públicas sobre el proyecto. La solicitud del CEC incluye información sobre el propósito y necesidad del proyecto propuesto, descripción y costos. También es necesario documentar los esfuerzos realizados para la obtención de permisos federales y estatales, asociados con asuntos ambientales y los esfuerzos por llegar a la población que se verá afectada. Una vez que el comité concluya con el proceso de audiencias públicas, hará una recomendación formal sobre el proyecto a los miembros de ACC. Esta comisión tomará entonces una determinación final, que incluirá la ruta preferida para esta nueva línea de transmisión.

## Proceso ambiental

APS ha contratado los servicios de Arcadis, una firma de asesoría en medio ambiente, para conducir el análisis ambiental requerido sobre el proyecto. En el análisis se toman en cuenta varios factores ambientales, incluyendo usos de la tierra existentes y planeados, jardinería de calidad con vistas escénica, características históricas y arqueológicas y especies de flora y fauna. Especialistas en recursos en cada una de las áreas mencionadas valorarán el impacto potencial del proyecto en las rutas alternativas que han sido identificadas. Arcadis será responsable de conducir cuatro tareas principales:

1) Estudio regional con características del área e identificación de líneas de transmisión alternativas preliminares;
2) Inventario detallados de recursos en el área de estudio;
3) Valoración del impacto y planificación para mitigarlo;
4) Asistencia en la preparación de la solicitud del certificado CEC que forma parte del proceso estatal.

Los resultados de los estudios ambientales serán una de las varias piezas de información que APS utilizará en la evaluación de varias rutas alternativas.

## Oportunidades de participación pública

APS proporcionará información así como oportunidades para que el público haga preguntas y comentarios sobre este proyecto, a través de una variedad de canales. Como mínimo, APS utilizará los siguientes medios para dar a conocer la información relacionada con este proyecto:

- Sitio electrónico del proyecto (http://siting.aps.com y seleccione el enlace "Current Projects")
- Boletines informativos sobre el proyecto (se enviarán por correo directamente a los clientes de APS y propietarios de terrenos ubicados en el área del proyecto)
- Contacto directo con el Administrador del Proyecto al (602-493-4448 ó 1-866-472-4484 y seleccione la Opción 2 para Greg Bernosky, gerente del proyecto)
- Reuniones públicas
- Audiencias públicas a cargo del Comité estatal de localización de Líneas de Transmisión y Plantas de energía de Arizona
- Audiencias públicas a cargo de ACC

En forma adicional, APS continuará informando a los interesados, comunidades y agencias afectados así como a negocios y líderes cívicos a lo largo.

## Calendario del proyecto

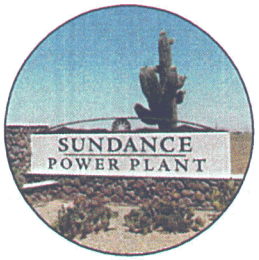
El proceso y tiempo requeridos parra establecer líneas varía de proyecto a proyecto. APS anticipa que estará en condiciones de concluir las audiencias públicas a finales del verano o principios de otoño de 2007. Después de que se realice el proceso de información al público, APS llenará la solicitud para e CEC del proyecto, la ruta preferida y cualquier ruta alternativa aceptable ante la Comisión de Corporaciones de Arizona (ACC).

Una vez que concluyan las audiencias del Comité y la consideración de la ACC, se espera que se tome una decisión final sobre este proyecto a finales de 2007.

## Reunión pública informativa

APS sostendrá una reunión pública sobre este proyecto el martes 14 de agosto en el Salón Residence Life, del Colegio Central Arizona, 8470 N. Overfield Road en Coolidge. Se invita a toda la comunidad a asistir en cualquier momento entre las 5:30 y 7:30 p.m., para hablar personalmente con los miembros del equipo del proyecto y revisar en detalle la información del proyecto.

Esperamos tener la oportunidad de verlo en esta reunión pública y explicarle los detalles del proyecto. Si tiene preguntas o comentarios sobre el proyecto, por favor visite nuestro sitio electrónico: http://siting.aps.com o comuníquese con el Administrador del Proyecto de APS, Greg Bernosky gratis al 1-866-472-4484 (seleccione la opción 2 para este proyecto).



Tuesday, August 14, 2007

# OPEN HOUSE HANDOUTS

**Sundance to Pinal South 230kV Transmission Project**
Open House Comment Form
August 14, 2007

Thank you for your interest in this Project. Please complete the appropriate sections of this form to be included on the Project mailing list and to provide any comments or questions you would like addressed. You may either return this completed form to a member of the Project Team, or by mail to the address specified on the back of this form.

❒ I would like to be kept informed of the ongoing process of this Project. Please include my name on the mailing list.

Name_____

Street Address_____

City_____ State_____ Zipcode_____

E-mail Address_____

❑ Resident

❑ Business or Organization_____

Please indicate any questions or comments you have about the Project.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for taking the time to comment about the Sundance to Pinal South 230kV Transmission Project. If you have any furthers questions, please contact Greg Bernosky, Project Manager, 1-866-472-4484. You can also visit our Website at http://siting.aps.com

APS

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Phoenix, AZ 85044

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Phoenix, AZ 85044

ATTENTION: Leslie McFadden

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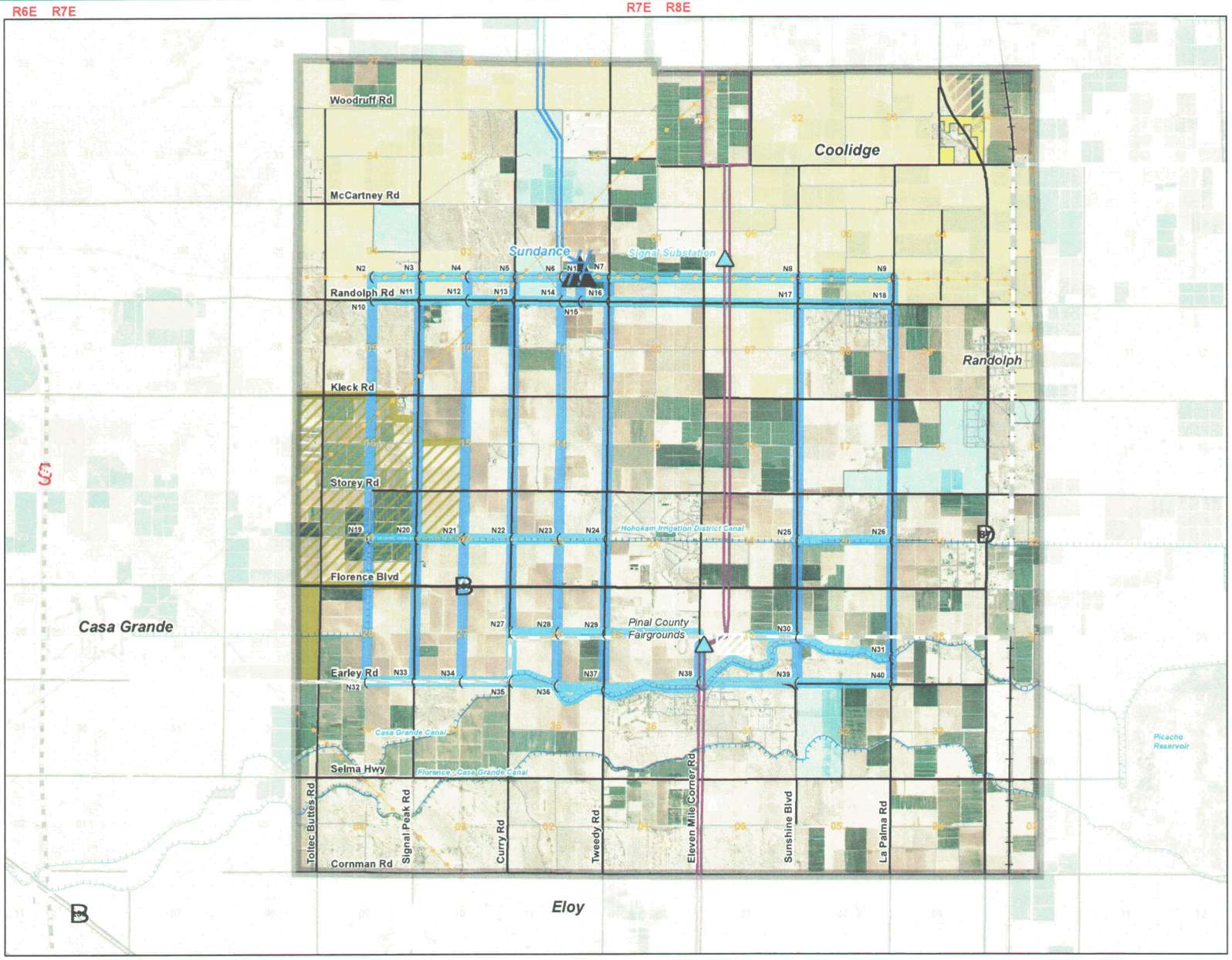



# Initial Alternative Alignments

## Sundance to Pinal South 230kV Transmission Project

*Analysis Area: Pinal County, Arizona*

## August 2007

### Legend

- North - South Alternative Alignment
- East - West Alternative Alignment
- Node

**City of Coolidge**
- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**
- Municipal Boundary
- Proposed Annexation

**Land Ownership**
- Bureau of Land Management
- Arizona State Trust

### Reference Features

- Project Study Area
- Canal
- Future Pinal South Substation
- Pipeline
- Future SRP 500/230kV Corridor
- Interstate
- Generating Station
- State Highway
- Electrical Substation
- Major Arterial
- 230kV Line
- Street
- 115kV Line
- Railroad

Data Sources
ARCADIS, 2007
City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - SRP, April 2006

0 0.25 0.5 0.75 1
Miles
Universal Transverse Mercator
North American Datum 1983
Zone 12 North meters

APS

Tuesday, August 14, 2007

# OPEN HOUSE BOARDS

# Sundance to Pinal South 230kV Transmission Project Open House

**Welcome**

Please Sign In

APS Sundance to Pinal South 230kV Transmission Project

# Project Need and Regional Information

APS Sundance to Pinal South 230kV Transmission Project

## Sundance to Pinal South 230kV Project

- **Project Need**
  - Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area
  - Allow APS to schedule the full output capability of the Sundance facility, currently estimated at 420 megawatts during peak summer conditions
  - Economically provide a new 230kV path for existing and potential future generation at the Sundance facility

APS Sundance to Pinal South 230kV Transmission Project

## Sundance to Pinal South 230kV Project

- **Project Description**
  - Double-circuit 230kV transmission line
  - Tie-in at Sundance and interconnection facilities at Pinal South
  - Steel monopole structures
  - Average structure height of 120 to 150 feet
  - 100 to 130 feet of right-of-way
  - Transmission line in-service, Summer 2011
    - *Right-of-way acquisition, followed by design, and then construction, would initiate after receipt of the CEC*

APS Sundance to Pinal South 230kV Transmission Project

# A Little Bit About Sundance

- Plant began Service in Summer of 2002
- Acquired by APS in Spring of 2005
- Natural gas-fueled "peaking plant"
  - 10 quick-start turbines
  - capable of producing approximately 450 MW
- APS owns approximately 300 acres around the Sundance facility (current plant operations occupy about 45 acres)

APS Sundance to Pinal South 230kV Transmission Project

# Key Electrical Terms

**Circuit** – term used to define an electrical path (Ex: 230kV circuit)

**Conductor** – another name for the wire that carries the electricity. Each conductor may actually be a bundle of several wires necessary for a complete 230kV circuit

**Kilovolt (kV)** – 1,000 volts 230kV = 230,000 volts

**Monopole** – a type of structure that supports electrical lines consisting of a single steel pole

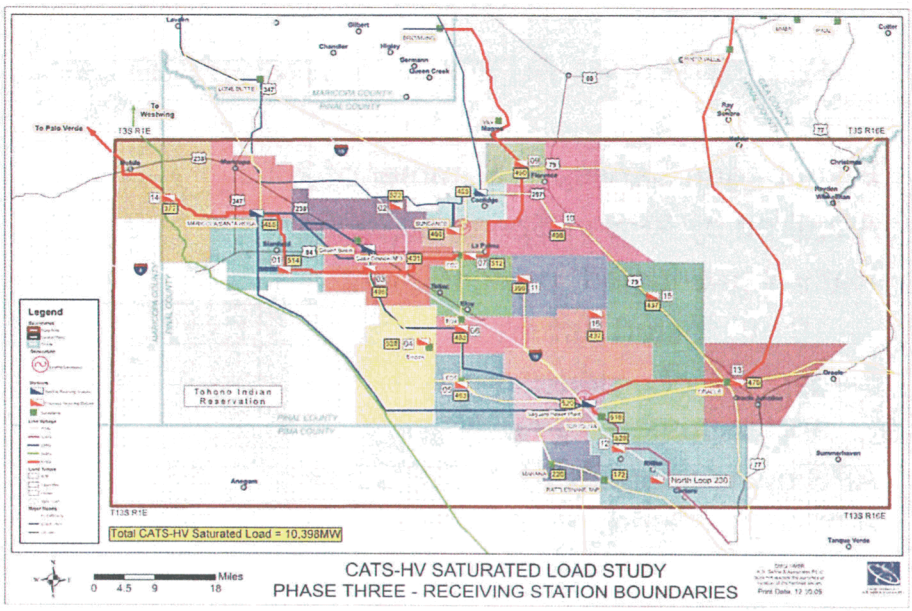
**Megawatt (MW)** – one million watts. Referenced as a unit of measure for the output capacity of a power plant. Typically 1 MW can power up to 250 average US homes

**Right-of-Way** – the land rights that APS must acquire to safely construct, operate, and maintain a power line

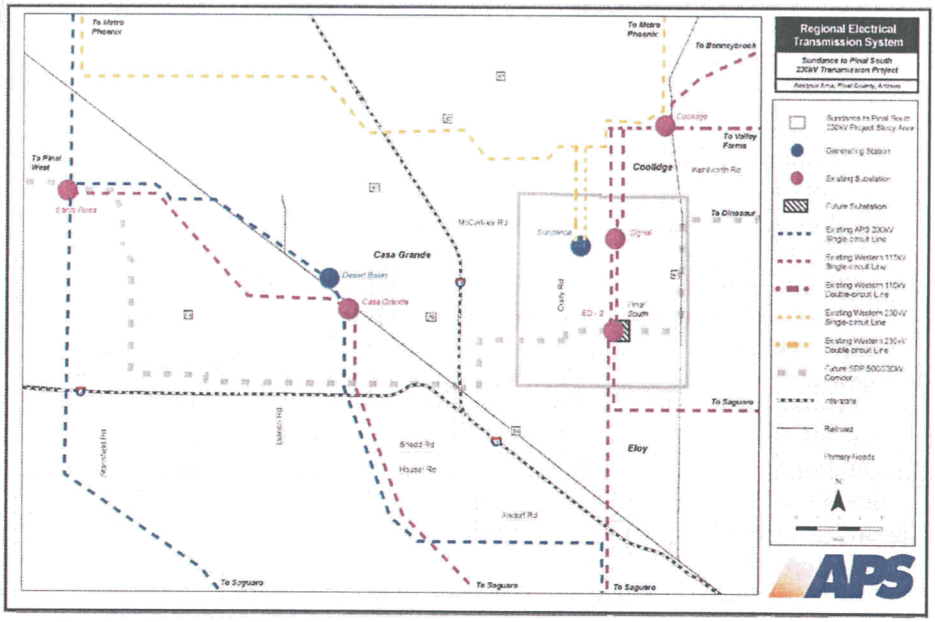
**Span** – the distance between two supporting structures

**Substation** – an electrical facility that serves as a point of interconnection for transmission and/or distribution lines where power is transformed for regional transport across the electric grid

APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project



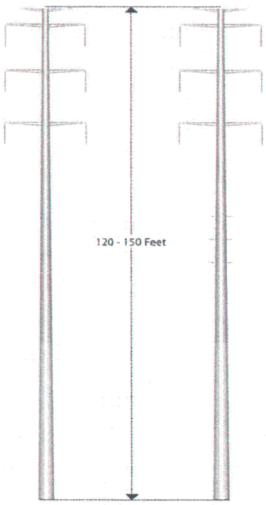

APS Sundance to Pinal South 230kV Transmission Project

# Project Description and Design Considerations

Sundance to Pinal South 230kV Transmission Project

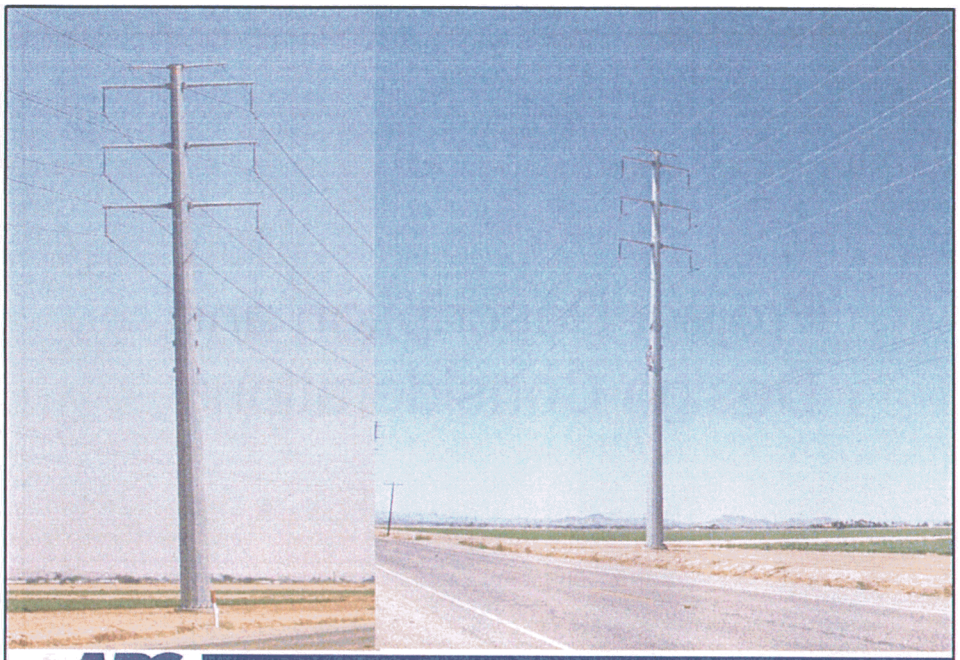
## Conceptual 230kV Structure

**Double Circuit 230kV Transmission Structure with no Underbuild**




**Double Circuit 230kV Transmission Structure with 69kV Underbuild**

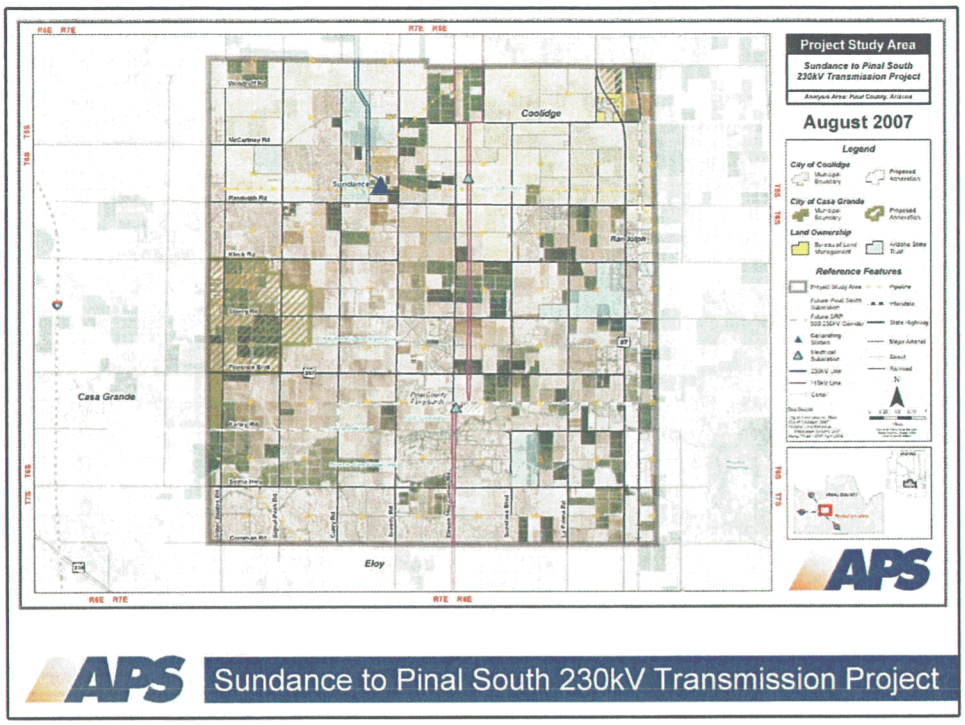
Sundance to Pinal South 230kV Transmission Project

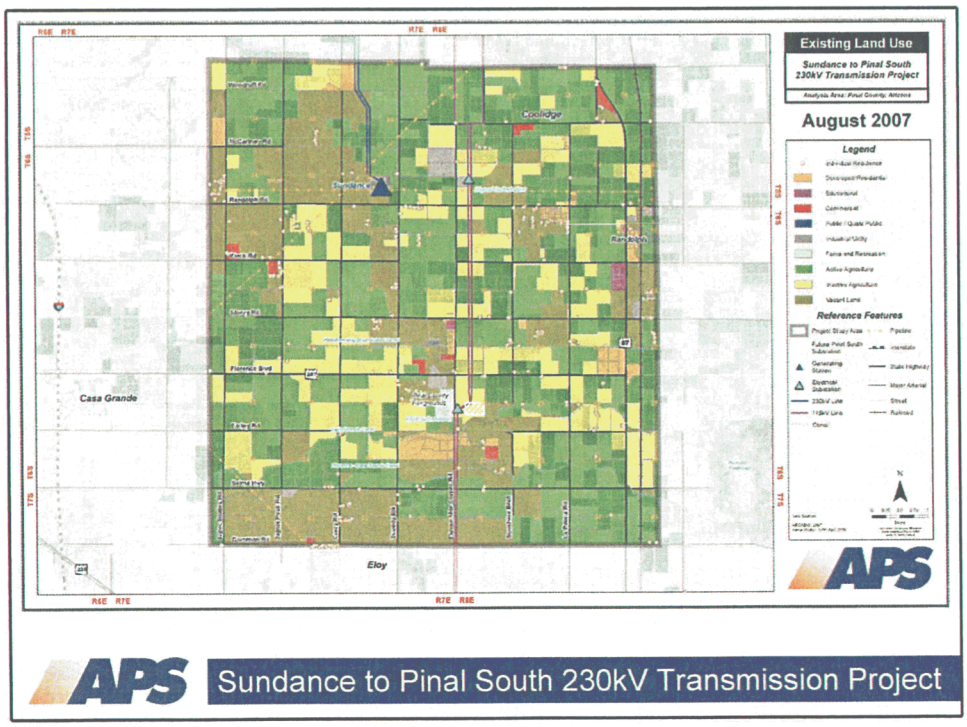


APS Sundance to Pinal South 230kV Transmission Project

# Study Area and Resource Data Collected

APS Sundance to Pinal South 230kV Transmission Project


Project Study Area
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
August 2007
Legend
Reference Features
Coolidge
Casa Grande
Eloy
APS
APS
Sundance to Pinal South 230kV Transmission Project


Existing Land Use
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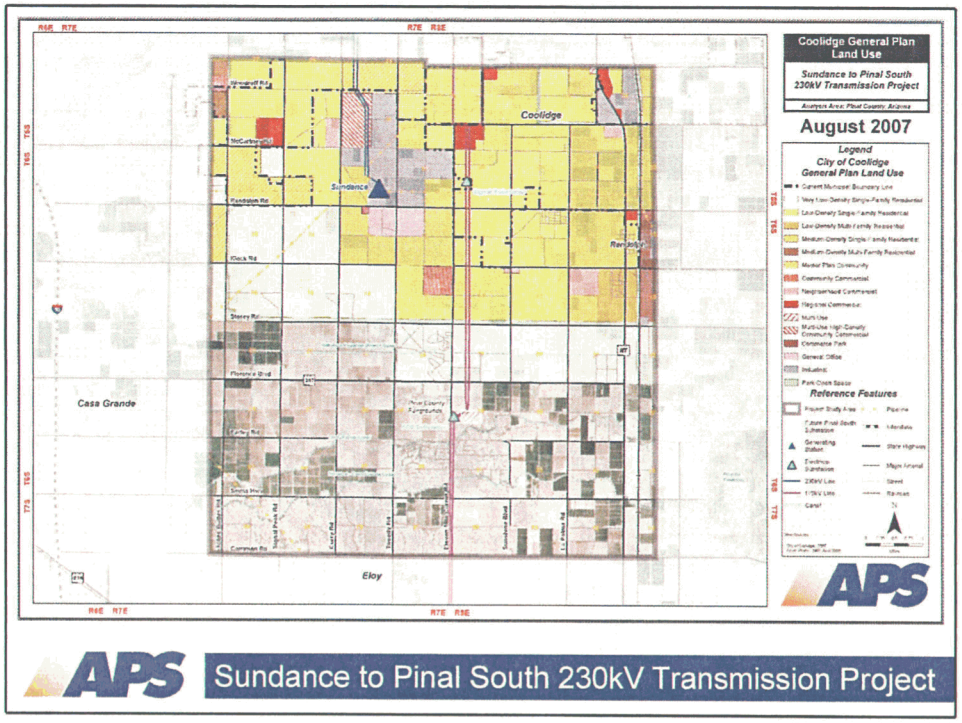
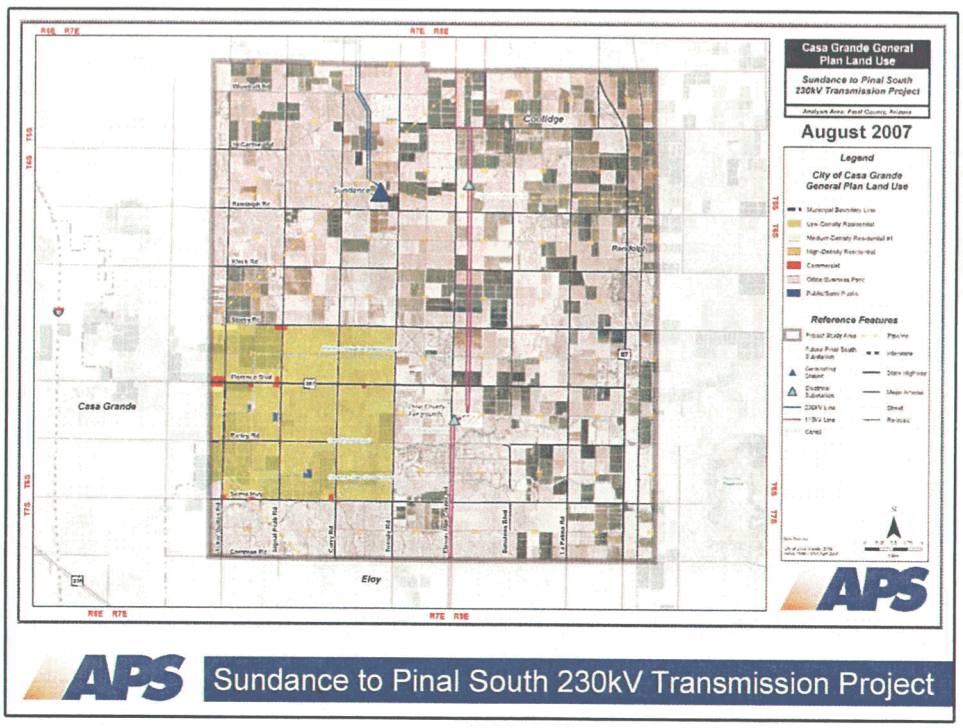
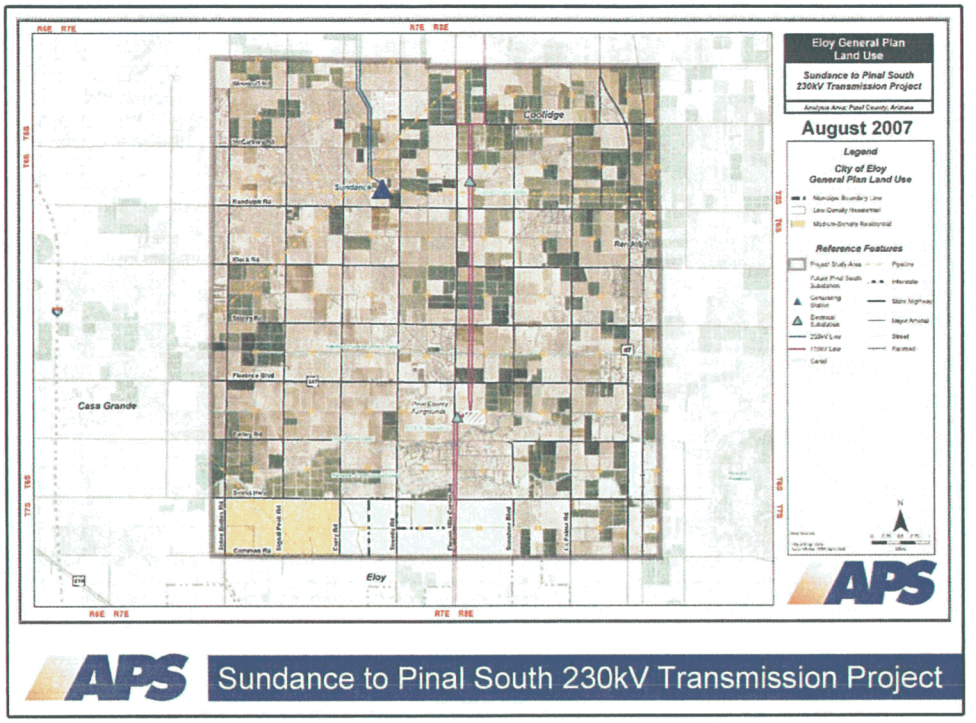
August 2007
Legend
Reference Features
Coolidge
Casa Grande
Eloy
APS
APS
Sundance to Pinal South 230kV Transmission Project

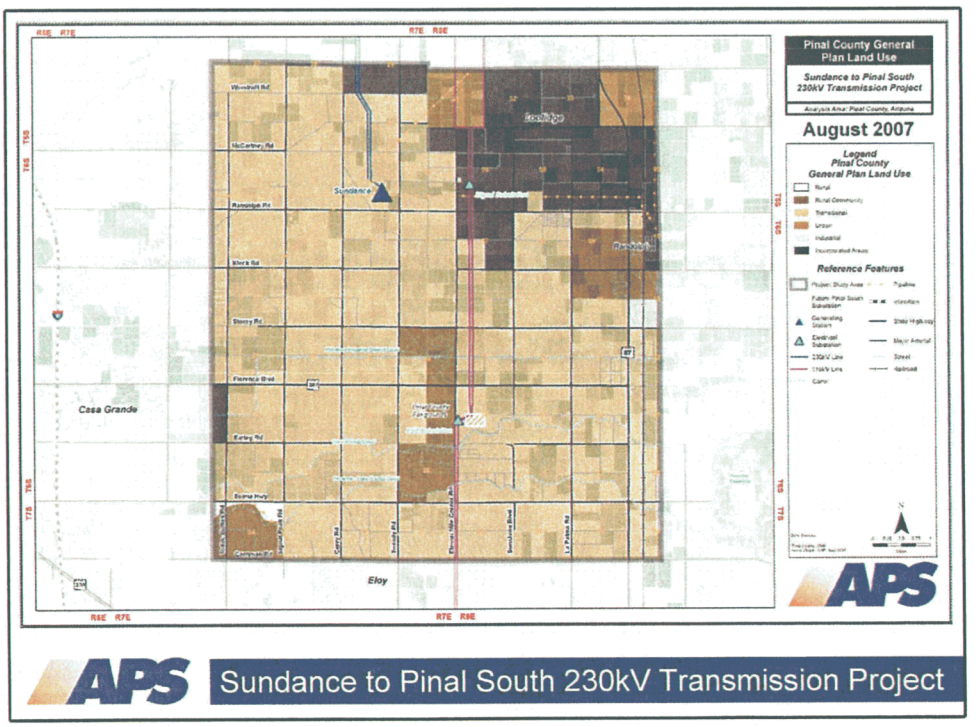


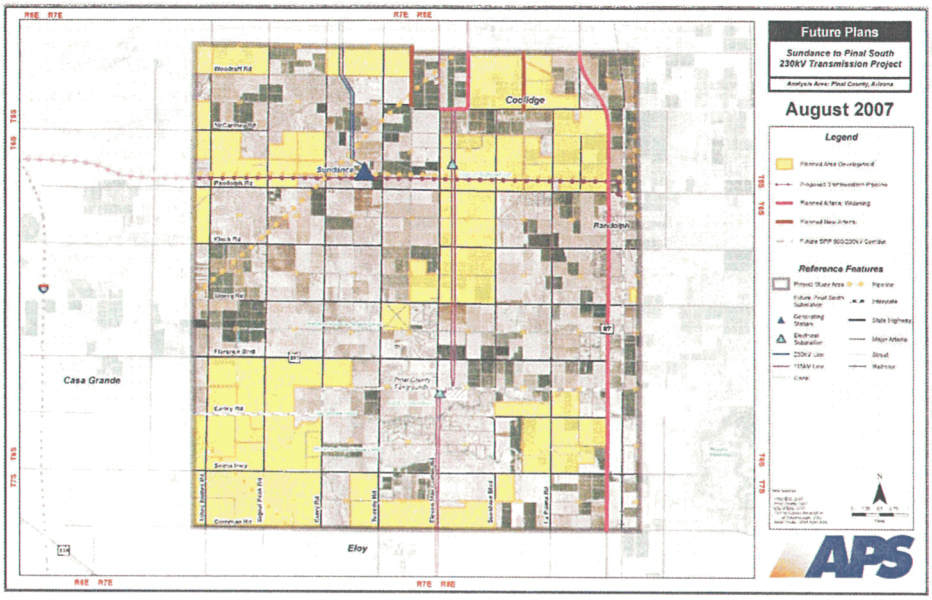

Sundance to Pinal South 230kV Transmission Project




Sundance to Pinal South 230kV Transmission Project


Eloy General Plan Land Use
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
August 2007
Legend
City of Eloy General Plan Land Use
Reference Features
Coolidge
Casa Grande
Eloy
APS
Sundance to Pinal South 230kV Transmission Project


Pinal County General Plan Land Use
Sundance to Pinal South 230kV Transmission Project
Analysis Area: Pinal County, Arizona
August 2007
Legend
Pinal County General Plan Land Use
Reference Features
Coolidge
Casa Grande
Eloy
APS
Sundance to Pinal South 230kV Transmission Project




[1] Planned Area Developments displayed on this map include all areas that have held zoning hearings as of August 1, 2007

APS Sundance to Pinal South 230kV Transmission Project

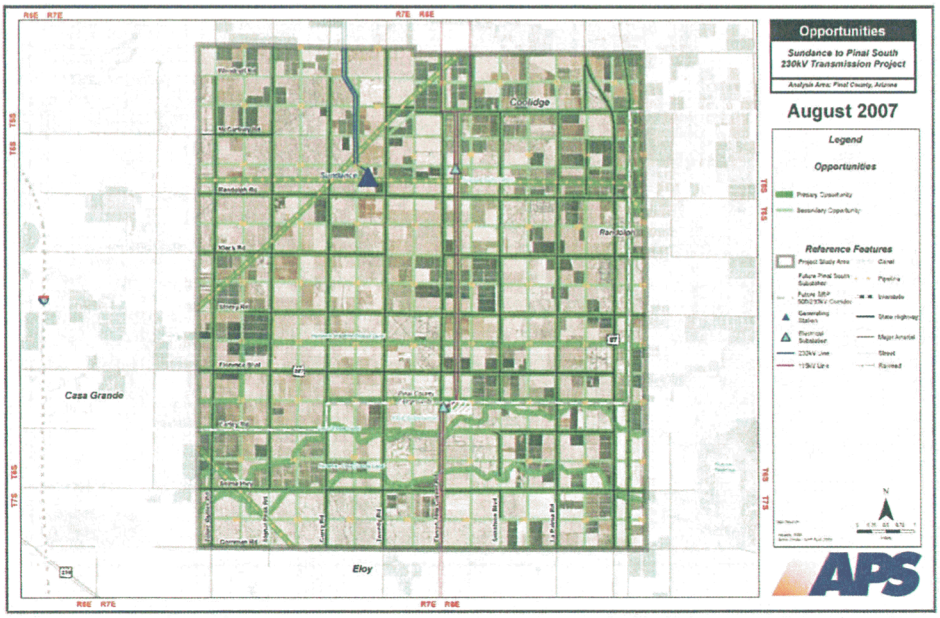
# Route Identification and Screening

APS Sundance to Pinal South 230kV Transmission Project

## Siting Criteria / Opportunities

| | |
|---|---|
| Primary | Designated Utility Corridors |
| | Existing Transmission Lines and Rights-of-Way |
| | Existing Canals |
| | Existing Railroads |
| | Existing Roads / Highways (County Road Level or Greater) |
| | Existing Pipelines |
| | Future Approved Utilities (Transmission Lines, etc.) |
| | Developed Section Lines / Major Property Lines / County Dedicated Roads |
| Secondary | Existing Small Canals and Drainage Features |
| | Undeveloped Section and Half-Section Lines |

APS Sundance to Pinal South 230kV Transmission Project



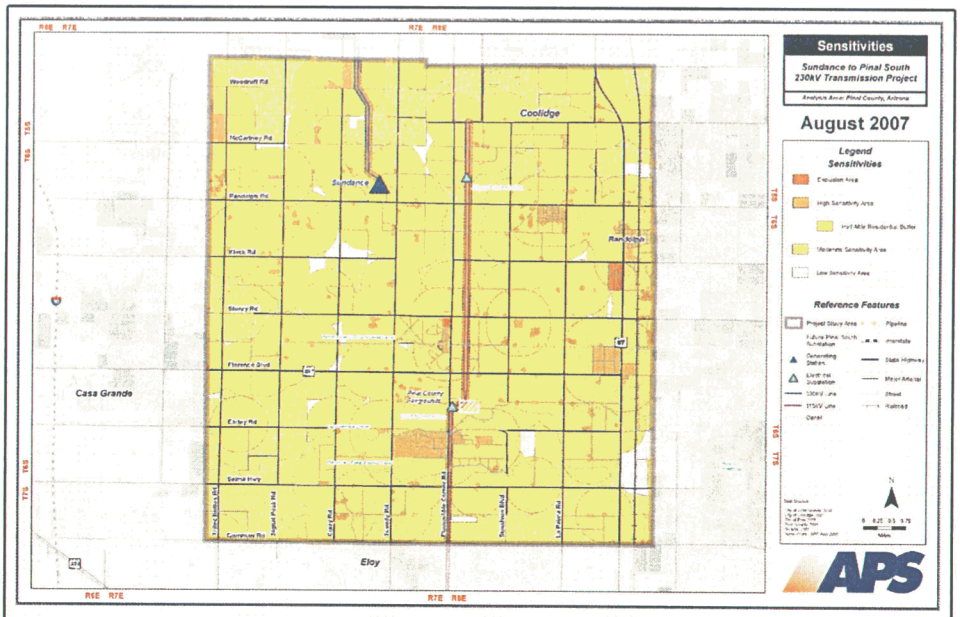

APS Sundance to Pinal South 230kV Transmission Project

## Areas of Sensitivity / Constraints

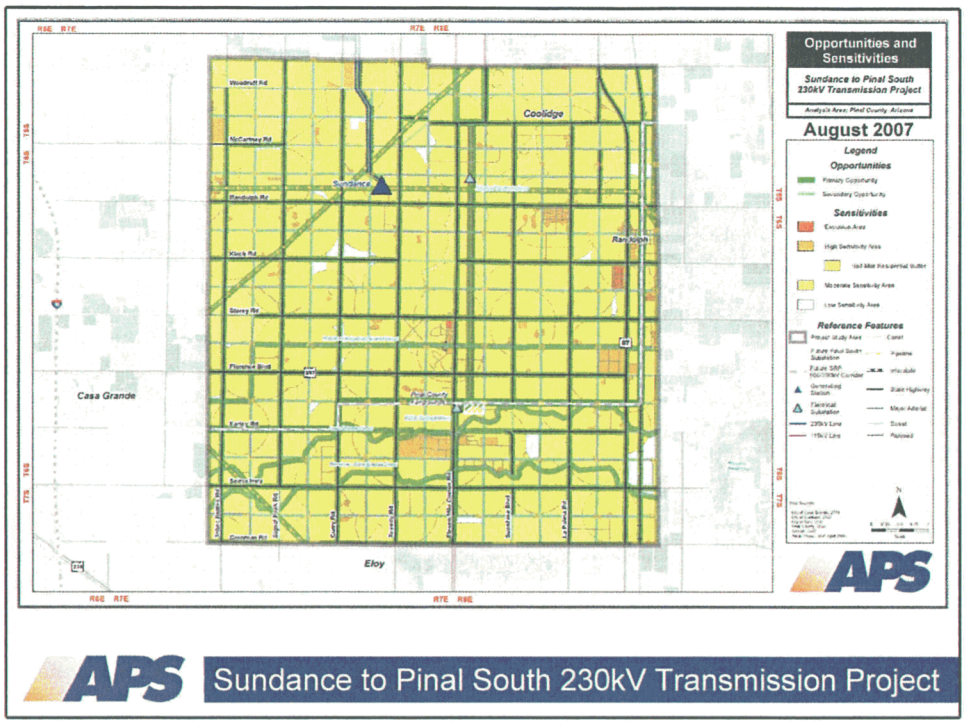
| | |
|---|---|
| Exclusion | Educational Facilities |
| High | Existing Residences and Residential Developments (half-mile buffer) |
| | Regional Parks and Recreation Facilities |
| | *Constrained Transmission Line Corridors |
| Medium | Agricultural Areas (Active) |
| | Biological Sensitive Areas |
| | Commercial Land Uses |
| | Public/Quasi-Public Land Uses |
| | Planned Area Developments |
| Low | General Plan Land Uses |
| | Industrial and Utility Land Uses |
| | Vacant Land or Inactive Agricultural Areas |

*A "**constrained transmission line corridor**" is an area with existing transmission lines where the addition of a new line (or lines) could negatively impact system reliability

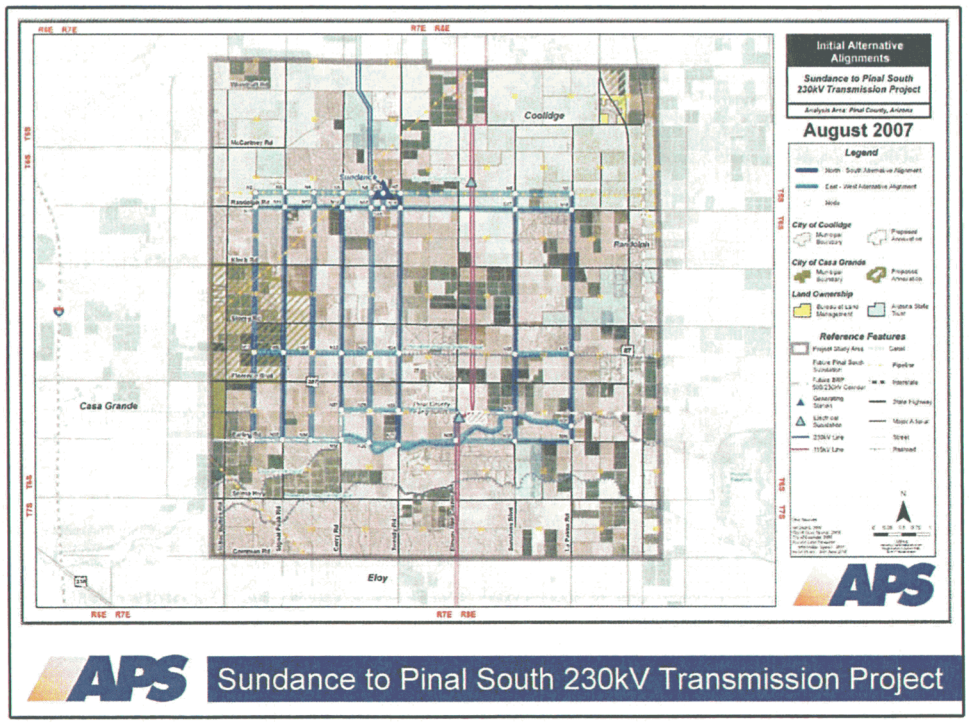
APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project

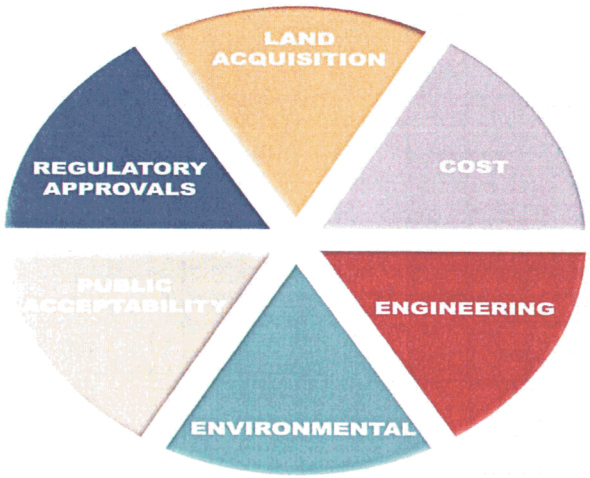



APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project

# Transmission Line Siting Considerations




APS Sundance to Pinal South 230kV Transmission Project

# Siting Project Schedule

APS Sundance to Pinal South 230kV Transmission Project

# Technical Considerations

APS Sundance to Pinal South 230kV Transmission Project

# EMF
# (Electric and Magnetic Fields)

- APS recognizes the public concern for EMF and have included EMF considerations in the design of this project
- Typical magnetic field calculations for this project
  **(based on expected 2011 flows)***

| | |
|---|---|
| Inside the Right-of-Way | < 5 (mG) |
| – 50 feet from the structure | 3.5 (mG) |
| – 100 feet from the structure | < 2 (mG) |

**Magnetic field calculations may vary based on the ultimate line configuration and the amount of electric load carried by the lines*

- Additional information and research
  - World Health Organization (**http://www.who.int/en/**)
  - National Institute of Environmental Health Sciences (**http://www.niehs.nih.gov/**)

APS Sundance to Pinal South 230kV Transmission Project

# EMF
# (Electric and Magnetic Fields)

- EMF's are produced by <u>ALL</u> devices which use, carry, or produce electricity
- EMF strength drops off dramatically as distance from the source increases
- Research on EMF began in the 1970's and continues today
- To date, no Federal or Arizona State standards have been established for EMF levels or exposure
- APS continues to monitor U.S. and international studies regarding EMF and offers free in-home measurements of EMF levels to all APS customers

APS Sundance to Pinal South 230kV Transmission Project

# Electric Fields

- Electrostatic induction can occur with insulated objects near the transmission line. This can result in nuisance shocks to individuals touching a grounded object under or near the line
- IEEE standard for electric field values (max):
  - Outside of the Right-of-Way 5.0 kV/m
  - Inside of the Right-of-Way 10.0 kV/m
- Calculated values for this project:
  - Outside of the Right-of-Way < 0.5 kV/m
  - Inside of the Right-of-Way < 1.1 kV/m

APS Sundance to Pinal South 230kV Transmission Project

## Communications

- Transmission lines have been known to cause interference with radio and TV transmissions
- Calculated radio noise levels (at 100 feet from conductor): 25.1 dB(A) fair weather (try to keep below 40 dB(A))
- Based on interference studies, no interference is expected with digital, satellite, or cable television

APS Sundance to Pinal South 230kV Transmission Project

## Corona

- Corona is defined as the breakdown of air into charged electrical particles. The amount of corona for a transmission line is a function of several things including:
  - Engineering Design
  - Voltage
  - Phase spacing and geometry
  - Weather conditions
- Effects of Corona are:
  - Audible Noise
  - Radio and TV interference

APS Sundance to Pinal South 230kV Transmission Project

## Audible Noise

- Created by Corona discharge along the line and the frequency and voltage level of the line
- Transmission line noise can be described as humming or crackling
- Noise Levels (at 100 feet from the structure) for this project are expected to be:
  - Fair Weather 11 dB(A)
  - Wet Weather 23 dB(A)
  - Ldn (Weighted Avg.) 17 dB(A)
- Suggested Levels (100 feet from the structure):
  - EPRI studies re: customer complaints 52.5 dB(A)
  - EPA recommended Ldn level 55.0 dB(A)
- Other common levels
  - Busy Traffic 70 dB(A)
  - Moderate Rain 50 db(A)

***Noise levels on this project are expected to be less than the suggested levels***

APS Sundance to Pinal South 230kV Transmission Project

## Opportunities for Public Information and Comment

- Fill out and return a comment form tonight!
- Electronic comment forms and project updates available on the Project Web site: **siting.aps.com** (see Sundance to Pinal South 230kV under "Current Projects")
- Greg Bernosky, APS Project Manager can be reached at 1-866-472-4484 (Select option 2)
- Future project newsletter(s) will have updated information and opportunities for comment
- Arizona Power Plant and Transmission Line Siting Committee Hearings

APS Sundance to Pinal South 230kV Transmission Project

# Interactive GIS

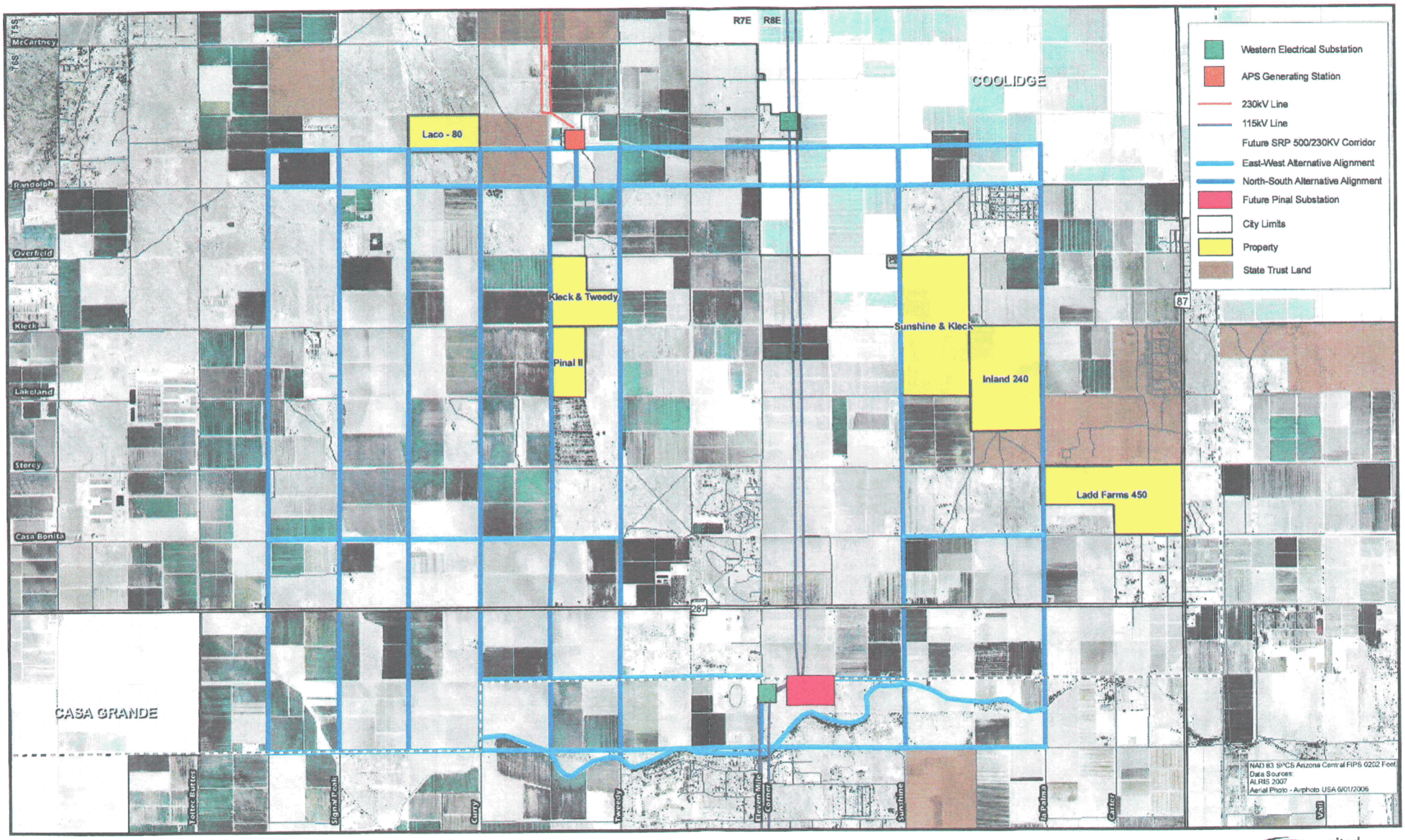
APS Sundance to Pinal South 230kV Transmission Project

Tuesday, August 14, 2007

# OPEN HOUSE
# COMMENT SUMMARY TABLE

| APS Sundance to Pinal South 230kV Transmission Project<br>Open House - August 14, 2007<br>Comment Summary Table | | | | |
|---|---|---|---|---|
| **Name** | **City** | **State** | **Organization** | **Comment Summary** |
| Adam Hamrick | Chandler | Arizona | United Engineering Group | United Engineering Group (UEG) represents a couple different clients that have property in the Sundance to Pinal South 230kV Transmission Project area. We have attached a map that shows our property in relation to the APS power line alternative alignments. UEG believes the best alignment would be any of the north-south alignments that are west of Curry Road. UEG has no problem with and of the east-west alternative alignments. Please keep UEG included in any future correspondence. Thank You* |
| Joe Blanton | Eloy | Arizona | City of Eloy | If the Transmission line is going to follow a section-line road, the poles should be set outside of the future Right-Of-Way (ROW). Co-location on existing structures is preferred. |
| Cameron MacDonald | Mesa | Arizona | Multiple parcel, property owner | Please correct your Eloy General Plan Exhibit. Your PAD Exhibit but Eloy General Plan is not. I would recommend Curry Road alignment from Randolph Road to Early Road, then east to Station Road. This will have the least impact on future Master Planned Communities and significantly reduce construction costs. |
| Todd Sergi | Scottsdale | Arizona | Bixby Development Partners | Owns a parcel along 287 at EMC Road. Concerned about potential ROW acquisition impact on parcel if route selected there. Noted the issue of transmission line constraint with Western Corridor. He will be providing an electronic copy of their site survey for our info. |
| Vashty St. Clair | Scottsdale | Arizona | property owner | Ms. St. Clair owns property along Randolph Road and wants to know the potential impact or location of the project. I told her that I would send her a map and comment form this week (08/13/07) to get her comments. |
| David Joyner | Coolidge | Arizona | property owner | Mr. Joyner's mother owns property in the vicinity and received the newsletter. I gave him an overview of the project. He asked if APS would have to acquire property to build the line, I said yes (100-130 feet of ROW for the length of the line). He had no further questions, I directed him to keep an eye on the website for future information. |
| Nancy Fisher | Casa Grande | Arizona | property owner | Questioned whether this project was related to or located near SRP's Desert Basin 230kV lines. No other comments or concerns noted. |

*See map attachment




# APS Initial Alternative Alignments 230 kV Line

Coolidge - Casa Grade, AZ

0 1 Miles

united engineering group

Date: 8-15-2007 Job Number: 00000

# PHASE II

Tuesday, October 23, 2007

# OPEN HOUSE INVITATION

# You're Invited to a Public Open House!

APS has been involved in a process of identifying alignment alternatives for a new 230 kilovolt (230 kV) transmission line that will connect the Sundance Generating Station to the recently permitted Pinal South Substation, both located in unincorporated Pinal County.

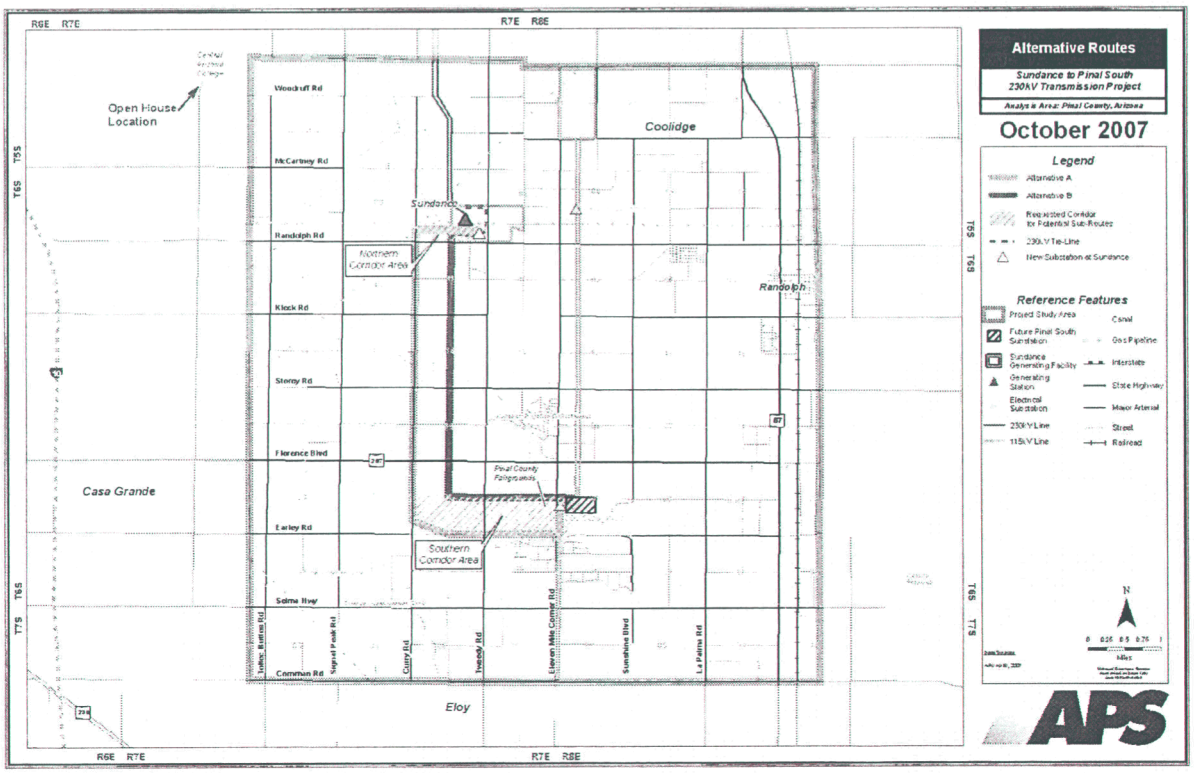
APS along with its environmental consultant, ARCADIS, is hosting an Open House to provide an update on the project, discuss the route options that have been identified, and to gather your comment and input on the project. The Open House is intended to allow for an informal exchange of ideas and information regarding APS development plans.

Mark your calendars to attend the Open House.

## Tuesday, October 23, 2007
## 5:30 to 7:30 p.m.
## Central Arizona College – Residence Life Classroom
## 8470 N. Overfield Road
## Coolidge, Arizona

*(From the main entrance to the campus, take the first left into the residence life parking lot and follow the signs to the meeting room.)*

We look forward to the opportunity to discuss this project with you and hope to see you at the Open House. The public may attend anytime between 5:30 and 7:30 p.m. to talk one-on-one with project team members and review detailed project information. For more information about the Sundance to Pinal South 230kV Transmission Project, go to www.aps.com/siting and select the link for "Current Projects," or call 1-866-472-4484 and select Option 2 for Greg Bernosky, the APS Project Manager



# PHASE II
# NEWSLETTER

APS
Mail Station 8508
P.O. Box 53999
Phoenix, AZ 85072

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IMPORTANT INFORMATION FOR PROPERTY OWNERS

## Please Attend the Sundance to Pinal South 230kV Transmission Project

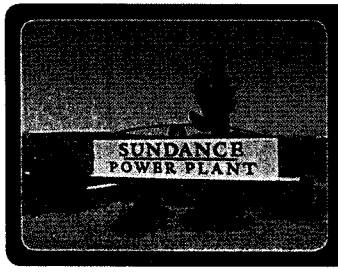
**Public Information Open House**
**Tuesday, October 23, 2007**
**5:30–7:30 P.M.**

Central Arizona College – Residence Life Classroom
8470 N. Overfield Road
Coolidge, Arizona 85228

(From the main entrance of the campus, take the first left into the residence life parking lot and follow the signs to the meeting room)

**For more information please visit our Web site at www.aps.com/siting and select the link for Current Projects**

APS




# Sundance to Pinal South 230kV Transmission Project

October 2007 • Issue 2

### In This Issue


- APS Identifies Alternative Transmission Line Routes
- Alternative Route Descriptions
- Next Steps


**Questions?**
**Call 1-866-472-4484**
**Select Option 2**
**for Greg Bernosky, Project Manager**

APS

## APS Identifies Alternative Transmission Line Routes

Based on several months of environmental and technical analysis, as well as public input, APS has identified a series of alternative route alignments that will be carried forward into the next phase of the Sundance to Pinal South 230kV (kilovolt) Transmission Project.

Arcadis, a consulting firm hired by APS to assist in the project, has completed an environmental analysis on the initial alternative route alignments presented at the first project open house held on Aug. 14 at Central Arizona College. Additional input has been received through comments received at the open house, the project Web site, community and agency meetings, and direct contact with the APS project manager.

In addition to the environmental analysis and public input, representatives from APS' internal departments have conducted analysis on the routes and facilities to ensure that the options that are carried forward meet APS' electrical and system planning needs.

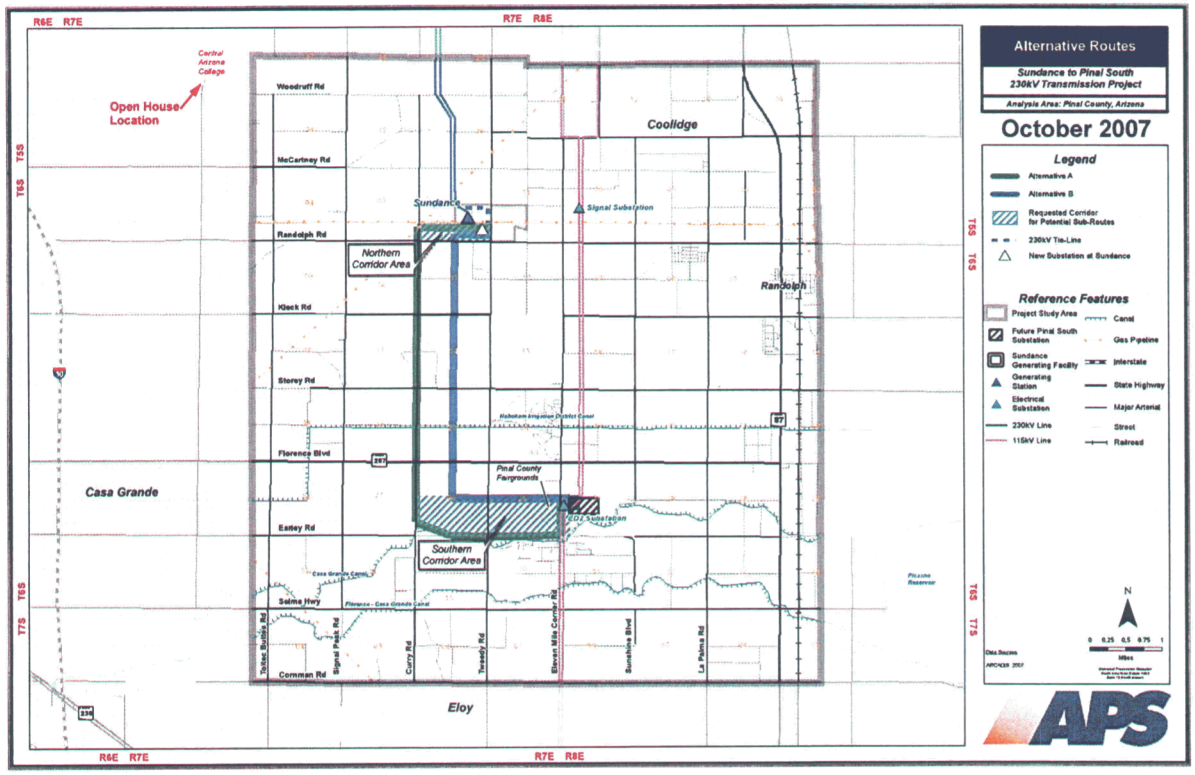
Other information that is part of the decision-making process includes:

- The ability of APS to obtain land rights;
- The total cost of the project; and
- The ability of APS to obtain the necessary approvals for the construction of the project, including regulatory approvals.

## Alternative Route Descriptions

The map on the inside of this newsletter illustrates the two primary alternative routes and two corridor areas inclusive of several sub-route options that are currently under consideration. It should be noted that

*(Continued on inside)*




*"We continue to value your feedback as we progress through the line siting and route identification process."*

Greg Bernosky, Project Manager

only one continuous route between Sundance and the Pinal South Substation is required for the project.

Both route alternatives will originate at a new substation, which will be located on 10 acres of the existing Sundance property owned by APS (white triangle on map).

### *Alternative A (Green Line)*

- This route originates at the new substation at Sundance as noted on the map and will parallel the south side of existing and future natural gas pipelines north of Randolph Road to the Curry Road alignment.
- The location of the route in this area will depend on engineering considerations described under the heading of "Northern Corridor Area".
- Alternative A then follows Curry Road to approximately the Earley Road alignment, which is also generally paralleled by the Casa Grande Canal.
- The route continues east to Eleven Mile Corner Road and then north to the Pinal South Substation.

### *Alternative B (Blue Line)*

- This route also originates at the new substation at Sundance and will follow the same alignment as Alternative A to the half-section alignment between Curry and Tweedy Roads.
- The route would then continue south along this alignment to the half-section alignment between Florence Boulevard (State Route 287) and Earley Road.
- From this point, APS would parallel the future Pinal West to Southeast Valley/Browning 500/230kV transmission line proposed by Salt River Project (SRP) to the Pinal South Substation.

### *Northern Corridor Area (Blue Crosshatch)*

APS will seek approval for a corridor of sufficient size between the existing and proposed natural gas pipelines and Randolph Road to accommodate the appropriate separation between the pipelines and the proposed transmission line based on engineering and policy requirements.

### *Southern Corridor Area (Blue Crosshatch)*

APS is continuing to work with SRP and Pinal County to identify a potential route for the project in an area that includes the Pinal County Fairgrounds, located immediately east of the existing ED-2 Substation and future Pinal South Substation along Eleven Mile Corner Road. Several sub-route options, including a crossing of the Pinal County Fairgrounds property as well as a series of alignments that would not cross the Fairgrounds, are under consideration. APS anticipates requesting a corridor that would allow the project to be built along Alternative A or B, or a route within the blue-hatched area as noted on the map.

## Next Steps

APS will hold a second public open house on this project on Tuesday, Oct. 23 in the Residence Life Classroom of Central Arizona College, 8470 N. Overfield Road in Coolidge. The public may attend any time between 5:30 and 7:30 p.m. to review project information, comment on the routes identified, and ask questions of the project team.

Additionally, APS and Arcadis will continue with the detailed analysis and begin the process of developing its Application for a Certificate of Environmental Compatibility (CEC), which is part of the state-required process to approve this project (Arizona Revised Statute § 40-360). APS plans to announce the identification of a Preferred Route in a final mailing prior to the filing of the CEC Application, anticipated in November 2007.

We continue to value your feedback as we progress through the line siting and route identification process and invite interested parties to provide comments or questions through our Web site at www.aps.com/siting or contact APS Project Manager Greg Bernosky toll free at 1-866-472-4484 (select Option 2 for this project).

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Phoenix, AZ 85072

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**IMPORTANTE INFORMACIÓN PARA PROPIETARIOS**

# Por favor, venga a la reunión pública Proyecto de transmisión de 230 kV, de Sundance a Pinal South

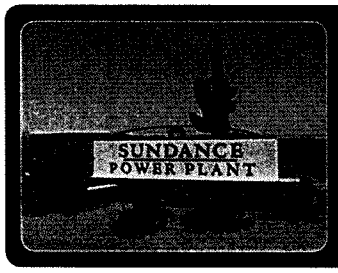
**Martes, 23 de octubre del 2007**
**de 5:30 a 7:30 p.m.**

Colegio Central Arizona – Salón Residence Life
8470 N. Overfield Road
Coolidge, Arizona 85228

(Desde la entrada principal del plantel, tome la primera calle a la izquierda hacia el estacionamiento de Residence Life y siga los señalamientos hasta el salón de juntas)

**Para más información, visite nuestro sitio electrónico, www.aps.com/siting y seleccione el enlace "Current Projects" (Proyectos actuales).**

APS




# Proyecto de transmisión de 230 kV Sundance a Pinal South

Octubre 2007 • Número 2

## APS identifica rutas alternativas para la nueva línea de transmisión

De acuerdo a varios meses de estudios ambientales y análisis técnicos, lo mismo que en la participación del público, APS ha identificado una serie de rutas alternativas paralelas que serán tomadas en cuenta en la próxima fase del Proyecto de transmisión de 230 kV (kilovoltios), de Sundance a Pinal South.

Arcadis, la firma de consultores que ha sido contratada para asistir a APS en este proyecto, ha concluido un análisis ambiental sobre la dirección de la ruta alternativa inicial, presentada en la primera reunión pública del proyecto el pasado 14 de agosto en el Colegio Central Arizona. Se han recibido comentarios adicionales en otras reuniones comunitarias, a través del sitio electrónico y en comunicaciones directas con el administrador del proyecto.

Además de los análisis de medio ambiente y de la participación pública, representantes de los departamentos internos de APS han conducido análisis de las rutas e instalaciones para asegurar que las opciones siguientes cumplan con las necesidades eléctricas y de sistema planificadas por APS.

Hay información adicional que forma parte del proceso de toma de decisiones incluye:

- La capacidad de APS de obtener derechos de uso de la tierra
- El costo total del proyecto
- La capacidad de APS de obtener los permisos de construcción necesarios, incluyendo permisos reguladores

## Descripción de las rutas alternativas

El mapa del interior muestra las dos principales rutas alternativas y los dos corredores junto con varias rutas menores opcionales que actualmente se encuentran bajo consideración. Es importante destacar que, para este proyecto, solamente se requiere una ruta continua entre Sundance y la Subestación Pinal South.

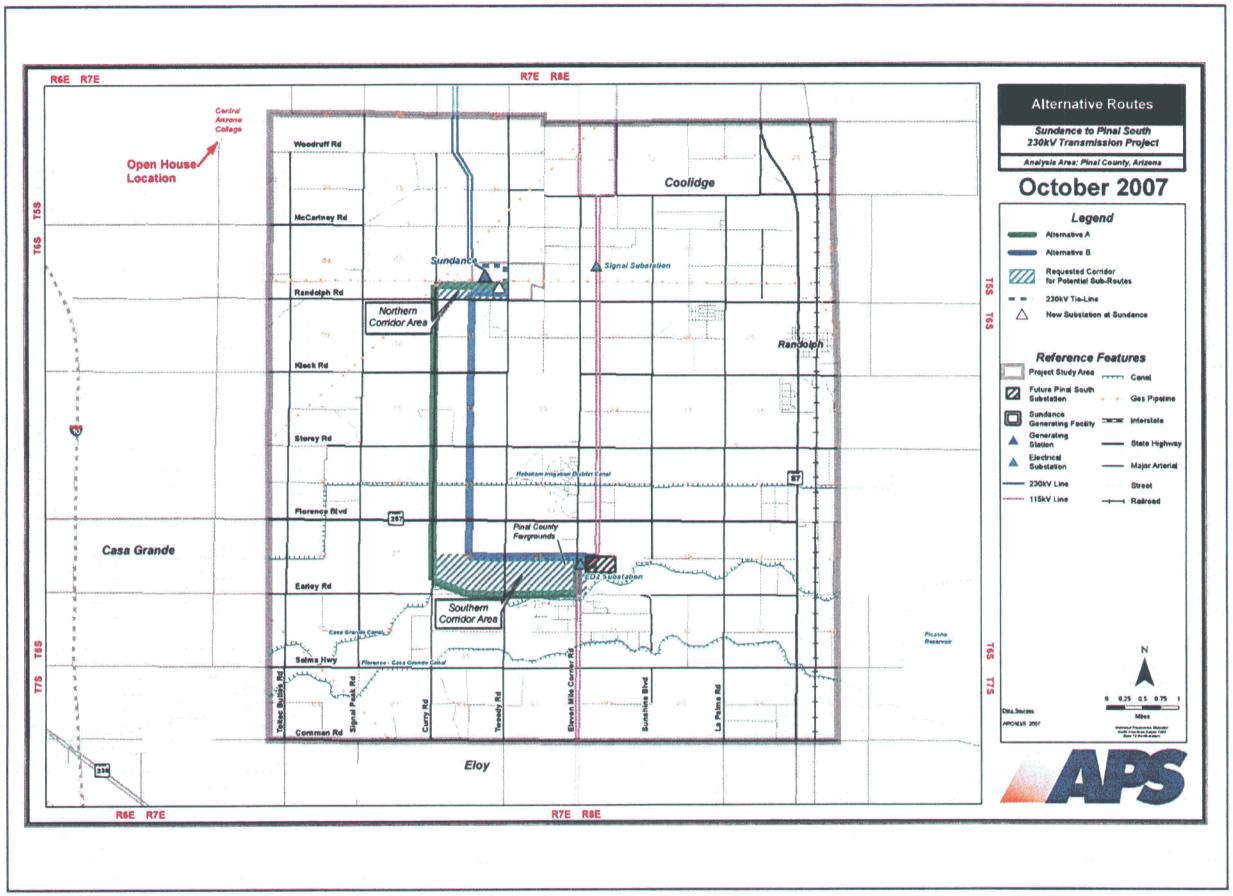
*(continúa en el interior)*

## En este número

- APS identifica rutas alternativas para la línea de transmisión
- Descripción de las rutas alternativas
- Pasos siguientes

**¿Preguntas?**
**Llame al 1-866-472-4484**
**Seleccione la opción 2**
**para Greg Bernosky,**
**Administrador del Proyecto**

APS




*"Continuaremos valorando sus comentarios al tiempo que progresamos con los procesos de identificación y ubicación de la línea".*

Greg Bernosky, Administrador del Proyecto

Ambas rutas alternativas se originan en una nueva subestación localizada en la propiedad de 10 acres de Sundance, cuyo dueño es APS (triángulo blanco en el mapa).

### *Alternativa A (línea verde)*

- Esta ruta se origina en la nueva subestación en la propiedad de Sundance, tal y como se muestra en el mapa, y será paralela en el lado sur de la existentes y futura tubería de gas natural al norte de Randolph Road en la misma dirección de Curry Road.
- La ubicación de la ruta en esta área dependerá de consideraciones de ingeniería descritas bajo el título de "Área del Corredor del Norte".
- La alternativa A entonces sigue la calle Curry Road hasta aproximadamente la alineación de Earley Road, la cual es paralela al canal Casa Grande.
- La ruta continúa al este hacia Eleven Mile Corner Road y después al norte hacia la Subestación Pinal South.

### *Alternativa B (línea azul)*

- Esta ruta también se origina en la nueva subestación de la propiedad Sundance y sigue la misma dirección que la alternativa A, hacia la línea recta de media sección entre las calles Curry y Tweedy.
- La ruta entonces continúa al sur a lo largo de la misma dirección hacia la línea recta de media sección entre las calles Florence Boulevard (Ruta estatal 287) y Earley Road.
- De este punto, APS correría su línea en forma paralela a la futura línea de transmisión Pinal West a Southeast Valley / Browing de 500/230kV, propuesta por Salt River Project (SRP) a la Subestación Pinal South.

### *Corredor del área norte (área sombreada con rayas azules)*

APS buscará la aprobación de un corredor, entre la tubería de gas natural existente y propuesta y Randolph Road, de tamaño suficiente para dejar una separación adecuada entre la tubería y las líneas de transmisión propuestas con base en los requisitos de ingeniería y las políticas.

### *Corredor del área sur (área sombreada con rayas azules)*

APS continúa trabajando con SRP y con el Condado Pinal para identificar una posible ruta para este proyecto en un área que incluya los terrenos de la feria del Condado Pinal, localizados inmediatamente al este de la existente Subestación ED-2 y la futura Subestación Pinal South a lo largo de Eleven Mile Corner Road. En la actualidad se encuentran bajo consideración varias opciones de rutas menores que incluyen un cruce en los terrenos de la feria del Condado Pinal así como una serie de rutas paralelas que no atravesarían los terrenos de la feria. APS anticipa solicitar un corredor que permita la construcción a lo largo de las Alternativas A o B, o una ruta dentro de las áreas sombreadas con rayas azules como se indica en el mapa.

## Pasos siguientes

APS llevará a cabo una segunda reunión pública sobre este proyecto el martes 23 de octubre en el salón de clases Residence Life del Colegio Central Arizona, 8470 N. Overfield Road en Coolidge. El público es bienvenido en cualquier momento, entre las 5:30 y 7:30 p.m. para revisar la información del proyecto, hacer comentarios sobre las rutas identificadas y preguntas directamente a los responsables de este proyecto.

En forma adicional, APS y Arcadis continuarán con el análisis en detalle e iniciarán el proceso de solicitud del Certificado de Compatibilidad Ambiental (CEC), el cual es parte de los requisitos estatales para la autorización del proyecto (Estatutos Revisados de Arizona 40-360). APS planea anunciar la selección de la ruta final en una última correspondencia, antes de llenar la solicitud del CEC programada para noviembre de 2007.

Continuamos valorando sus comentarios al tiempo que progresamos con los procesos de identificación y ubicación de la línea e invitamos a todos los grupos o individuos interesados en expresar sus comentarios y hacer preguntas a través de nuestro sitio electrónico, www.aps.com/siting o comuníquese gratis con el Administrador del Proyecto de APS, Greg Bernosky al 1-866-472-4484 (seleccione la opción 2 para este proyecto específico).

Tuesday, October 23, 2007

# OPEN HOUSE HANDOUTS

**Sundance to Pinal South 230kV Transmission Project**
Open House Comment Form
October 23, 2007

Thank you for your interest in this Project. Please complete the appropriate sections of this form to be included on the Project mailing list and to provide any comments or questions you would like addressed. You may either return this completed form to a member of the Project Team, or by mail to the address specified on the back of this form.

❒ I would like to be kept informed of the ongoing process of this Project. Please include my name on the mailing list.

Name_____

Street Address_____

City_____State_____Zipcode_____

E-mail Address_____

❑ Resident

❑ Business or Organization_____

Please indicate any questions or comments you have about the Project.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for taking the time to comment about the Sundance to Pinal South 230kV Transmission Project. If you have any furthers questions, please contact Greg Bernosky, Project Manager, 1-866-472-4484. You can also visit our Website at http://siting.aps.com

APS

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ARCADIS
8222 S. 48th Street Suite 140
Phoenix, AZ 85044

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Postage

ARCADIS
8222 S. 48th Street Suite 140
Phoenix, AZ 85044

ATTENTION: Leslie McFadden

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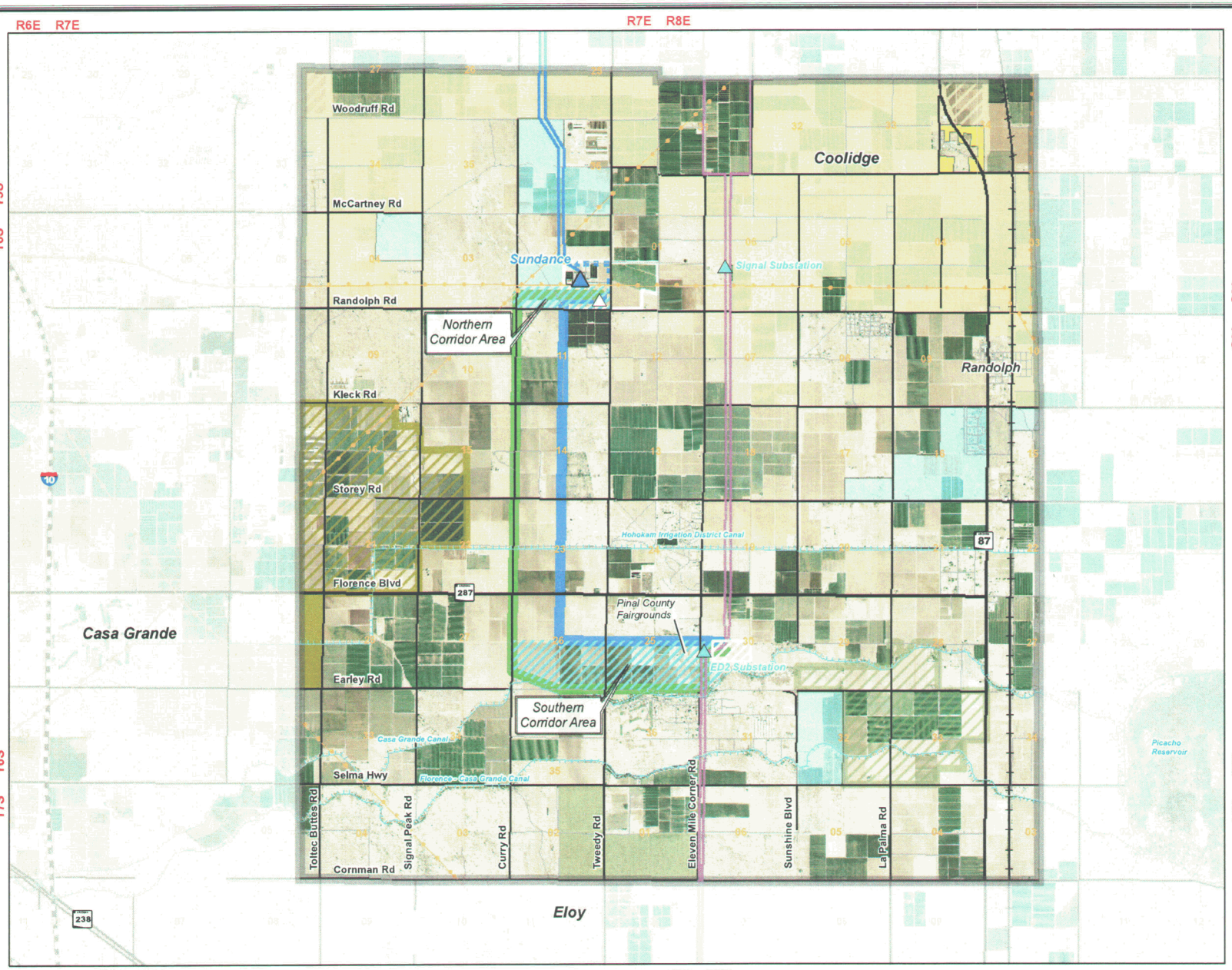



# Alternative Routes

*Sundance to Pinal South 230kV Transmission Project*

*Analysis Area: Pinal County, Arizona*

## October 2007

### Legend

- Alternative A
- Alternative B
- Requested Corridor for Potential Sub-Routes
- 230kV Tie-Line
- New Substation at Sundance

**City of Coolidge**
- Municipal Boundary
- Proposed Annexation

**City of Casa Grande**
- Municipal Boundary
- Proposed Annexation

**City of Eloy**
- Municipal Boundary
- Proposed Annexation

**Land Ownership**
- Bureau of Land Management
- Arizona State Trust

**Reference Features**
- Project Study Area
- Future Pinal South Substation
- Sundance Generating Facility
- Generating Station
- Electrical Substation
- 230kV Line
- 115kV Line
- Canal
- Gas Pipeline
- Interstate
- State Highway
- Major Arterial
- Street
- Railroad

Data Sources
ARCADIS, 2007
City of Casa Grande, 2006
City of Coolidge, 2007
Arizona Land Resource Information System, 2007
Aerial Photo - May, 2007

N

0 0.25 0.5 0.75 1
Miles

APS

Tuesday, October 23, 2007

# OPEN HOUSE BOARDS

# Sundance to Pinal South 230kV Transmission Project Open House

**Welcome**

Please Sign In

APS Sundance to Pinal South 230kV Transmission Project

# Project Need and Regional Information

APS Sundance to Pinal South 230kV Transmission Project

## Sundance to Pinal South 230kV Project

- **Project Need**
  - Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area
  - Allow APS to schedule the full output capability of the Sundance facility, currently estimated at 420 megawatts during peak summer conditions
  - Economically provide a new 230kV path for existing and potential future generation at the Sundance facility

APS Sundance to Pinal South 230kV Transmission Project

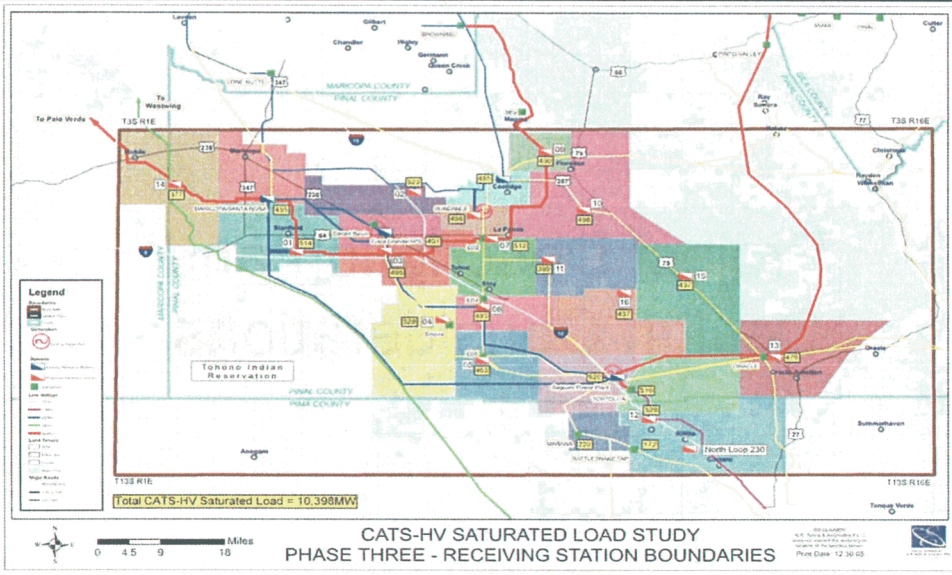
## A Little Bit About Sundance

10 quick-start turbines capable of producing approximately 450 MW

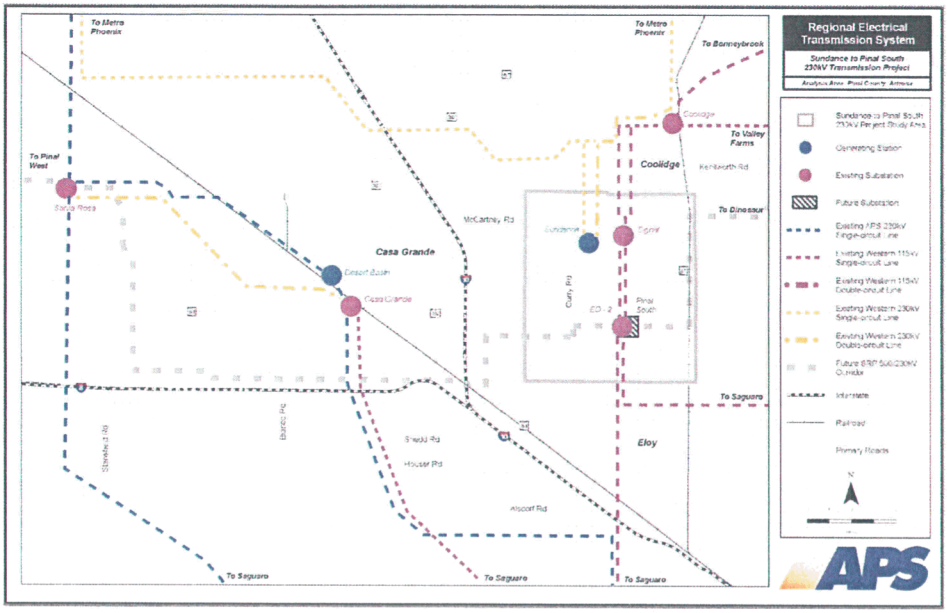
APS Sundance to Pinal South 230kV Transmission Project

# Key Electrical Terms

APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project

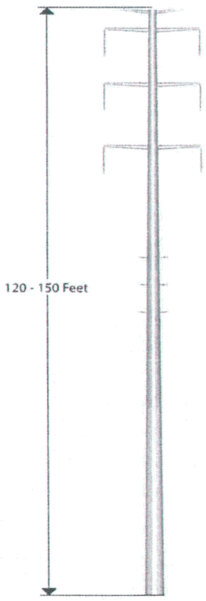
# Project Description and Design Considerations

APS Sundance to Pinal South 230kV Transmission Project

## Sundance to Pinal South 230kV Project

- **Project Description**
  - Double-circuit 230kV transmission line, designed to accommodate double-circuit 69kV underbuild
  - Tie-in and substation at Sundance and interconnection facilities at Pinal South
  - Steel monopole structures
  - Average structure height of 120 to 150 feet
  - 100 to 130 feet of right-of-way
  - Transmission line in-service, Summer 2011
    - *Right-of-way acquisition, followed by design, and then construction, would initiate after receipt of the CEC*

APS Sundance to Pinal South 230kV Transmission Project



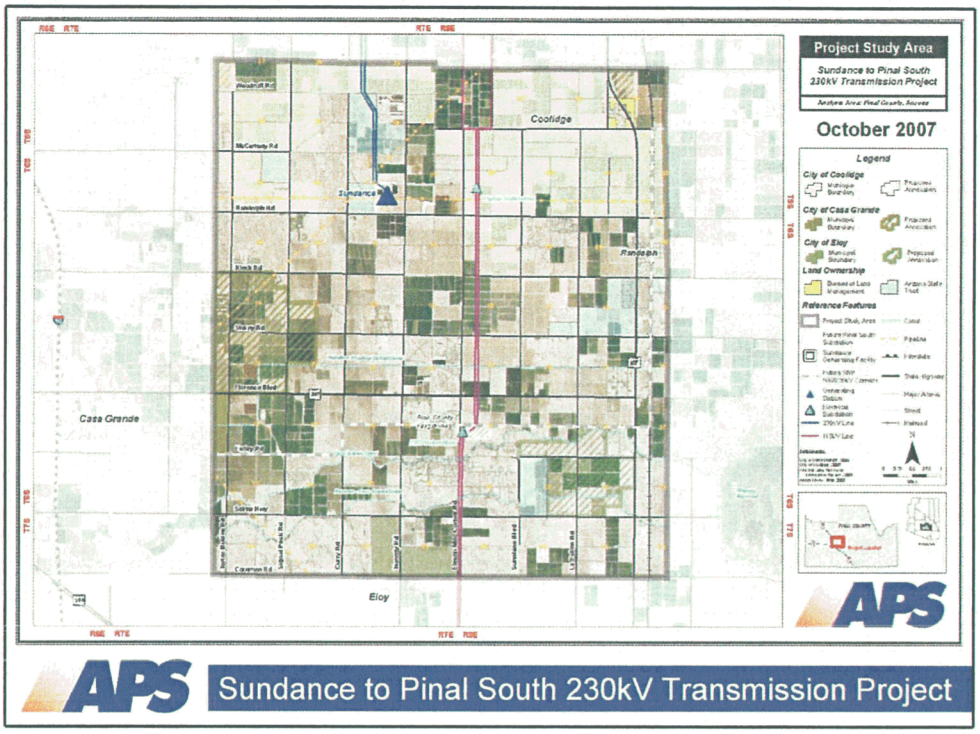

**Double-Circuit 230kV Transmission Structure with Double-Circuit 69kV Underbuild**

APS Sundance to Pinal South 230kV Transmission Project

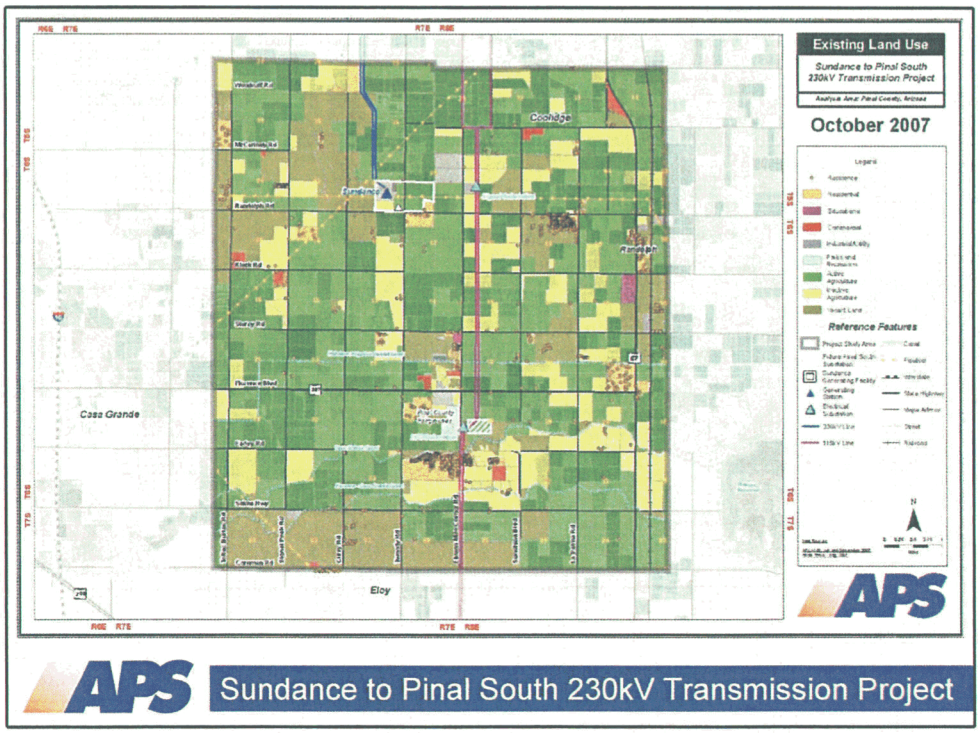
APS Sundance to Pinal South 230kV Transmission Project

# Study Area and Resource Data Collected

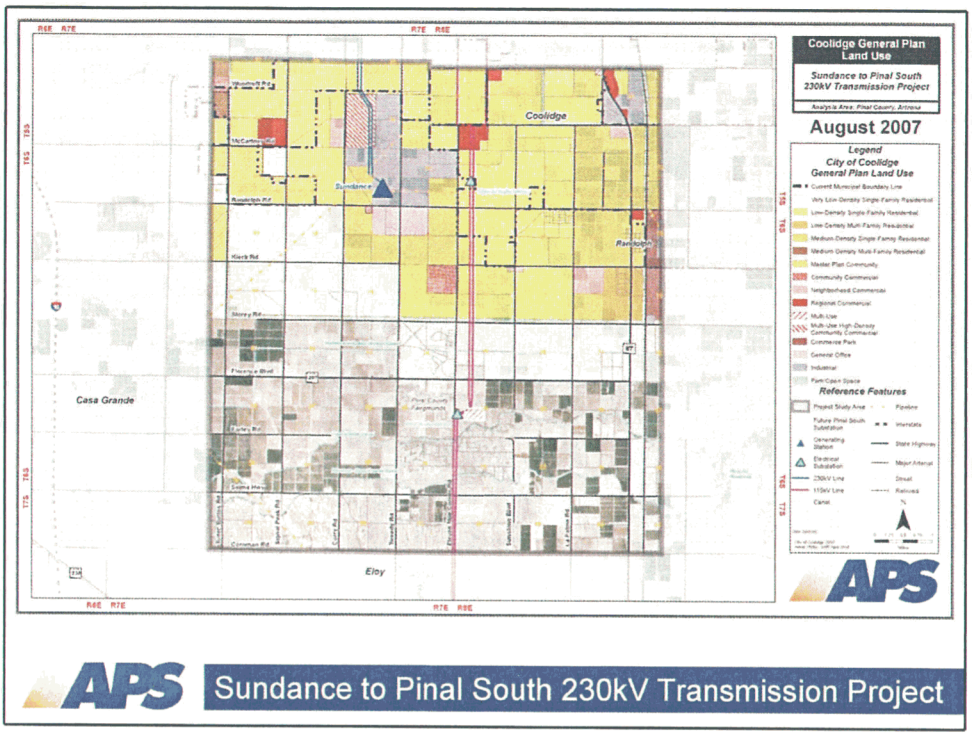
APS Sundance to Pinal South 230kV Transmission Project



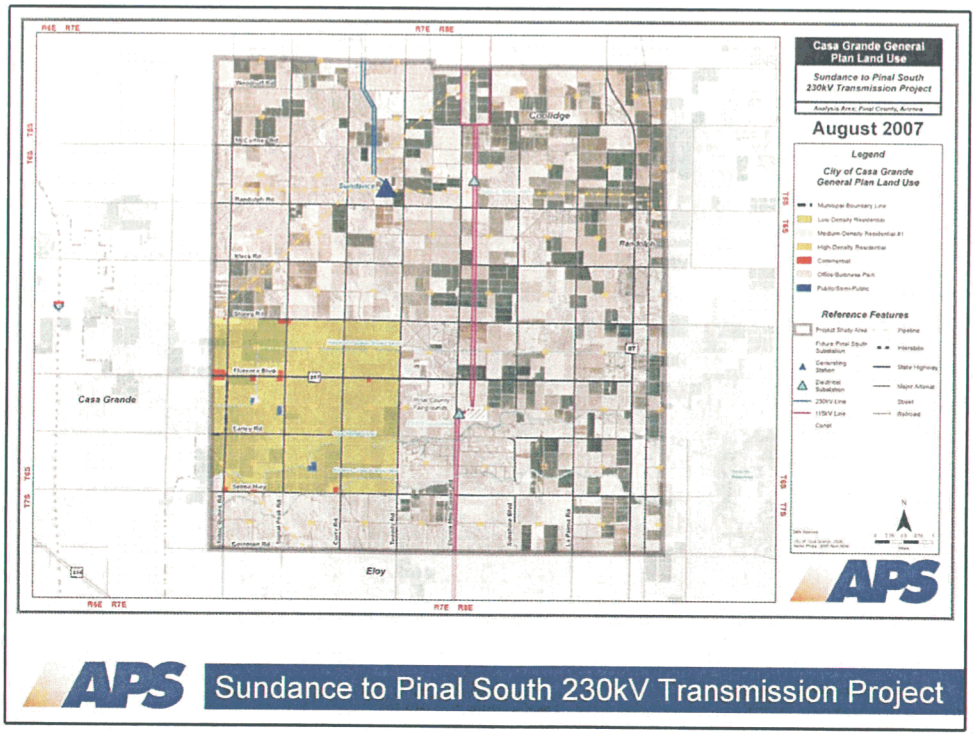

APS Sundance to Pinal South 230kV Transmission Project



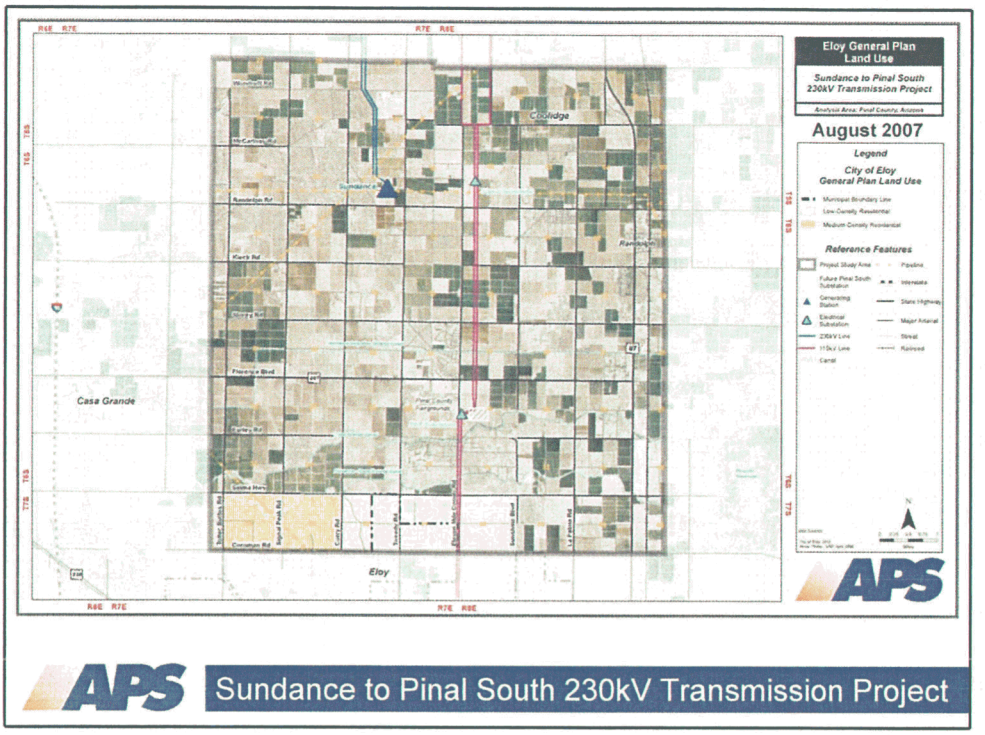

APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project

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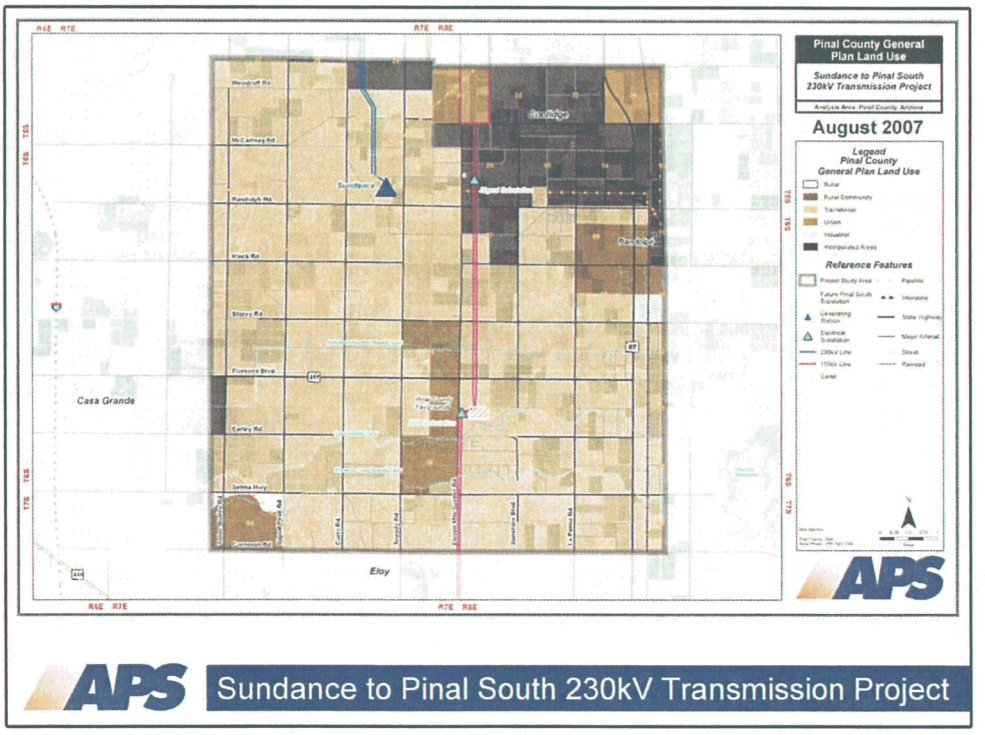


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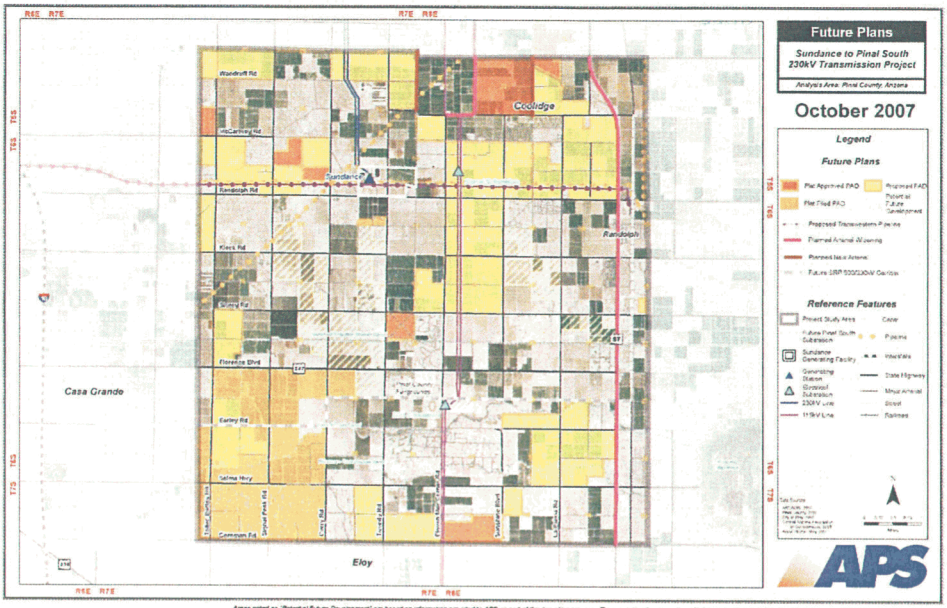



Areas noted as "Potential Future Development" are based on information provided to APS as part of this line siting process. There may be other properties with future development plans in addition to those illustrated on this map.

APS Sundance to Pinal South 230kV Transmission Project

# Route Identification and Screening

APS Sundance to Pinal South 230kV Transmission Project

## Sundance to Pinal South 230kV Project

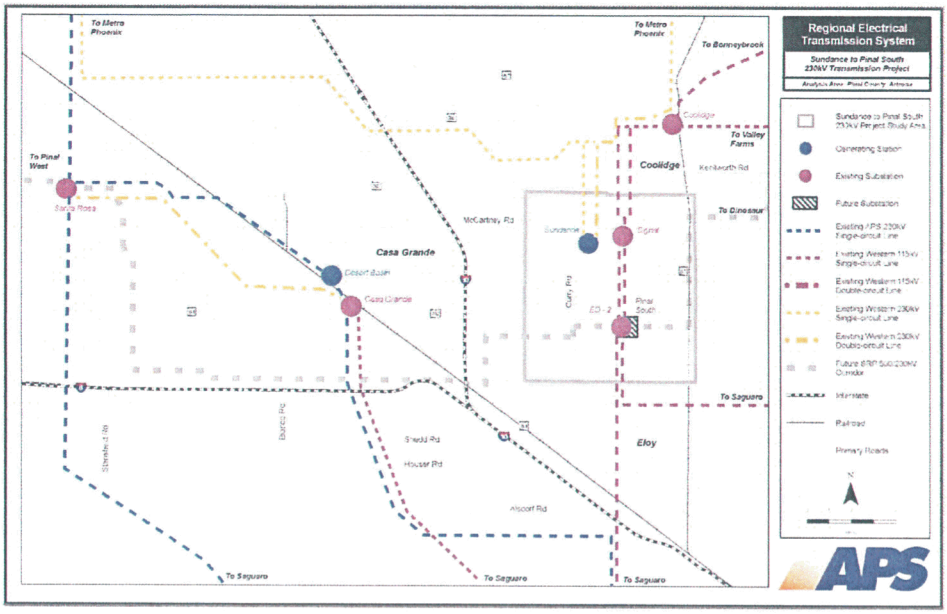
- **Project Need**
  - Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area
  - Allow APS to schedule the full output capability of the Sundance facility, currently estimated at 420 megawatts during peak summer conditions
  - Economically provide a new 230kV path for existing and potential future generation at the Sundance facility

APS Sundance to Pinal South 230kV Transmission Project

## A Little Bit About Sundance

10 quick-start turbines capable of producing approximately 450 MW

APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project

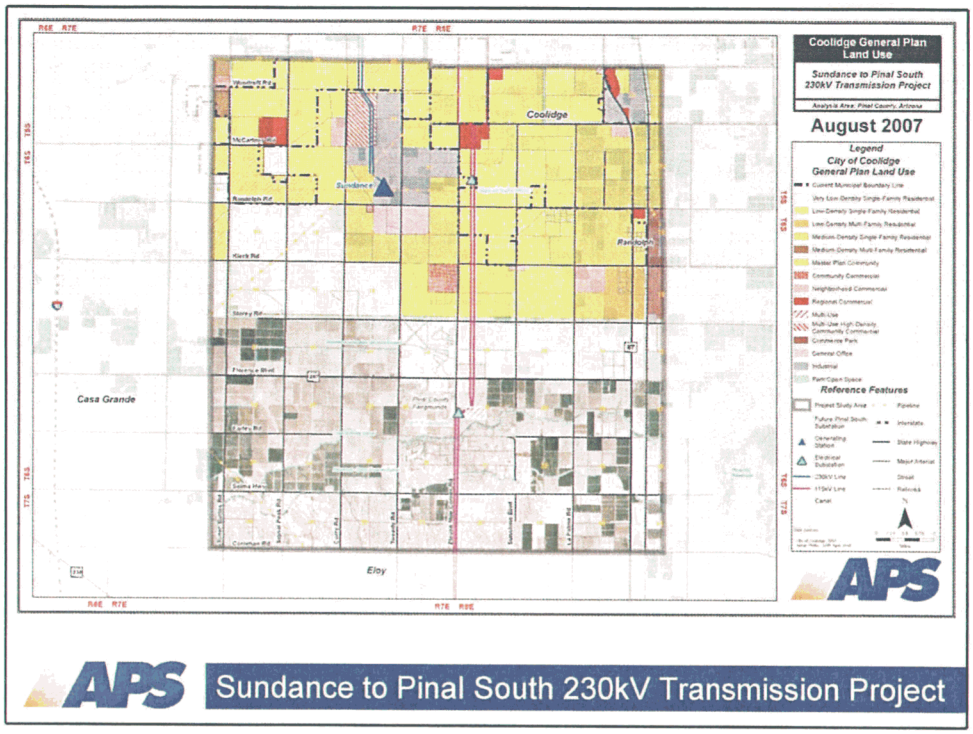
# Project Description and Design Considerations

APS Sundance to Pinal South 230kV Transmission Project

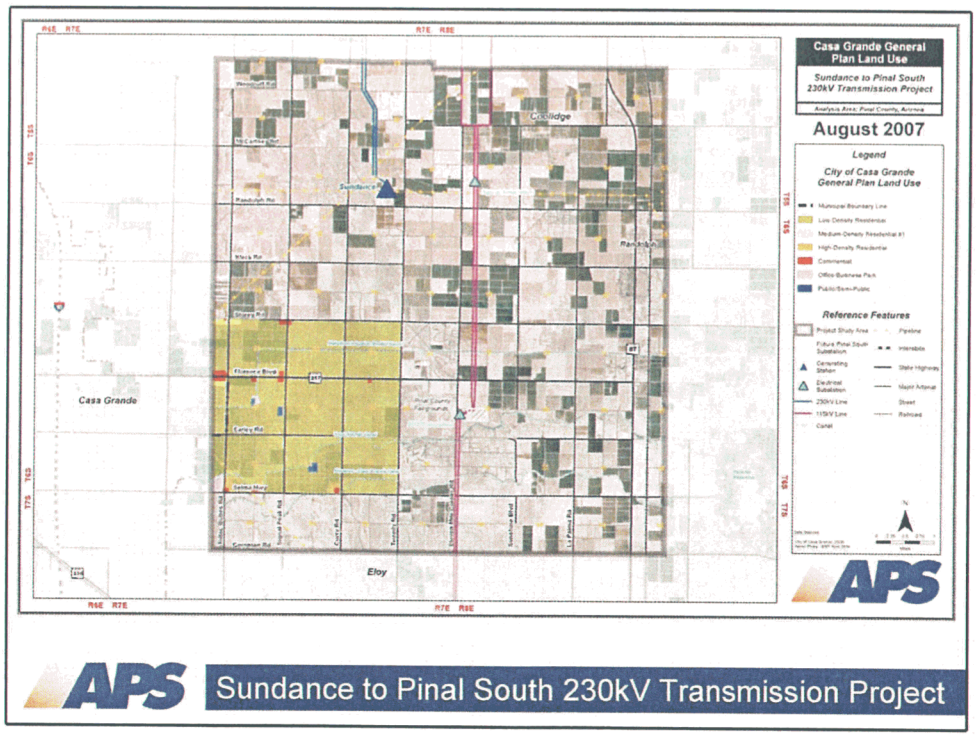
APS Sundance to Pinal South 230kV Transmission Project

# Study Area and Resource Data Collected

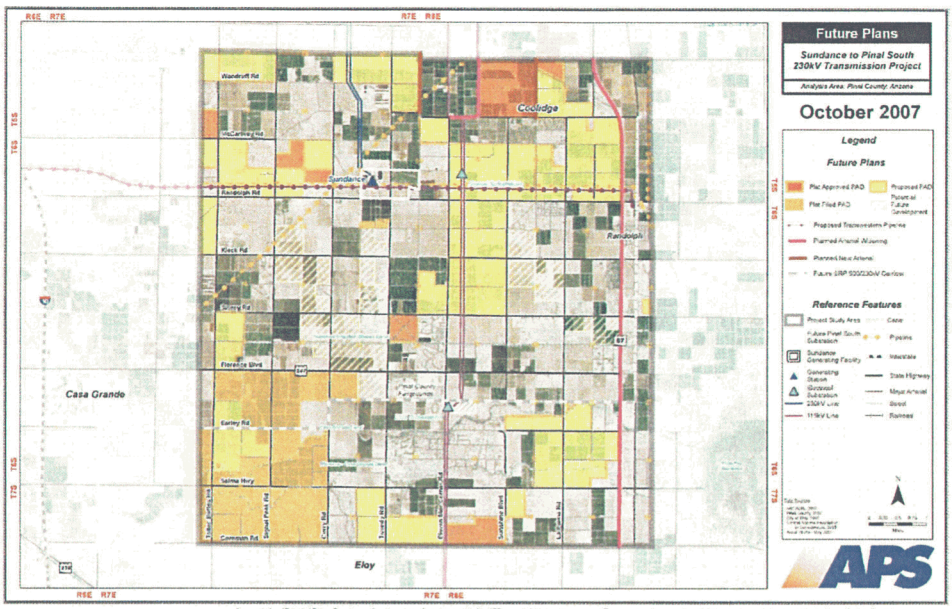
APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project

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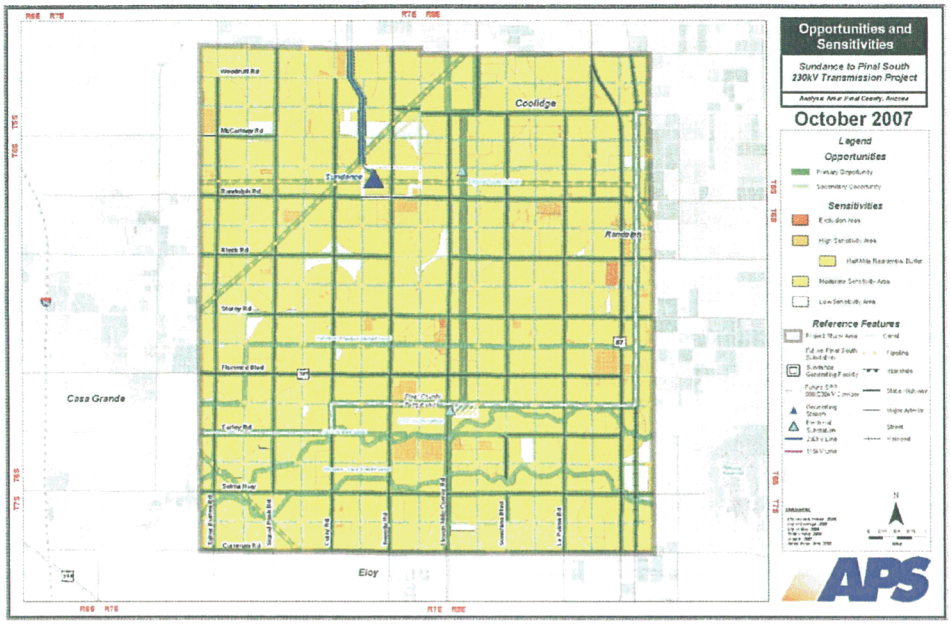
APS Sundance to Pinal South 230kV Transmission Project

# Route Identification and Screening

APS Sundance to Pinal South 230kV Transmission Project

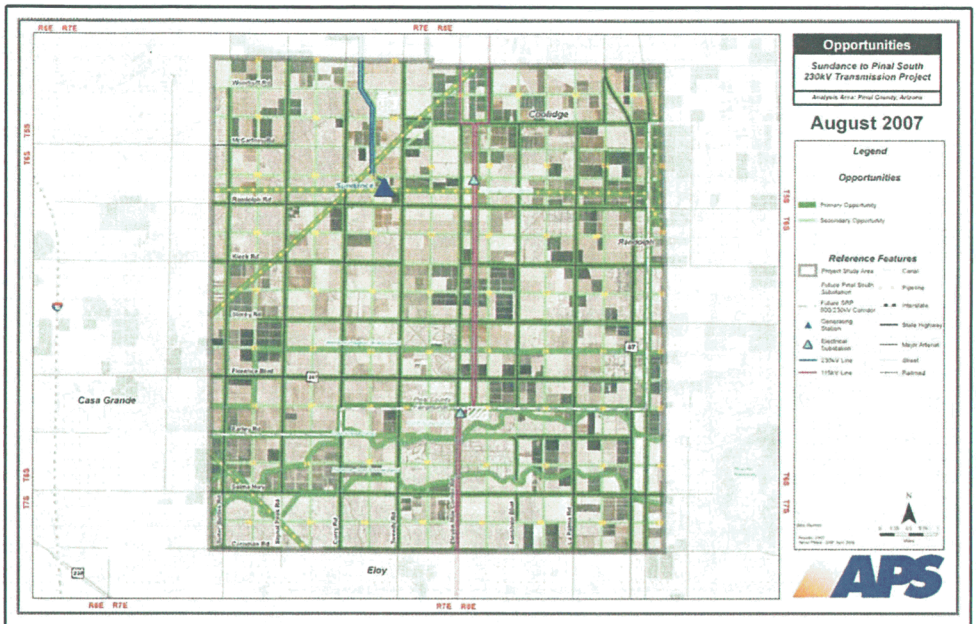



APS Sundance to Pinal South 230kV Transmission Project

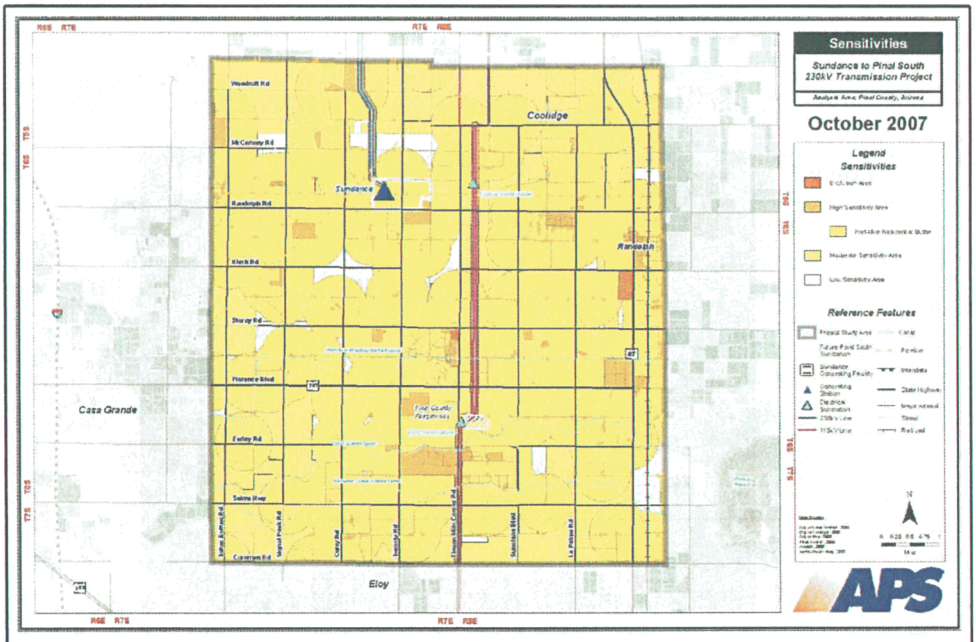
## Siting Criteria / Opportunities

| | |
|---|---|
| Primary | Designated Utility Corridors |
| | Existing Transmission Lines and Rights-of-Way |
| | Existing Canals |
| | Existing Railroads |
| | Existing Roads / Highways (County Road Level or Greater) |
| | Existing Pipelines |
| | Future Approved Utilities (Transmission Lines, etc.) |
| | Developed Section Lines / Major Property Lines / County Dedicated Roads |
| Secondary | Existing Small Canals and Drainage Features |
| | Undeveloped Section and Half-Section Lines |

APS Sundance to Pinal South 230kV Transmission Project




APS Sundance to Pinal South 230kV Transmission Project



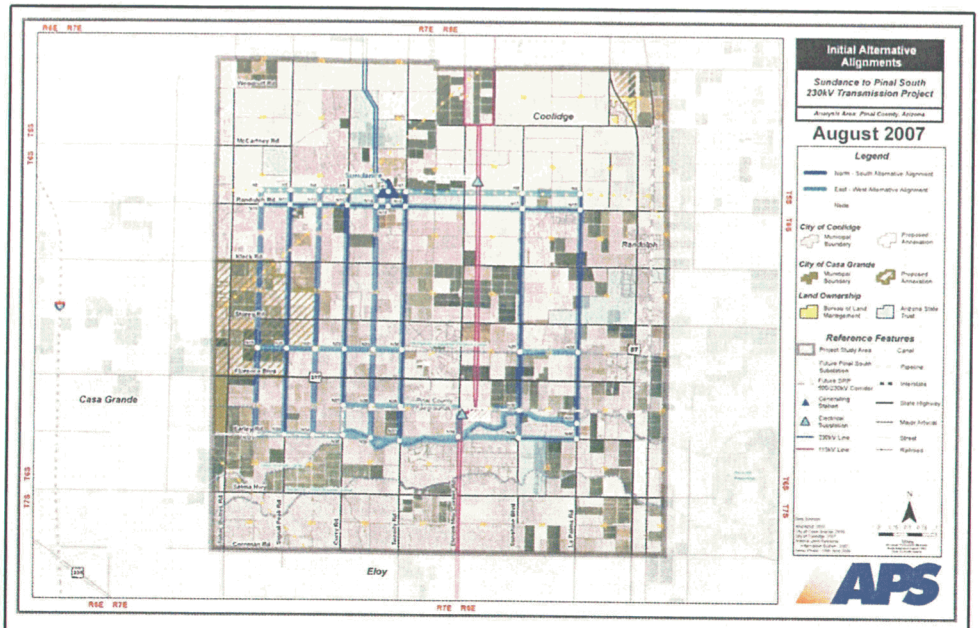

APS Sundance to Pinal South 230kV Transmission Project

## Areas of Sensitivity / Constraints

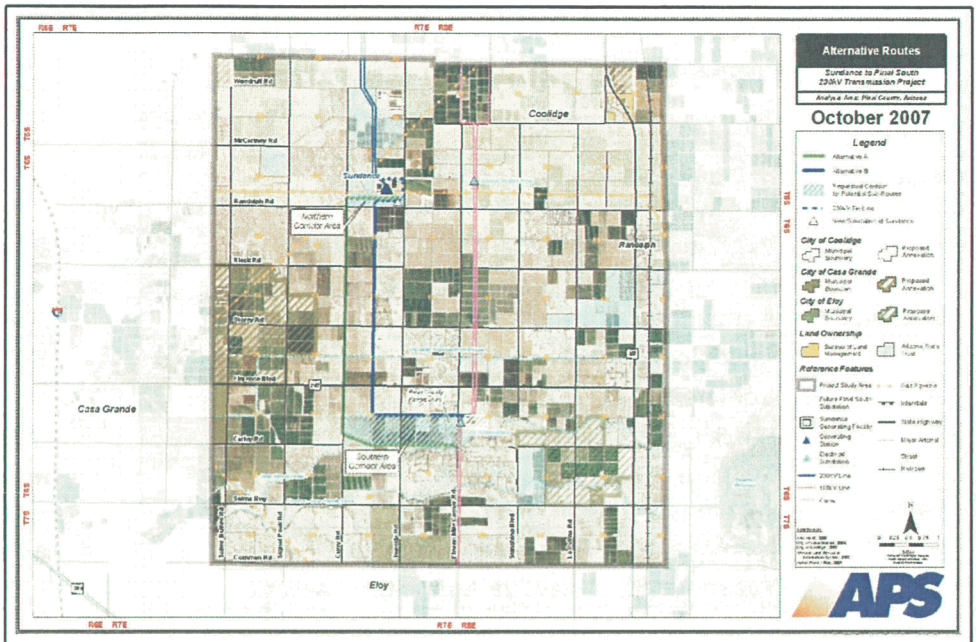
| | |
|---|---|
| Exclusion | Educational Facilities |
| High | Existing Residences and Residential Developments (half-mile buffer) |
| | Regional Parks and Recreation Facilities |
| | *Constrained Transmission Line Corridors |
| Medium | Agricultural Areas (Active) |
| | Biological Sensitive Areas |
| | Commercial Land Uses |
| | Public/Quasi-Public Land Uses |
| | Planned Area Developments |
| Low | General Plan Land Uses |
| | Industrial and Utility Land Uses |
| | Vacant Land or Inactive Agricultural Areas |

*A "**constrained transmission line corridor**" is an area with existing transmission lines where the addition of a new line (or lines) could negatively impact system reliability

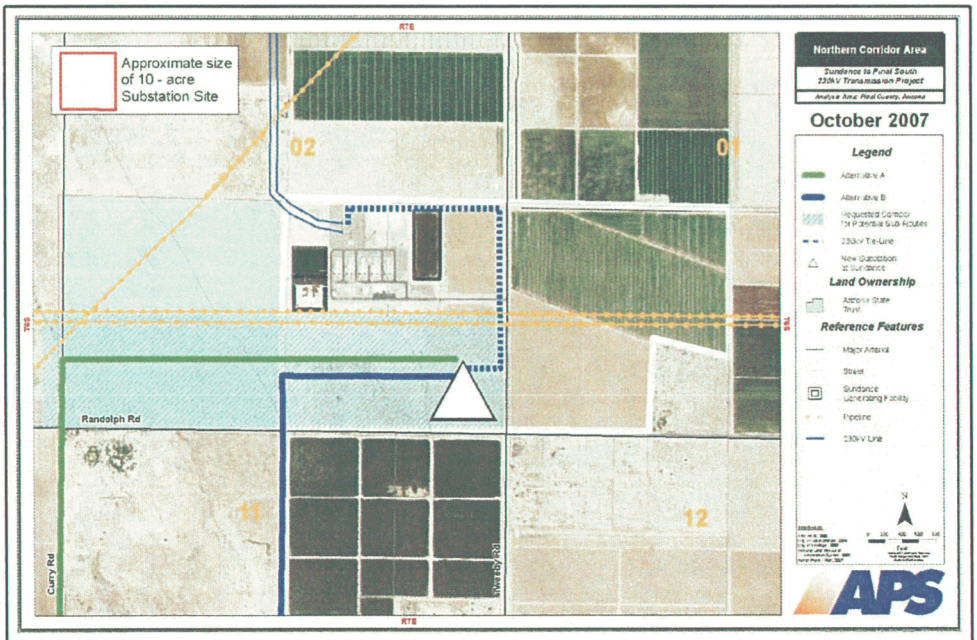
APS Sundance to Pinal South 230kV Transmission Project



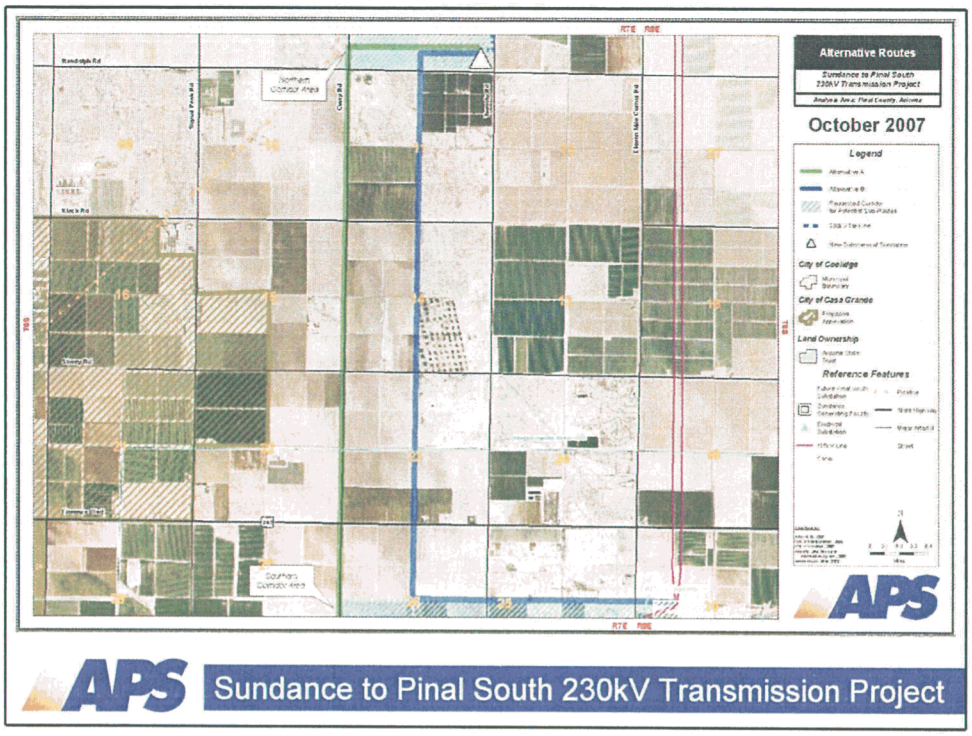

APS Sundance to Pinal South 230kV Transmission Project

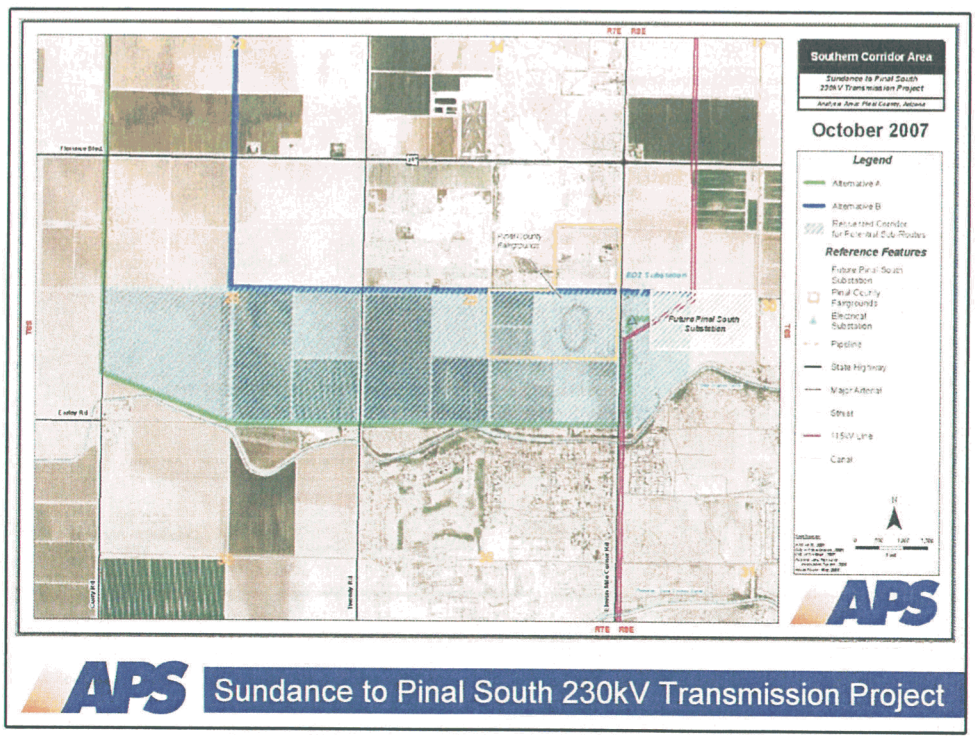



APS Sundance to Pinal South 230kV Transmission Project

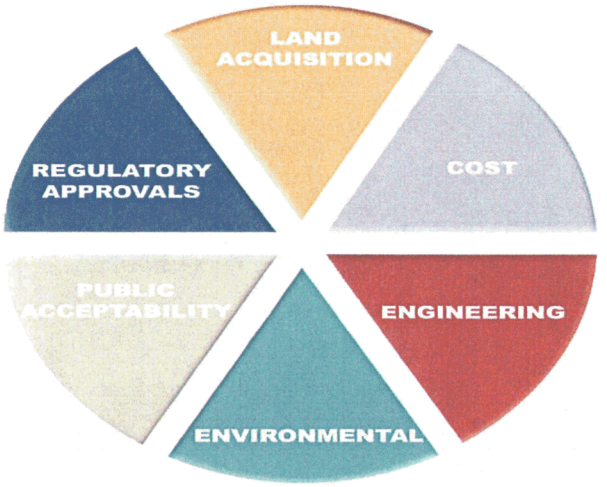



APS Sundance to Pinal South 230kV Transmission Project


Alternative Routes
Sundance to Pinal South 230kV Transmission Project
October 2007
Legend
City of Coolidge
City of Casa Grande
Land Ownership
Reference Features
Northern Corridor Area
Southern Corridor Area
APS
APS
Sundance to Pinal South 230kV Transmission Project

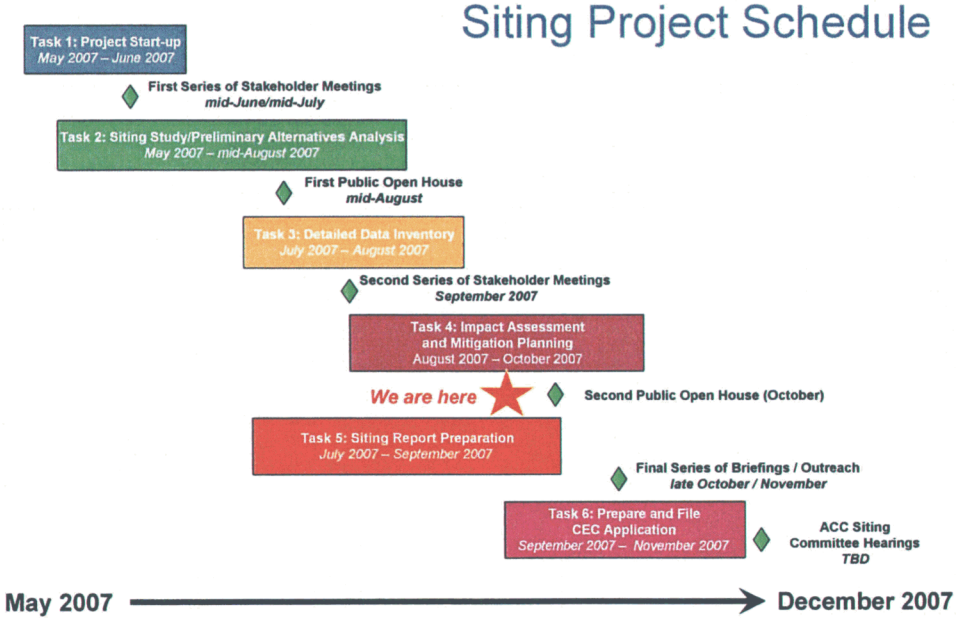

Southern Corridor Area
Sundance to Pinal South 230kV Transmission Project
October 2007
Legend
Alternative A
Alternative B
Reference Features
Future Pinal South Substation
Pinal County Fairgrounds
Electrical Substation
Pipeline
State Highway
Major Arterial
Street
115kV Line
Canal
Future Pinal South Substation
APS
APS
Sundance to Pinal South 230kV Transmission Project

# Transmission Line Siting Considerations




APS Sundance to Pinal South 230kV Transmission Project

# Siting Project Schedule




APS Sundance to Pinal South 230kV Transmission Project

# Technical Considerations

APS Sundance to Pinal South 230kV Transmission Project

# EMF
# (Electric and Magnetic Fields)

- APS recognizes the public concern for EMF and have included EMF considerations in the design of this project
- Typical magnetic field calculations for this project
  **(based on expected 2011 flows)***
  Inside the Right-of-Way < 5 (mG)
  - 50 feet from the structure 3.5 (mG)
  - 100 feet from the structure < 2 (mG)

  **Magnetic field calculations may vary based on the ultimate line configuration and the amount of electric load carried by the lines*
- Additional information and research
  - World Health Organization (**http://www.who.int/en/**)
  - National Institute of Environmental Health Sciences (**http://www.niehs.nih.gov/**)

APS Sundance to Pinal South 230kV Transmission Project

# EMF
# (Electric and Magnetic Fields)

- EMF's are produced by **ALL** devices which use, carry, or produce electricity
- EMF strength drops off dramatically as distance from the source increases
- Research on EMF began in the 1970's and continues today
- To date, no Federal or Arizona State standards have been established for EMF levels or exposure
- APS continues to monitor U.S. and international studies regarding EMF and offers free in-home measurements of EMF levels to all APS customers

APS Sundance to Pinal South 230kV Transmission Project

# Electric Fields

- Electrostatic induction can occur with insulated objects near the transmission line. This can result in nuisance shocks to individuals touching a grounded object under or near the line
- IEEE standard for electric field values (max):
  - Outside of the Right-of-Way 5.0 kV/m
  - Inside of the Right-of-Way 10.0 kV/m
- Calculated values for this project:
  - Outside of the Right-of-Way < 0.5 kV/m
  - Inside of the Right-of-Way < 1.1 kV/m

APS Sundance to Pinal South 230kV Transmission Project

## Communications

- Transmission lines have been known to cause interference with radio and TV transmissions
- Calculated radio noise levels (at 100 feet from conductor): 25.1 dB(A) fair weather (try to keep below 40 dB(A))
- Based on interference studies, no interference is expected with digital, satellite, or cable television

APS Sundance to Pinal South 230kV Transmission Project

## Corona

- Corona is defined as the breakdown of air into charged electrical particles. The amount of corona for a transmission line is a function of several things including:
  - Engineering Design
  - Voltage
  - Phase spacing and geometry
  - Weather conditions
- Effects of Corona are:
  - Audible Noise
  - Radio and TV interference

APS Sundance to Pinal South 230kV Transmission Project

## Audible Noise

- Created by Corona discharge along the line and the frequency and voltage level of the line
- Transmission line noise can be described as humming or crackling
- Noise Levels (at 100 feet from the structure) for this project are expected to be:
  - Fair Weather 11 dB(A)
  - Wet Weather 23 dB(A)
  - Ldn (Weighted Avg.) 17 dB(A)
- Suggested Levels (100 feet from the structure):
  - EPRI studies re: customer complaints 52.5 dB(A)
  - EPA recommended Ldn level 55.0 dB(A)
- Other common levels
  - Busy Traffic 70 dB(A)
  - Moderate Rain 50 db(A)

***Noise levels on this project are expected to be less than the suggested levels***

APS Sundance to Pinal South 230kV Transmission Project

## Opportunities for Public Information and Comment

Fill out and return a comment form tonight!

Electronic comment forms and project updates available on the

Project Web site: **www.aps.com/siting** (see Sundance to Pinal South 230kV under "Current Projects")

Greg Bernosky, APS Project Manager can be reached at 1-866-472-4484 (Select option 2)

Future project announcements will have updated information and opportunities for comment

Arizona Power Plant and Transmission Line Siting Committee Hearings

APS Sundance to Pinal South 230kV Transmission Project

# Interactive GIS

APS Sundance to Pinal South 230kV Transmission Project

Tuesday, October 23, 2007

# OPEN HOUSE
# COMMENT SUMMARY TABLE

| APS Sundance to Pinal South 230kV Transmission Project<br>Open House - October 23, 2007<br>Comment Summary Table | | | | |
|---|---|---|---|---|
| **Name** | **City** | **State** | **Organization** | **Comment Summary** |
| Jim Degolier | Gilbert | Arizona | property owner | I would like to see the power lines go down Randolph Road to keep it where there are already existing lines. |
| Cameron MacDonald | Mesa | Arizona | Cardon Hist. | I support the Option A Routing. This uses existing corridor and will cause the least disruption to private land owners. |
| Gianna Walker | Tempe | Arizona | property owner | Where is the "Signal Station" located - east or west of Eleven Mile corner? The map doesn't really show a closeup of the exact location. There's just a symbol for it. Can you give me the exact location? im looking at an aerial image on a map. |
| Chaouki Bassil | Miami | Florida | property owner | I received APS second letter of October 2007 Issue 2 where you show the two alternate corridors and was wondering why a third corridor was not cosidered following Randolph Road east to tie into the existing 115KV line and then turn South directly and continue to Pinal County Fairgrounds. I am not sure if the 115KV corridor is owned by APS or another power generating company but it is well worth it to consider corridor sharing if it is not yours than impacting another area. Plus I believe it has a lot less environmental impact on the area and may save a lot of money to APS in aquisition and additional run of towers...etc. I have not been to the area in several years. I am not sure of the change in topography. And also because I am not able to attend your public hearing on October 23, 2007, I felt that I need to voice my concern about these two new alternate corridors while there is one existing that is less expensive and less impacting to the environment. |
| Jack Gilmore | Phoenix | Arizona | property owner | Our office is preparing a site plan for commercial development at the northwest corner of Curry Road and Florence Blvd. After reviewing the 'A' and 'B' siting corridors with our client, the property owner, we are requesting that the Alternative 'B' route be the selected and preferred alignment. We believe that there will be less net impact to the future land uses, which along the mid-section alignments would undoubtedly be residential. Both the City of Casa Grande and Pinal County have increased their open space criteria for residential developments, which could be in the range of 15 -20% based on density.<br><br>Both jurisdictions are requiring connectivity to the regional trail systems and these utility corridors are specifically mentioned. We believe the mid-section alignment of Alt 'B' can be shared with open space / retention / community parks all of which may be linked by the regional trail system following these utility corridors. Placing these overhead powerlines along arterial frontages limits the effective potential to overlap funcional common area open spaces, limits access and marketing windows for commercial centers, which municipalities rely on for sales tax. Please select Alternative 'B'. |

# COMMENT LETTERS

**All State Associates**

21050 N. Pima Road, Suite 100, Scottsdale, AZ 85255 (480) 314-2010 • (480) 314-2002 Fax

November 8, 2007

APS Transmission and Facility Siting
Attn: Greg Bernosky
P.O. Box 53933, M.S. 4030
Phoenix, AZ 85072-3933

**RE: Sundance to Pinal South 230kV Transmission Project.**

Dear Mr. Greg Bernosky:

All State Associates of Pinal II, L.L.C is the current owner of 80-acres located within the vicinity of the proposed Sundance to Pinal South 230kv Transmission Project, as depicted on the attached exhibit. As manager of the ownership group, I have reviewed the October 2007 Alternative Routes map that was provided by APS. It is hereby requested that APS choose Alternative Route A as the Preferred Route identified within the Application for a Certificate of Environmental Compatibility that will be submitted to the ACC.

Alternative A will be routed adjacent to a north-south county section line (Curry Road). The county comprehensive road plan requires that all section lines be developed as major arterial roads. Arterial roads are typically limited on the number of intersections which would minimize the number of road crossings through APS's eventual easement. Also, the section line road right-of-way would provide a buffer along one side of the power line easement. In contrast, Alternative B which is routed along the north-south mid-section line, will likely bisect future interconnecting housing developments. Housing would be immediately adjacent along both sides of the power line easement. All State Associates of Pinal II, L.L.C. is in support of Alternative A.

Please route any future correspondence regarding this matter through our engineering consultant, United Engineering Group (UEG). The contact at UEG is Adam Hamrick, at:

3205 W. Ray Road
Chandler, AZ 85226
Tel: 480-305-8429
Fax: 480-705-5376
E-Mail: ahamrick@unitedeng.com

In addition, UEG will provide any additional information as needed. Thank you for your assistance regarding this matter.

Sincerely,

C. Thomas Cummings
Manager – All State Associates of Pinal II, L.L.C.

McRae
GROUP of COMPANIES

The Power of Proven Performance

November 15, 2007

APS Transmission and Facility Siting
Attn: Greg Bernosky
P.O. Box 53933, M.S. 4030
Phoenix, AZ 85072-3933

**RE: Sundance to Pinal South 230kV Transmission Project**

Dear Mr. Bernosky:

The undersigned is the current owner of 120+/- acres located within the vicinity of the proposed Sundance to Pinal South 230kv Transmission Project, as depicted on the attached Exhibit. Following review the October 2007 Alternative Routes map provided by APS, we hereby request APS choose Alternative Route A as the Preferred Route identified within the Application for a Certificate of Environmental Compatibility to be submitted to the Arizona Corporation Commission. Reasons supporting that request include:

- Alternative Route A will be adjacent to a north-south Pinal County section line (Curry Road). Pinal County's comprehensive road plan requires all section lines be developed as major arterial roads, with number of road crossings/intersections onto arterial roads typically limited. Alternative Route A would minimize the number of road crossings through APS's easement.

- The section line road right-of-way would provide a buffer along one side of the power line easement.

- Alternative Route B, as routed along a north-south mid-section line, will likely bisect future interconnecting housing developments, resulting in housing located immediately adjacent to the power line along both sides of the easement.

Please route any future correspondence regarding this matter through our engineering consultant, United Engineering Group, attn: Adam Hamrick:

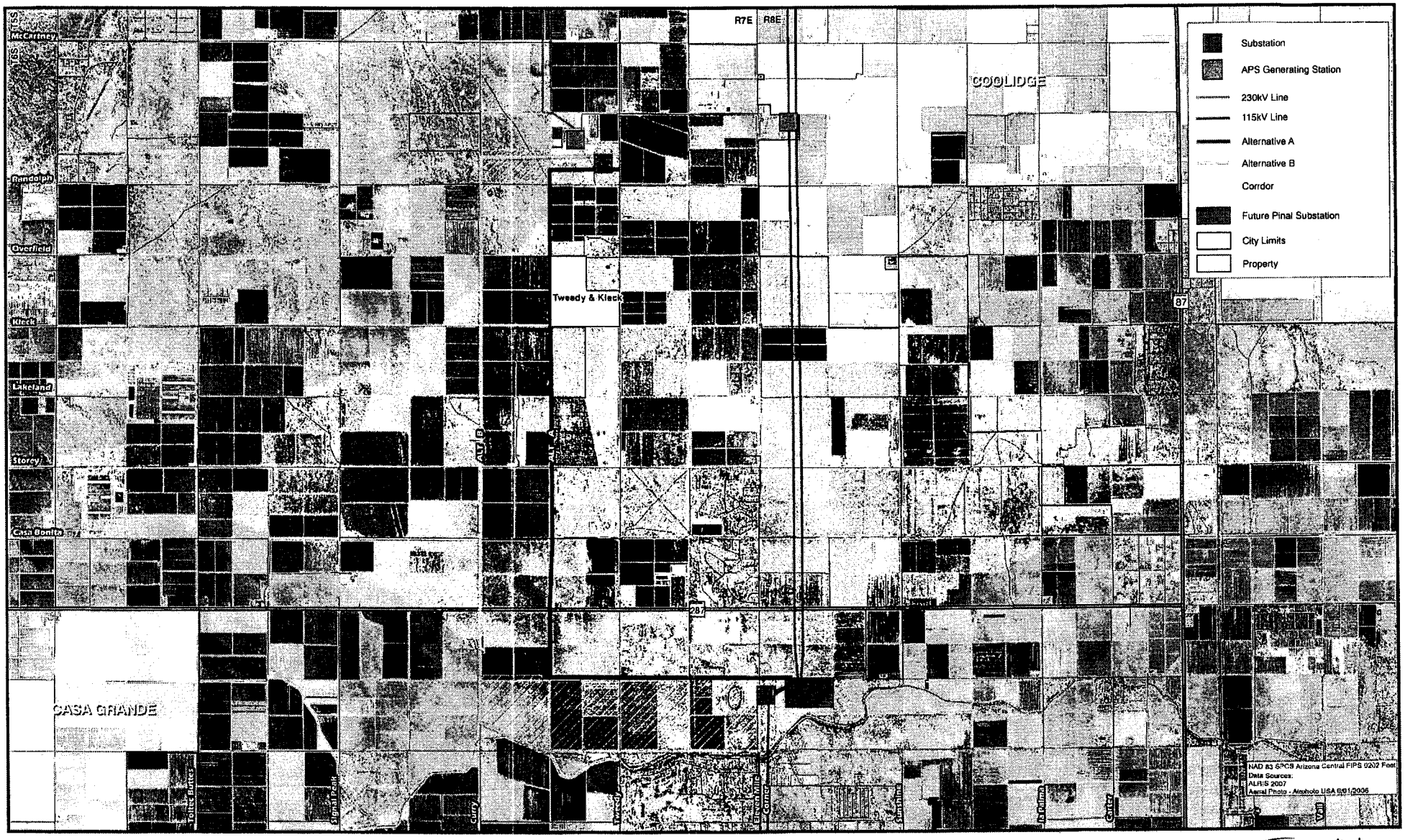
United Engineering Group
3205 W. Ray Road
Chandler, AZ 85226
Tel: 480-305-8429
Fax: 480-705-5376
E-Mail: ahamrick@unitedeng.com

United Engineering Group will provide any additional information as needed.

Thank you for your assistance regarding this matter.

**TWEEDY & KLECK, L.L.C.**
By: RMG Real Estate Services II, L.L.C., its Administrator
By: _____
Authorized Officer

Cc (w/encl): United Engineering Group:




# APS Alternative Routes 230 kV Line

Coolidge - Casa Grade, AZ

Sundance to Pinal South 230 kV Transmission Project

Miles 0 1

united engineering group

Date: 8-15-2007 Job Number: 00000

# EXHIBIT J-4
# OTHER INFORMATION

# PROJECT ARTICLES

TriValleyCentral.com

Local News

Zwire!

News | Classifieds | Community | Directory | Marketplace





## Top Stories

# APS sets meeting on power line routes

Staff Reports

August 07, 2007

Email to a friend | Voice your opinion

**An open house regarding route alternatives for a proposed 230 kilovolt transmission line has been scheduled from 5:30 to 7:30 p.m. Aug. 14 at the Residence Life Classroom at Central Arizona College, 8470 N. Overfield Road.**

APS, along with environmental consultant Arcadis, will host the open house to information the public about the project, discuss potential route options and gather comments. The power line would connect the existing Sundance Generating Station between Casa Grande and Coolidge with the recently permitted Pinal South Substation, also located in unincorporated Pinal County.

For more information about the Sundance to Pinal South 230kV Transmission Project, go to http://siting.aps.com and select the link for "Current Projects," or call 1-866-472-4484 and select Option 2 for Greg Bernosky, the APS Project Manager.

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Tri-Valley Dispatch
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Public Notices Online
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City of Coolidge
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## Coolidge News

# Proposed power line would link Sundance with new substation

By BRIAN AHNMARK, Editor

August 21, 2007

Email to a friend Voice your opinion

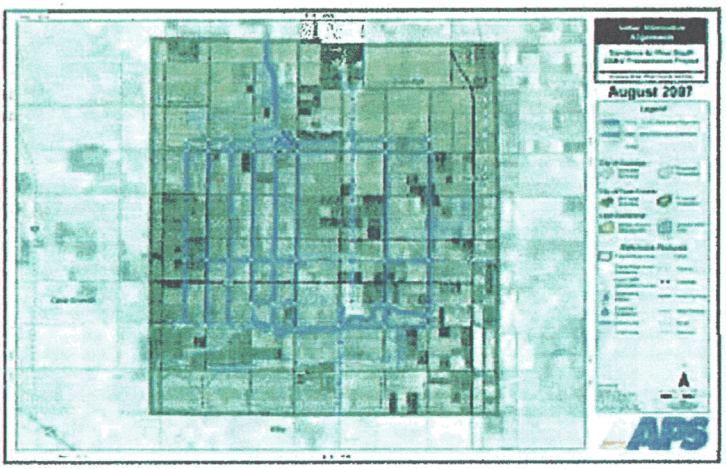


Image submitted by APS, This map, provided by APS, details several route alternatives for the proposed 230kV energy transmission line, which would link the Sundance Generating Station with the Pinal South Substation.

**APS is proposing to build a new 230-kilovolt power line in the Coolidge area. The double-circuit transmissic line would link the Sundance Generating Station, located in unincorporated Pinal County west of Coolidge, with the future Pinal South Substation.**

"APS identified a need in its 10-year plan for a 230kV line in the Coolidge area," explained Greg Bernosky, project manager with APS. "The new power line will supply bulk power generated at the Sundance facility to the regional electrical system at times when additional capacity is needed to meet demand."

The Pinal South Substation was approved about two years ago as part of APS expansion in Pinal County. The substation will be located across Eleven Mile Corner Road from the Pinal County Fairgrounds, south of Arizona 287.

APS owns and operates the Sundance Generating Station, which Bernosky defined as a "peaking plant." That is, the facility only generates power when conditions require the production of additional electricity, such as

Advertisement

Bears start slowly, but fin
Wranglers, 55-15
All signs pointed to a class
No. 1-ranked Coolidge Bear
defending champion and fav
and the game lived up to its
Full Story »

Cross country runners im
Times continue to drop for r

during the summer months.

"Currently, the capacity at Sundance is moved out of two existing 230kV lines," he said. "This project would redirect electricity to another line, freeing up capacity and aiding the overall reliability of service. Sundance is capable of producing 420 megawatts of electricity, but during the summer months when electricity use is at its peak, we can't even get all of that power out of the station because demand is so high." As the residential and commercial population of Coolidge grows, so will the demand for electrical services. The new 230kV line proposal and the Pinal South Substation represent APS trying to keep pace with the expected growth.

The proposed transmission line will be five to seven miles in length, constructed on steel monopoles between 130 and 150 feet high. The project will originate at Sundance and terminate at the Pinal South Substation, necessitating a right-of-way clearance of 100 to 130 feet in width. Construction is anticipated to begin in 2009, with the power line in-service in the summer of 2011. The Pinal South Substation is also expected to begin operations in the summer of 2011.

"The two projects are tied together," Bernosky explained. "We need the Pinal South Substation in order to connect the new 230kV line."

The lengthy process of determining a route for the proposed power line has begun. Bernosky said APS representatives have already conducted briefings with administrators and stakeholders in Coolidge, Florence, Eloy, Casa Grande and Pinal County to gather perspectives. More such meetings are planned. Last Tuesday, APS held a public open house to overview the project and discuss potential route alternatives.

"There was a fairly light turnout, but we received pretty positive feedback," Bernosky said. "A lot of people have been through this before with other power line projects. Most were interested in learning more about the potential route of the power line with respect to their locations. There was some support for the routes that we've already plotted on maps" (see related image).

Numerous factors are taken into consideration during the siting process.

"There are residents that stand to be potentially affected by the route, and we balance that with other issues," Bernosky said, such as environmental concerns, existing and future residential developments, public acceptability, engineering, ease of land acquisition and cost. "We know we can't necessarily avoid everyone."

Arcadis, an environmental consulting firm, will conduct an environmental analysis of the project. This analysis will consider existing and planned land uses, landscape scenic quality and views, historic and archaeological features, and plant and wildlife species. The gathered data will aid APS in the siting process.

All of this information will go into an application for a Certificate of Environmental Compatibility (CEC) through the Arizona Corporation Committee. Bernosky said APS hopes to bring an application before the Arizona Power Plant and Transmission Line Siting Committee by the end of October. Hearings will follow before the line siting committee makes a formal recommendation to the ACC. The ACC is responsible for final approval, including the ultimate route of the transmission line. Bernosky said that if APS gets the application in by the end of October, the line siting hearings should

take place in November and December, and APS would anticipate a final decision in early 2008.

In the meantime, APS will produce another newsletter this fall for distribution to residents in the "study area," which comprises Coolidge and areas to the west and south of the city. While no more open houses are scheduled, Bernosky said the lines of communication will remain open. Members of the public are welcome to visit the APS siting Web site at siting.aps.com, or call (866) 472-4484 ext. 2 to speak directly with Bernosky.

Coolidge City Manager Bob Flatley said that while the power line route is not yet finalized, the course is expected to run "roughly along Eleven Mile Corner Road down to the substation." APS is in discussion with Western Area Power Administration to co-locate the new power line within the right-of-way of an existing WAPA line. If that partnership does not pan out, Flatley said alternate routes would direct the new 230kV line west of Eleven Mile Corner Road.

"It's all a matter of bringing more electrical power to the area, with the onslaught of new housing," he said. "Once the housing slump ends, APS needs to be ready for the increased demand for electrical power." Flatley said in addition to the APS expansion plans, SRP recently announced the need for "four or five" additional peaking stations to supply the amount of electricity anticipated for the influx of new residents.

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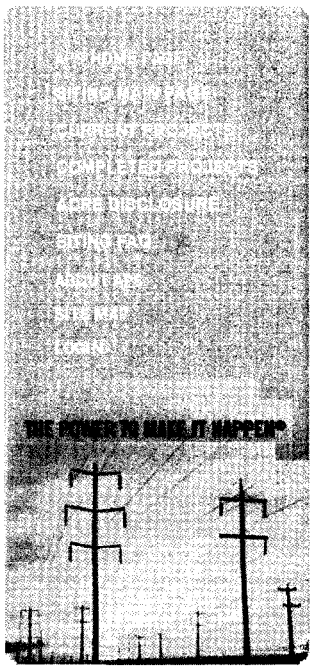
# PROJECT WEBSITE



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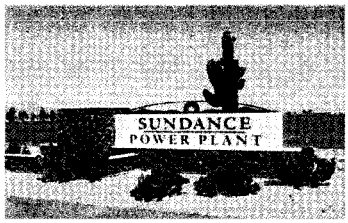
## Transmission and Facility Siting - Curent Projects

### Sundance to Pinal South 230kV Transmission Project




As part of APS' continuing effort to meet the increasing demand for electricity, the APS Transmission and Facility Siting Department has initiated a process to identify possible alternative routes for a new 230 kilovolt (kV) transmission line to connect the Sundance Generating Station and the future Pinal South Substation. APS intends to prepare and submit an application for a Certificate of Environmental Compatibility (CEC) to the Arizona Corporation Commission (ACC) in 2007.

The proposed project will accomplish the following objectives:

- Increase local capacity, which will improve the reliability and continuity of service for the electrical load in the area.
- Allow APS to schedule the full output capability of the Sundance facility, currently estimated at 420 megawatts during peak summer conditions.
- Economically provide a new 230kV path for existing and potential future generation at the Sundance facility.

Please check this site frequently for new and updated information. You may send us your comments or call Greg Bernosky, APS Project Manager, at (866) 472-4484 (Press "2" for the Project Manager) for more information on the project.

***NEW INFORMATION!***

***The informational boards on display at the second project Open House held on Tuesday, October 23rd are now available. Also available is a map illustrating the alternative routes under consideration, which was provided as a handout at the Open House. Both files are included below under the heading of "Project Maps and Other Materials."***

***APS anticipates filing an Application for a Certificate of Environmental Compatibility for this project in late November 2007. Please be sure to provide any comments you may have regarding the project by clicking on the "send us your comments" link above and stay tuned to this Web page for more updates.***

Latest Information

Public Open House #1 Announcement

Public Open House #2 Announcement

Project Maps and Other Materials

Open House #1 Boards

Initial Alternative Alignments (August 2007)

Open House #2 Boards

Alternative Routes (October 2007)

Project Fact Sheets and Newsletters

Newsletter#1

Newsletter#1 (Spanish version)

Fact Sheet #1

Newsletter#2

Newsletter#2 (Spanish version)

## Appendix A
## List of Acronyms and Abbreviations

| Acronym | Definition |
|---|---|
| AC | alternating current |
| AM | amplitude modulation |
| Project | APS Sundance to Pinal South 230kV Transmission Line Project |
| ARCADIS | ARCADIS U.S., Inc. |
| APE | area of potential effect |
| AOS | Area of Study |
| ACC | Arizona Corporation Commission |
| ADA | Arizona Department of Agriculture |
| AGFD | Arizona Game and Fish Department |
| APS | Arizona Public Service Company |
| A.R.S. | Arizona Revised Statute |
| ADOT | Arizona State Department of Transportation |
| ASLD | Arizona State Land Department |
| ASM | Arizona State Museum |
| AN | audible noise |
| Ldn | average day/night calculated noise level |
| db(A) | A-weighted decibels |
| BS | Bachelor of Science |
| BLM | Bureau of Land Management |
| CAP | Central Arizona Project |
| CATS-HV | Central Arizona Transmission Study - High Voltage |
| CEC | Certificate of Environmental Compatibility |
| dB | decibels |
| du/ac | dwelling unit per acre |
| EPNG | El Paso Natural Gas Company |
| EMF | electric and magnetic field or electromagnetic field |
| ED2 | Electrical District #2 |
| ESA | Endangered Species Act of 1973 |
| ELF | extremely low frequency |
| FM | frequency modulation |
| GIS | Geographic Information System |
| Hz | Hertz |
| HDR | high density residential |
| IEEE | Institute of Electrical and Electronic Engineers |
| IARC | International Agency for Research on Cancer |
| I-10 | Interstate 10 |
| KOP | Key Observation Point |
| kHz | kilohertz |
| kV | kilovolt |
| kV/m | kilovolt per meter |
| kVrms/cm | kilovolt root mean square per centimeter |
| LDR | low density residential |
| MA | Master of Arts |

| Appendix A<br>List of Acronyms and Abbreviations | |
|---|---|
| MS | Master of Science |
| mHz | megahertz |
| MW | megawatt |
| µV/m | microvolt per meter |
| mA | milliamps |
| mm | millimeter |
| NEPA | National Environmental Policy Act |
| NIEHS | National Institute of Environmental Health Science |
| NPS | National Park Service |
| NPL | Native Plant Law |
| N | node |
| OVS | Overall Visual Sensitivity |
| PAD | Planned Area Development |
| PSA | Project Study Area |
| RV | recreational vehicle |
| RMU | Regional Mixed Use |
| ROW | right-of-way |
| SRP | Salt River Project |
| SPRR | Southern Pacific Railroad Company |
| s.f. | square feet |
| SHPO | State Historic Preservation Office |
| SR | State Route |
| TVI | television interference |
| TPRR | Texas and Pacific Railroad Company |
| TCB | traditional cultural properties |
| Transwestern | Transwestern Pipeline Company, LLC. |
| UHF | ultra high frequency |
| UPRR | Union Pacific Railroad |
| USFWS | United States Fish and Wildlife Service |
| USFS | Unites States Forest Service |
| VHF | very high frequency |
| VC | Viewer Concern |
| VE | Viewer Exposure |
| VQ | Visual Quality |
| Western | Western Area Power Administration |
| WSC | Wildlife of Special Concern |
| WHO | World Health Organization |

**BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE**

| | | |
|---|---|---|
| IN THE MATTER OF THE APPLICATION OF ARIZONA PUBLIC SERVICE COMPANY, IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES §§ 40-360, *et seq.*, FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AUTHORIZING THE SUNDANCE TO PINAL SOUTH 230kV TRANSMISSION PROJECT, WHICH ORIGINATES AT THE SUNDANCE GENERATING STATION, SECTION 2, TOWNSHIP 6 SOUTH, RANGE 7 EAST, AND TERMINATES AT THE FUTURE PINAL SOUTH SUBSTATION, SECTION 30, TOWNSHIP 6 SOUTH, RANGE 8 EAST, IN PINAL COUNTY, ARIZONA. | ) | Docket No. _____<br><br>Case No. 136 |

## NOTICE OF HEARING

A PUBLIC HEARING WILL BE HELD before the Arizona Power Plant and Transmission Line Siting Committee ("Committee") regarding the Application of Arizona Public Service Company ("APS") for a Certificate of Environmental Compatibility authorizing the Sundance to Pinal South 230kV Transmission Project ("Project") in Pinal County, Arizona. The hearing will be held at The Property Conference Center, 1251 Gila Bend Highway, Casa Grande, Arizona, 85293, telephone: (520) 836-1101, beginning on January 22, 2008, at 9:30 a.m. and continuing on January 23, 2008, at 9:30 a.m. The hearings will adjourn at approximately 5:00 p.m. Additional hearing days, if necessary, will be noticed on the Project and Arizona Corporation Commission ("ACC") websites. The Project website is http://siting.aps.com. The ACC website is: www.azcc.gov/AZ_Power_Plant/LineSiting-Calendar.asp.

**PUBLIC COMMENT WILL BE TAKEN AT THE BEGINNING OF EACH HEARING DAY. PUBLIC COMMENT ALSO WILL BE TAKEN IN A SPECIAL EVENING SESSION ON JANUARY 22, 2008, BEGINNING AT 6:30 P.M. AT THE PROPERTY CONFERENCE CENTER, 1251 GILA BEND HIGHWAY, CASA GRANDE, ARIZONA, 85293.**

The Committee may conduct a tour of the Project Study Area and the proposed routes on a future date. The map and itinerary for the tour will be available at the hearings and posted on the Project website. Members of the public may follow the Committee in their own private vehicles. During any tour, the Committee will not discuss or deliberate in any manner concerning the Application.

The Project consists of approximately 7 miles of 230kV transmission line and required substation facilities and modifications. A general location map of the Project Study Area and Applicant's proposed routes, described herein, is set forth below.

The Project will originate at a new 10-acre substation to be located on property owned by APS at the Sundance Generating Station, Section 2, Township 6 South, Range 7 East (Arizona Corporation Commission Decision #63863, Line Siting Case No. 107) A single-circuit 230kV tie-line will be built from the new substation to interconnect with the existing Western Substation located immediately north of the Sundance Generating Station.

From the new substation, the Project will proceed west, south of existing and future planned natural gas lines north of Randolph Road, on structures designed to accommodate double-circuit 230kV with 69kV circuits underbuilt. The Preferred Route for the Project then turns south along the Curry Road alignment to the half-section line between Florence Boulevard/State Route 287 and Earley Road. From this point the Preferred Route heads east along the half-section between Florence Boulevard and Earley Road to the future Pinal South Substation, located at Section 30, Township 6 South, Range 8 East (approved as part of Arizona Corporation Commission Decision #68093, Line Siting Case No. 126). The portion of the Preferred Route along the half-section between Florence Boulevard and Earley Road would be immediately adjacent and parallel to the location in which SRP has received approval for a future planned double-circuit 500/230kV transmission line in Decision #68093.

The Alternate Route for the Project originates at the same location as the Preferred Route and proceeds west along the same corridor south of existing and future planned natural gas pipelines north of Randolph Road. The Alternate Route turns south at the half-section between Curry and Tweedy Roads and continues south to the Earley Road alignment. At this point, the Alternate Route turns to the east and parallels the Earley Road alignment on the north side of the Casa Grande Canal to Eleven Mile Corner Road. The Alternate Route then proceeds north on the east side of Eleven Mile Corner Road, terminating at the future Pinal South Substation.

The Applicant requests approval of a total right-of-way width of up to 130 feet within a general corridor that is a minimum of 500 feet wide, except in the areas identified as the Northern Corridor Area and Southern Corridor Area in the attached map. In the Northern Corridor Area, the Applicant requests a 2700-foot corridor north of Randolph Road, on APS property, from 250 feet east of Tweedy Road to the half-section between Curry and Tweedy Roads. The Application requests a 1380-foot corridor north of Randolph Road, from the half-section between Curry and Tweedy Roads to 250 feet west of Curry Road. In the Southern Corridor Area, the Applicant requests a 3000-foot corridor south of the half-section between Florence Boulevard and Earley Road, from 250 feet west of Curry Road to 1000 feet east of Eleven Mile Corner Road.

More complete maps, along with more detailed textual descriptions of the proposed routes are available in the Application itself and on the Project website. The Application, including detailed maps of the proposed Project, is on file with the Docket Control Center of the Arizona Corporation Commission, 1200 West Washington Street, Suite 108, Phoenix, Arizona 85007.

Copies of the Application also are available for review at the Coolidge Public Library, 160 W. Central Avenue, Coolidge, AZ 85228, (520) 723-6030.

Depending on the issues raised and the number of intervenors appearing during the hearing, the Committee may deem it appropriate at some point to recess the hearing to a time and place to be announced during the hearing, or to be determined after the recess. These dates and places will be posted on the Project and ACC websites. At the discretion of the Committee, such resumed hearings may be held at a date, time and place designated by the Committee or its Chairman.

**NOTE: NOTICE OF SUCH RESUMED HEARING WILL BE GIVEN. PUBLISHED NOTICE OF SUCH RESUMED HEARING IS NOT REQUIRED.**

Each county and municipal government and state agency interested in the proposed Project and desiring to become a party to the proceeding, shall, not less than ten (10) days before the date set for hearing, file with the Director of Utilities, Arizona Corporation Commission, 1200 West Washington, Phoenix, Arizona 85007, a notice of its intent to be a party.

Any domestic, non-profit corporation or association, formed in whole or in part to promote conservation of natural beauty, to protect the environment, personal health or other biological values, to preserve historical sites, to promote consumer interests, to represent commercial and industrial groups or to promote the orderly development of the area in which the Project is to be located and desiring to become a party to the certification proceeding, shall, not less than ten (10) days before the date set for hearing, file with the Director of Utilities, Arizona Corporation Commission, 1200 West Washington, Phoenix, Arizona 85007, a notice of its intent to be a party.

The Committee or its Chairman, at any time deemed appropriate, may make other persons parties to the proceedings.

Any person may make a limited appearance at the hearing by filing a statement in writing with the Director of Utilities, Arizona Corporation Commission, 1200 West Washington, Phoenix, Arizona 85007, not less than five (5) days before the date set for hearing. A person making a limited appearance shall not be a party or have the right to present testimony or cross-examine witnesses.

This proceeding is governed by Arizona Revised Statutes (A.R.S.) §§ 40-360 to 40-360.13 and Arizona Administrative Code Rules R14-3-201 to R14-3-220 and 14-3-113. No substantive communication, not in the public record, may be made to any member of the Committee. The written decision of the Committee shall be submitted to the Arizona Corporation Commission pursuant to A.R.S. § 40-360.07. Any person intending to be a party before the Arizona Corporation Commission must be a party to the certification proceedings before the Committee.

ORDERED this _____ day of December, 2007.

_____
Laurie A. Woodall, Chairman
Arizona Power Plant and
Transmission Line Siting Committee
Assistant Attorney General