

# APS North Peoria Facilities Siting Project

## Open House

WELCOME!  
Please Sign In



# Project Overview and Need



# Project Overview

- Phase I (Estimated In-Service 2021)
  - One new 69/12kV substation (W03)
  - One double-circuit, or two single-circuit, 69kV powerline(s) from the planned W03 substation to the existing Raceway to Calderwood 69kV powerline located in the eastern portion of the Project study area
- Future Phases (Estimated In-Service 5-10+ years)
  - One 230/69/12kV substation (TS14)
  - Two 69/12kV substations (W04, W05)
  - 230kV interconnection (less than two spans) from the existing Sun Valley to Morgan 500/230kV transmission line to the planned TS14 substation
  - 69kV powerlines with looped connections to/from W03, W04, W05, and TS14 substations
- APS is in the early stages of the planning process and is conducting agency and public involvement outreach prior to identifying preferred powerline routes

# North Peoria Facilities Siting Study Land Ownership / Jurisdiction

## Conceptual Siting

- 230/69/12kV Substation Siting Area
- 69/12kV Substation Siting Area
- ↔ Potential 69kV Electrical Transmission Connection
- Phase 1** - Conceptual connections to, and location of, Substation W03

Note: Siting Areas and Potential Electrical Transmission Connection needs are conceptual and not all connections are required. Conceptual 69/12kV Substation Siting Areas, as displayed, are approximately 875 acres. Actual 69/12kV Substation sites require approximately 5 acres.

## Land Ownership

- Bureau of Land Management
- Bureau of Reclamation
- Arizona State Trust
- Maricopa County
- Private

## Land Jurisdiction

- City of Peoria
- City of Surprise
- City of Phoenix
- Maricopa County

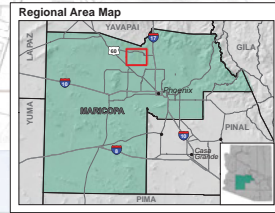
## Transmission Facilities

- ▲ 500kV Substation
- ▲ 230kV Substation
- ▲ 69kV Substation
- 500kV Transmission Line
- 345kV Transmission Line
- 230kV Transmission Line
- 69kV Powerline

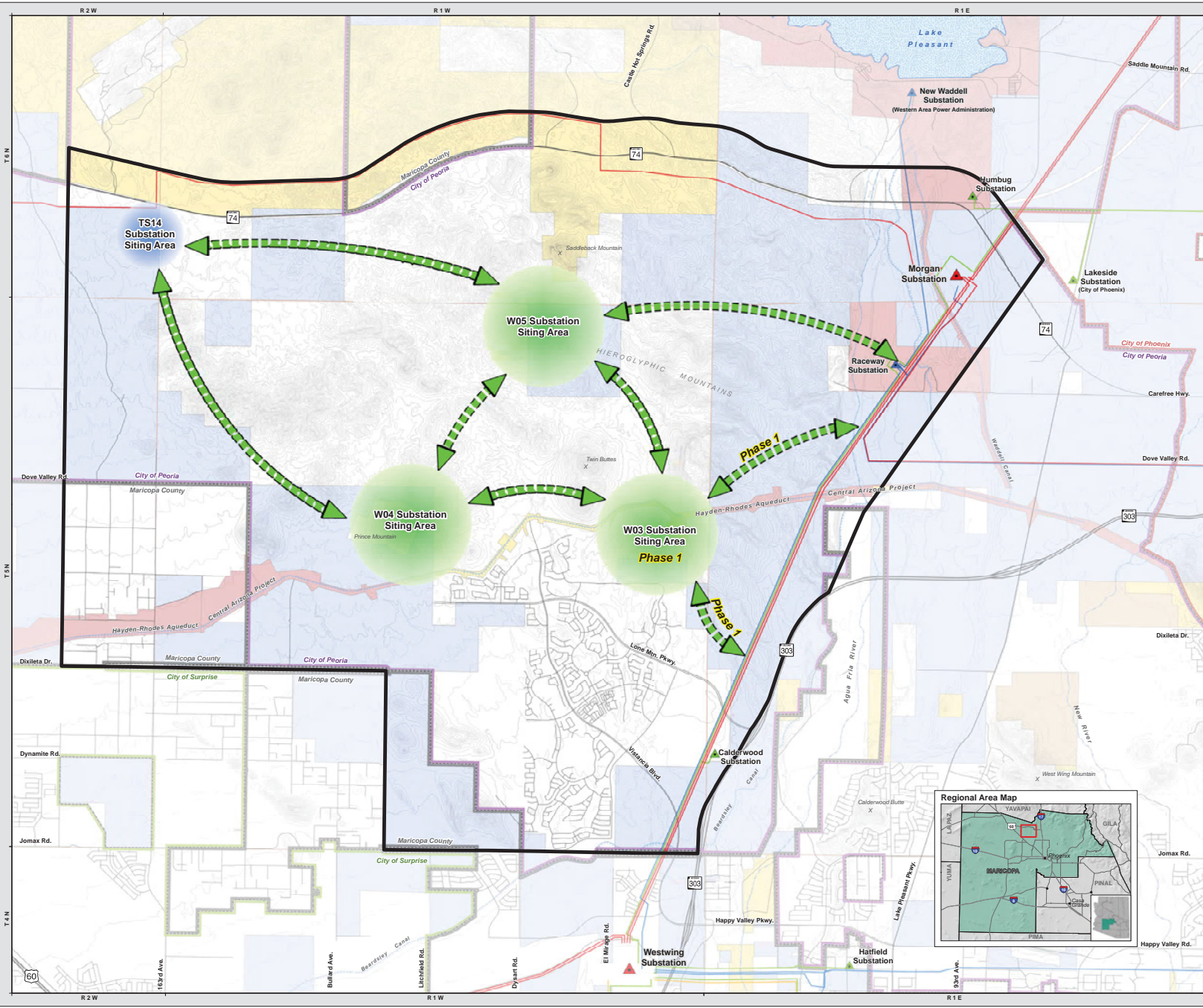
Note: APS is sole or joint owner of substation unless shown otherwise

## Reference Features

- Study Area
- Local Road
- Arterial Road
- Highway
- Canal
- Contour (20ft Interval)
- Township and Range



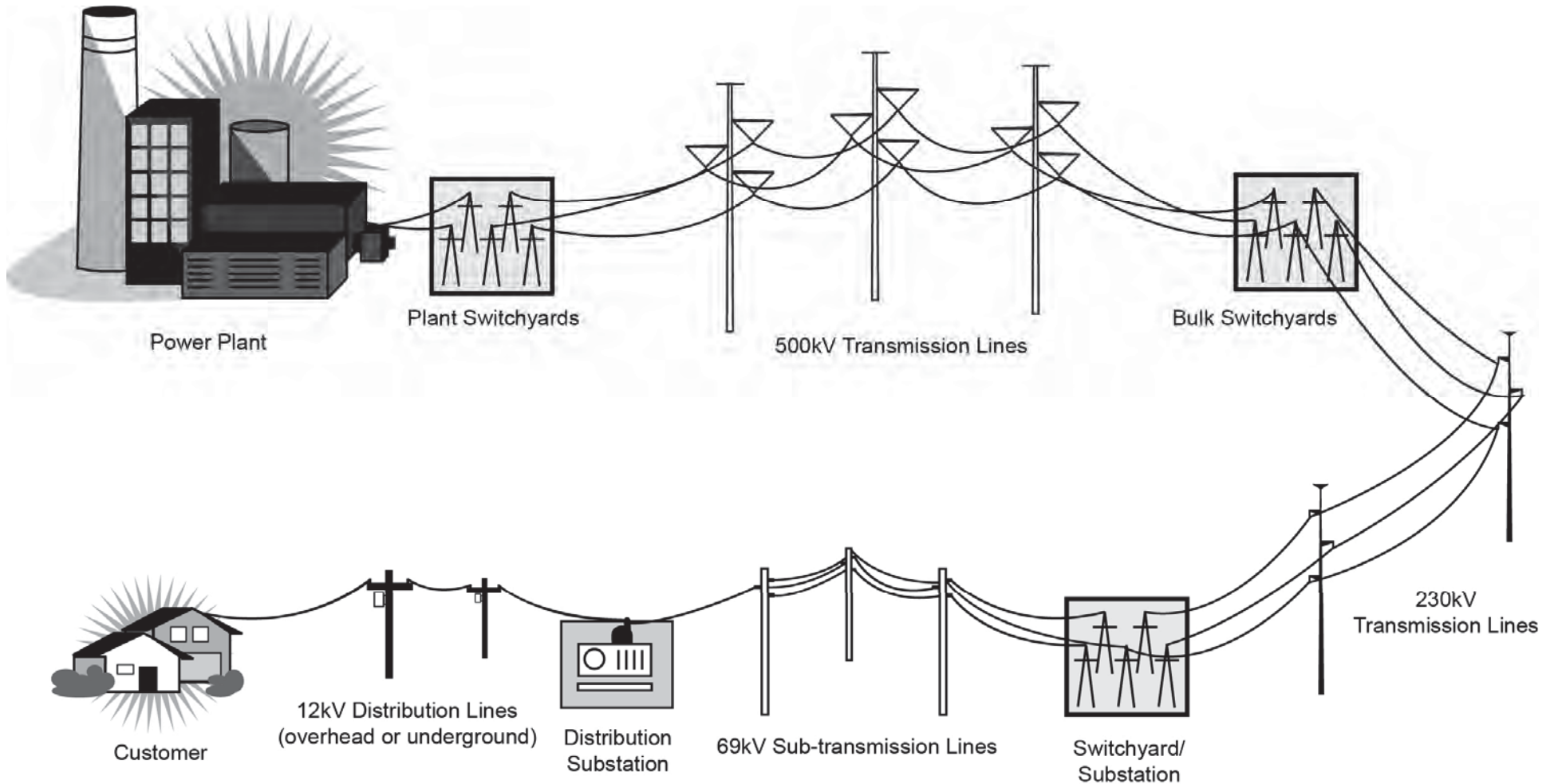
April 2018



# Project Need

- Provide additional, separate, 69kV and 230kV power sources, allowing the system to serve new development and increased electricity use within existing developments
- Improve reliability in the area by adding additional 69kV and 230kV facilities, strengthening the regional electrical system, and helping to prevent potential outages
- Provide operating flexibility by creating new loops and sources into the area

# Electricity From the Power Plant to the Customer



# Project Description and Design Considerations

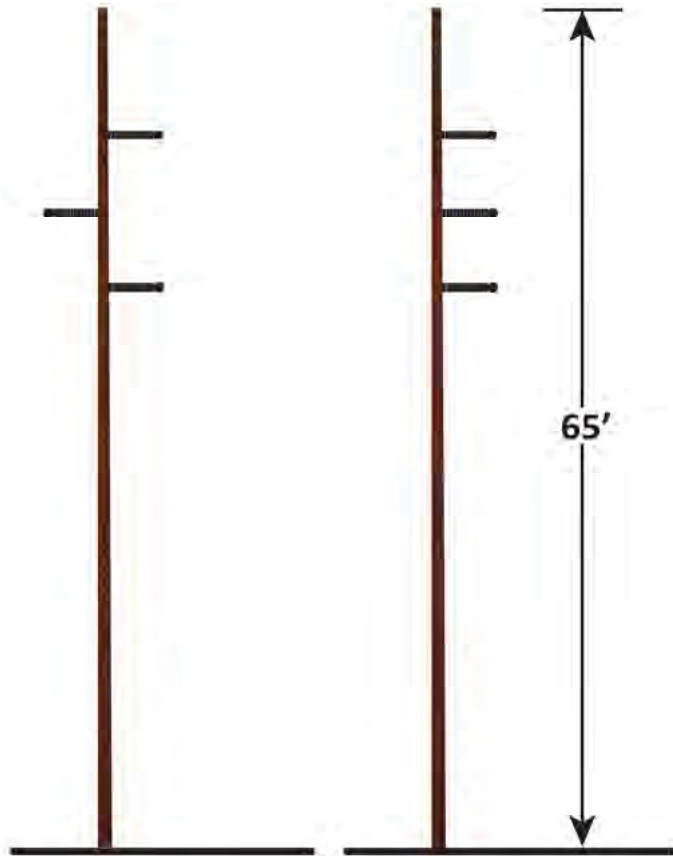


# Project Description

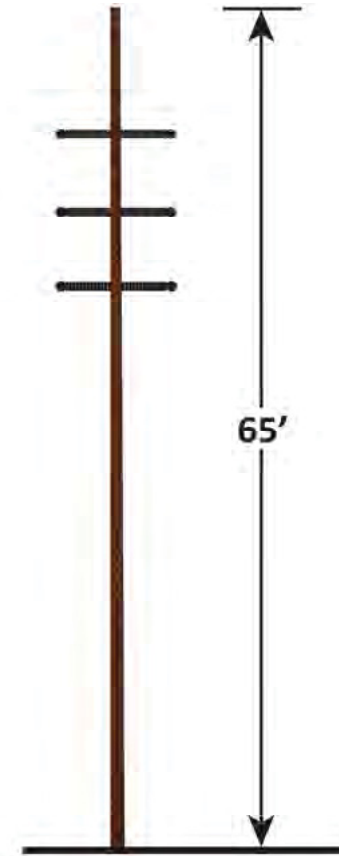
- Phase I (Estimated In-Service 2021)
  - One new 69/12kV substation (W03)
  - One double-circuit, or two single-circuit, 69kV powerline(s) from the planned W03 substation to the existing Raceway to Calderwood 69kV powerline located in the eastern portion of the Project study area
- Future Phases (Estimated In-Service 5-10+ years)
  - One 230/69/12kV substation (TS14)
  - Two 69/12kV substations (W04, W05)
  - 230kV interconnection (less than two spans) from the existing Sun Valley to Morgan 500/230kV transmission line to the planned TS14 substation
  - 69kV powerlines with looped connections to/from W03, W04, W05, and TS14 substations
- A new 69kV powerline route will require right-of-way or easement up to 60 feet wide, and construction of new steel monopoles approximately 65 feet tall (may include 12kV underbuild)
- A new 69kV substation will require an approximate 5-acre site



# Typical Structures



Single-circuit 69kV Structures



Double-circuit 69kV Structure

Heights may vary according to terrain

# Typical Structures



# Technical Considerations



# Electric and Magnetic Fields (EMF)

## Electric Field

Fields created by voltage on the transmission line that can cause an electric charge to build up on insulated objects near the line. This can create nuisance shocks (much like walking across carpet and touching a door handle) to individuals touching grounded objects near the line.

The standard for maximum electrical field value outside of the powerline right-of-way is 5.0kV/m. The value calculated for this project is less than 0.5kV/m.

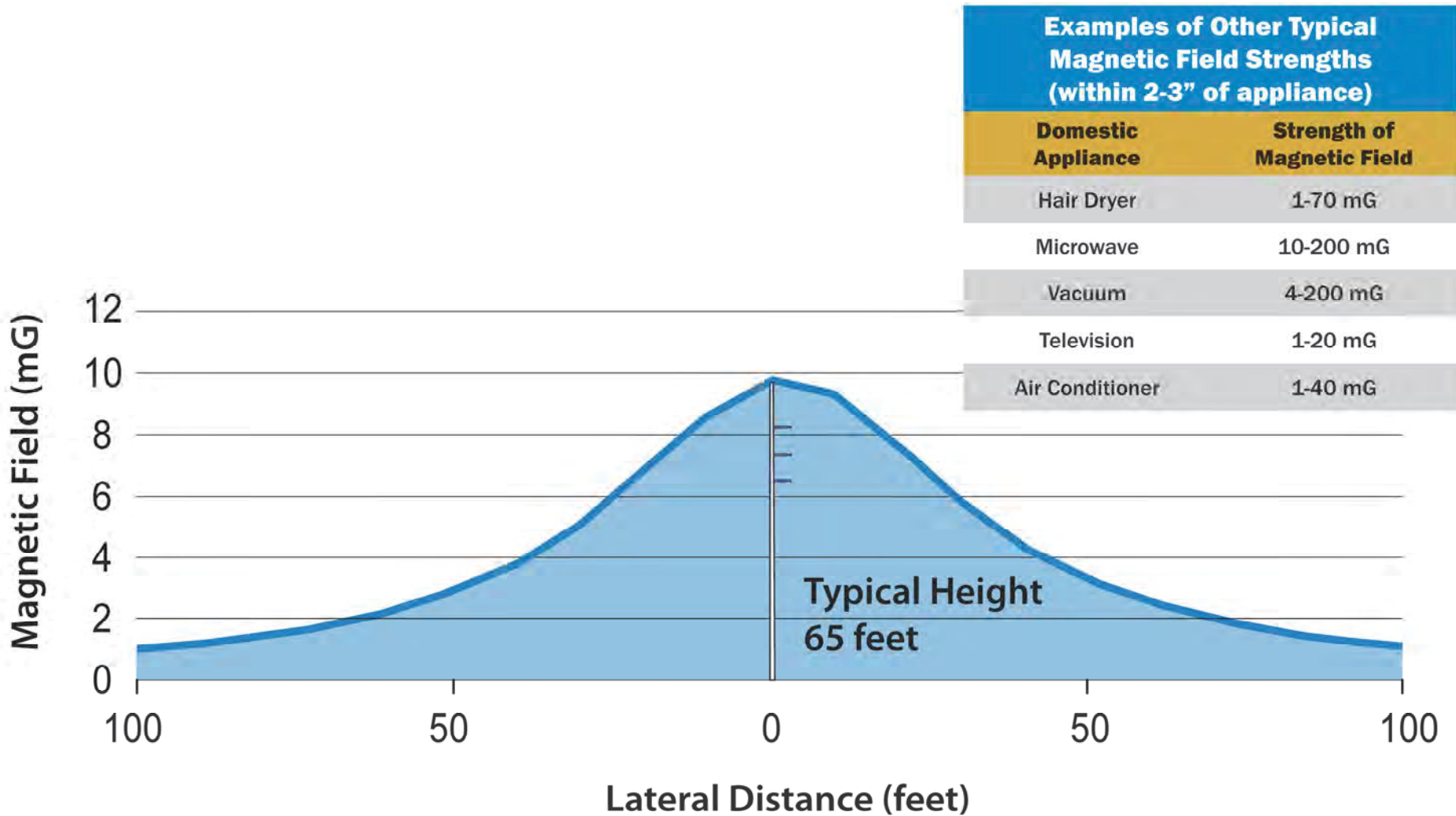
## Magnetic Field

Fields that are created by ALL devices that use, carry, or generate electricity. Magnetic fields drop off dramatically as distance from the source increases. To date, no federal or Arizona state standards have been established for magnetic field levels.

APS recognizes the public concern for magnetic fields and has included those considerations in the design of this project. For this project, the calculated value for magnetic field at the edge of the right-of-way is approximately 9mG.

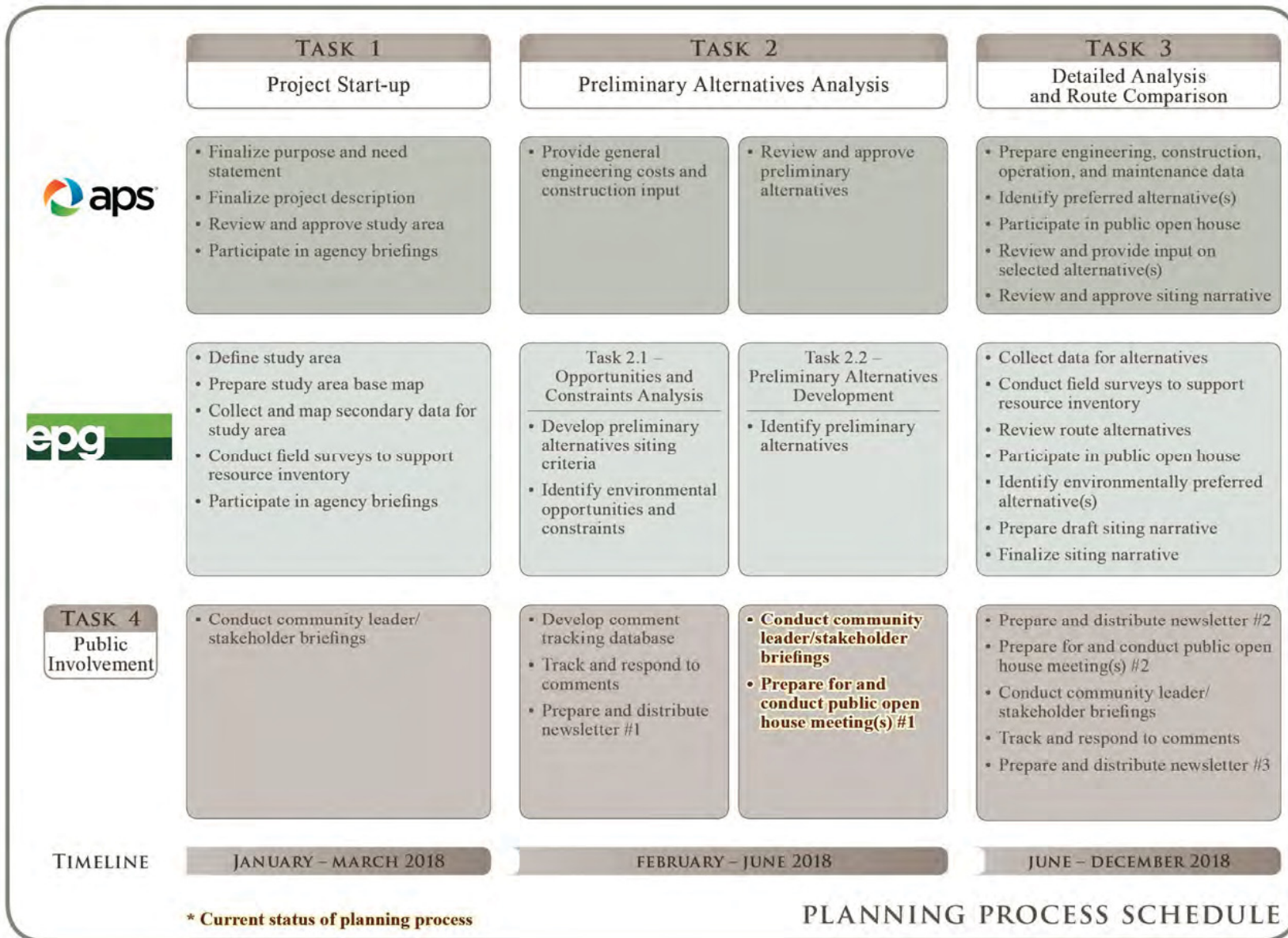
***APS continues to monitor U.S. and international studies regarding EMF, and offers free in-home measurements of EMF levels to all APS customers.***

# Magnetic Fields



# Planning Process





# Next Steps in Planning Process

- Collect, respond, and document public and agency comments
- Alternative route/location identification – May/June 2018
- Complete detailed inventory
- Impact assessment
- Next open house – August/September 2018
- Alternative route/location comparison
- Final route/location selection – November/December 2018



# Environmental Studies Overview

- Land Use – existing/future land use and jurisdictional planning guidelines
- Visual – sensitive viewers (residences, parks, and travel routes)
- Cultural – final routes will be designed to minimize impacts to culturally sensitive sites
- Biology – final routes will be designed to minimize impacts to sensitive habitat

# North Peoria Facilities Siting Study

## Existing Land Use

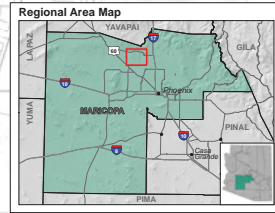
- Existing Land Use**
- Agriculture
  - Canal
  - Commercial
  - Construction Laydown Area/Nursery
  - Industrial
  - Open Space/Greenbelt
  - Park
  - Public/Quasi Public
  - Recreation
  - Residential - High Density
  - Residential - Medium Density
  - Residential - Low Density
  - Residential - Under Construction
  - School/Educational Facilities
  - Transportation
  - Utilities
  - Vacant
  - Communication Facilities
  - Designated Scenic Road
  - Trails

- Land Jurisdiction**
- City of Peoria
  - City of Surprise
  - City of Phoenix
  - Maricopa County

- Transmission Facilities**
- 500kV Substation
  - 230kV Substation
  - 69kV Substation
  - 500kV Transmission Line
  - 345kV Transmission Line
  - 230kV Transmission Line
  - 69kV Powerline

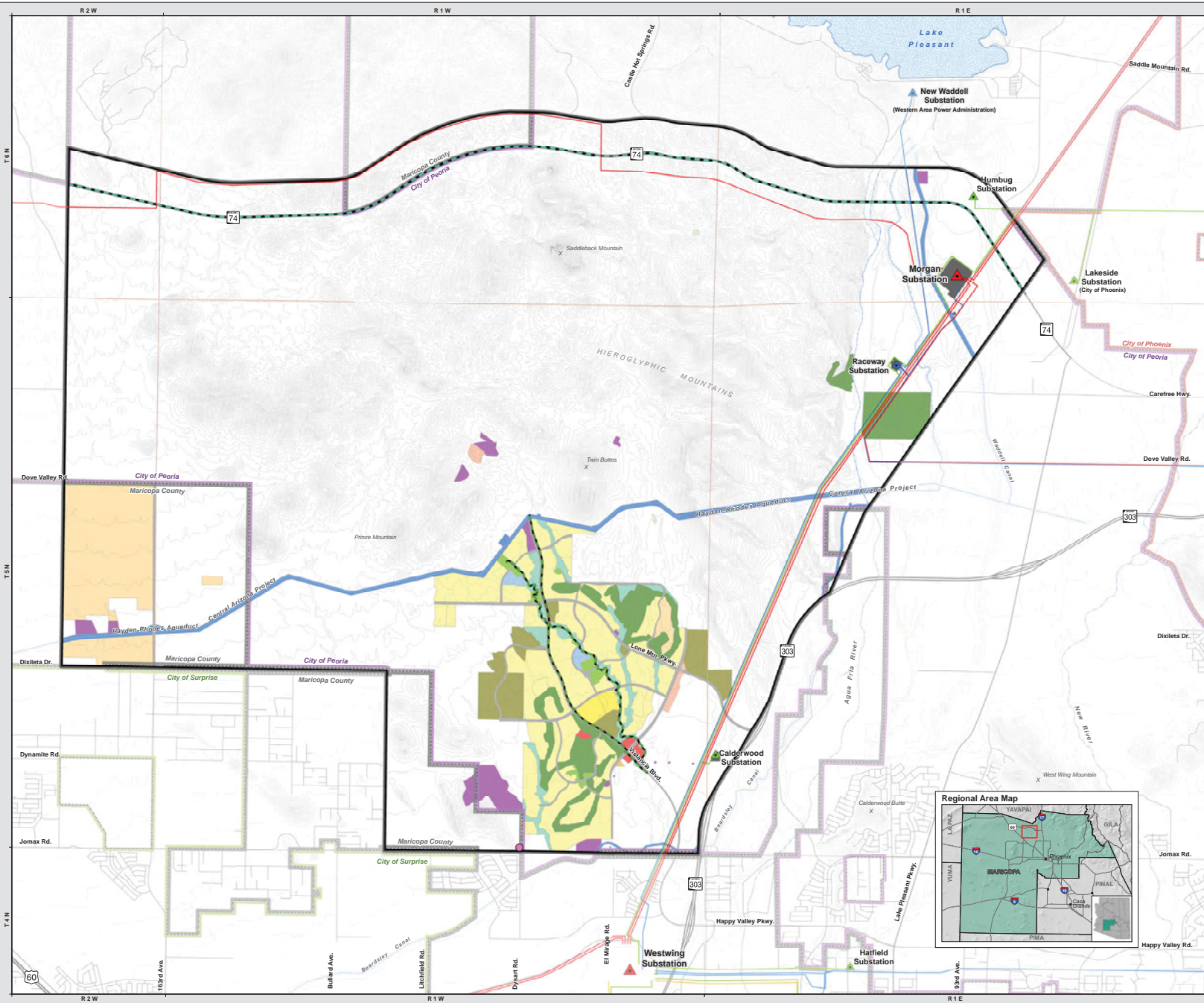
Note: APS is sole or joint owner of substation unless shown otherwise

- Reference Features**
- Study Area
  - Local Road
  - Arterial Road
  - Highway
  - Canal
  - Contour (20ft Interval)
  - Township and Range



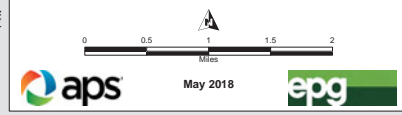
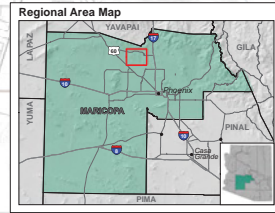
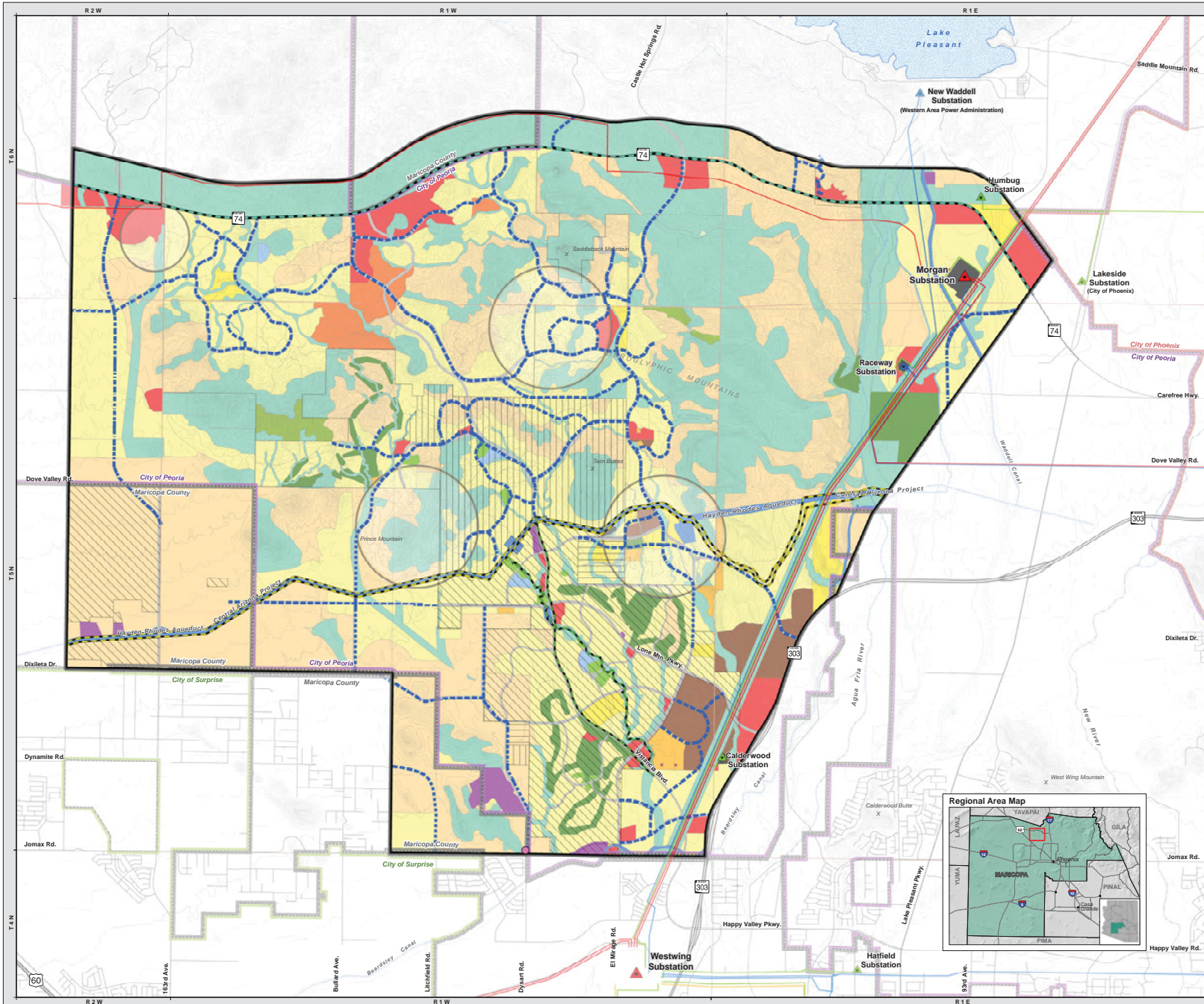
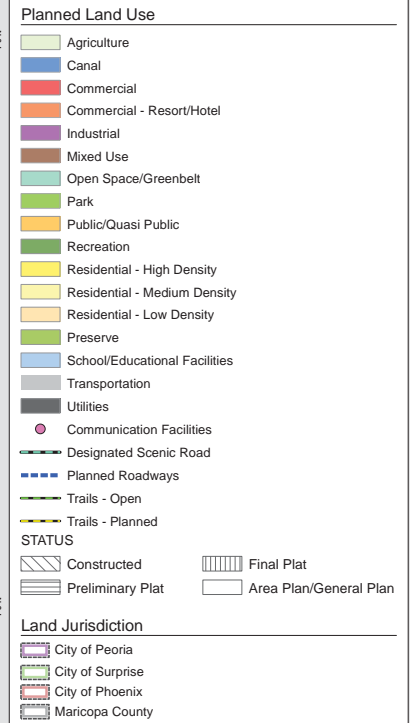
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Miles



# North Peoria Facilities Siting Study

## Planned Land Use



# North Peoria Facilities Siting Study Developments

## Conceptual Siting

- 230/69/12kV Substation Siting Area
- 69/12kV Substation Siting Area
- ↔ Potential 69kV Electrical Transmission Connection

*Note: Siting Areas and Potential Electrical Transmission Connection needs are conceptual and not all connections are required. Conceptual 69/12kV Substation Siting Areas, as displayed, are approximately 875 acres. Actual 69/12kV Substation sites require approximately 5 acres.*

## Development Status

- Built-out
- Final Plat
- Preliminary Plat
- Conceptual; Proposed

## Land Jurisdiction

- City of Peoria
- City of Surprise
- City of Phoenix
- Maricopa County

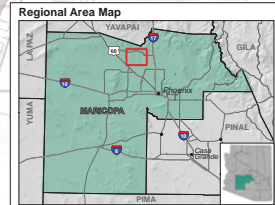
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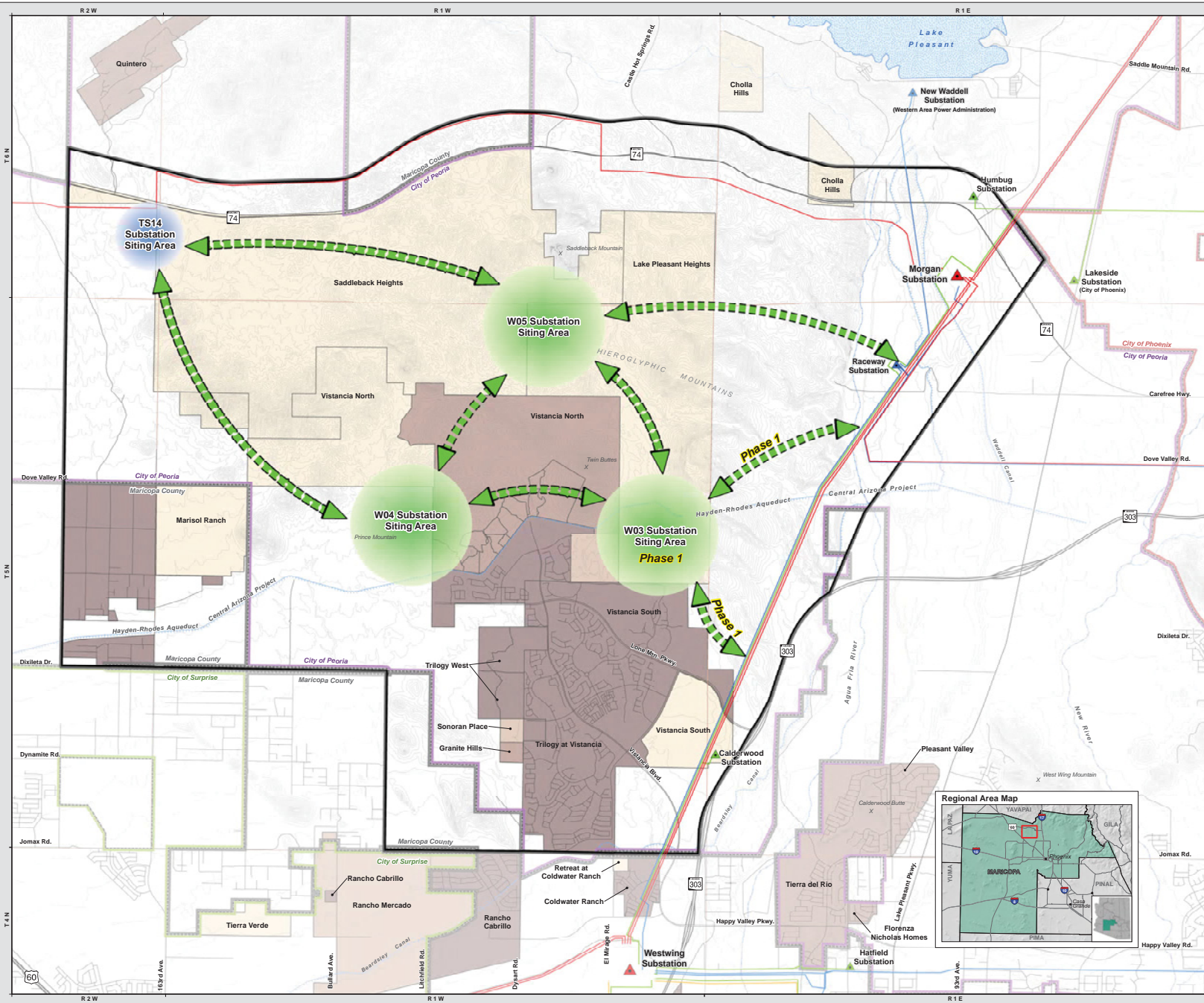
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## Reference Features

- Study Area
- Local Road
- Arterial Road
- Highway
- Contour (20ft Interval)
- Township and Range
- Canal



May 2018



# Opportunities and Constraints Analysis

- Identify opportunities and constraints through evaluation of environmental resources within the project study area
- Conduct an analysis of various land use and environmental resource sensitivities to the construction, operation, and maintenance of 230/69/12kV powerlines and substations

# Factors Considered in Route Identification

- Minimize impact to sensitive resource areas
  - Existing residences, schools, etc.
- Maximize use of siting opportunities
  - Parallel existing linear features, including roads, transmission lines, powerlines, and canals

# Preliminary Facility Siting Criteria

Existing Land Use and Visual Resources Constraints	
Constraints	Sensitivity Level
<b>Existing Land Use and Visual Resources</b>	
Residential Low Density	High
Residential Medium Density	High
Residential High Density	High
Subdivision Under Construction	High
Schools/Educational Facilities	High
Parks, Trails, and Designated Scenic Roads	High
Recreation (golf course, race track, paintball park, etc.)	Moderate
Open Space/Greenbelt	Moderate
Commercial	Moderate
Public/Quasi-public	Moderate
Transportation (Roadways)	Moderate
Agriculture/Corral/Stocktank	Low
Construction Laydown Area/Nursery	Low
Industrial/Mining	Low
Canal	Low
Utility Facilities (substations, pump stations, water treatment, comm., flood control, etc.)	Low

Planned Land Use and Visual Resources Constraints	
Constraints	Sensitivity Level
Residential – Final Plat	High
Residential – Preliminary Plat	Moderate
Residential – General Plan	Moderate
Commercial – Final Plat	Moderate
Commercial – Preliminary Plat	Low
Commercial – General Plan	Low
Commercial, Resort/Hotel – General Plan	Moderate
Commercial, Mixed Use – General Plan	Low
School/Education Facilities – Final Plat	High
Schools/Education Facilities – General Plan	Moderate
Industrial – General Plan	Low
Transportation (Roadways) – Final Plat	Moderate
Transportation (Roadways) – Preliminary Plat	Low
Transportation (Roadways) – General Plan	Low
Recreation Trail – General Plan	Moderate
Park/Golf Course – Final Plat	Moderate
Park/Golf Course – General Plan	Low
Open Space – Final Plat	Moderate
Open Space – Preliminary Plat	Low
Open Space – General Plan	Low
Preserve – General Plan	Moderate
Public/Quasi-public – General Plan	Low

Opportunities	
Opportunities	Opportunity Level
Overhead Transmission Line Corridors	High
Overhead 12kV Distribution Line (suitable for co-location)	High
Canal	High
Highways (State Route)	High
Arterial Roadways (with Jurisdictional Franchise Agreement)	High
Arterial Roadways (without Jurisdictional Franchise Agreement)	Moderate
Utility Facilities (substations, pump stations, water treatment, comm., flood control, etc.)	Moderate



# North Peoria Facilities Siting Study Opportunities and Constraints

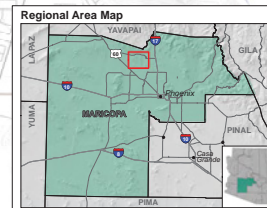
- Sensitivity Levels**
- High
  - Moderate
  - Low

- Opportunity Levels**
- High
  - Moderate

- Land Jurisdiction**
- City of Peoria
  - City of Surprise
  - City of Phoenix
  - Maricopa County

- Transmission Facilities**
- 500kV Substation
  - 230kV Substation
  - 69kV Substation
  - Conceptual Substation Siting Area
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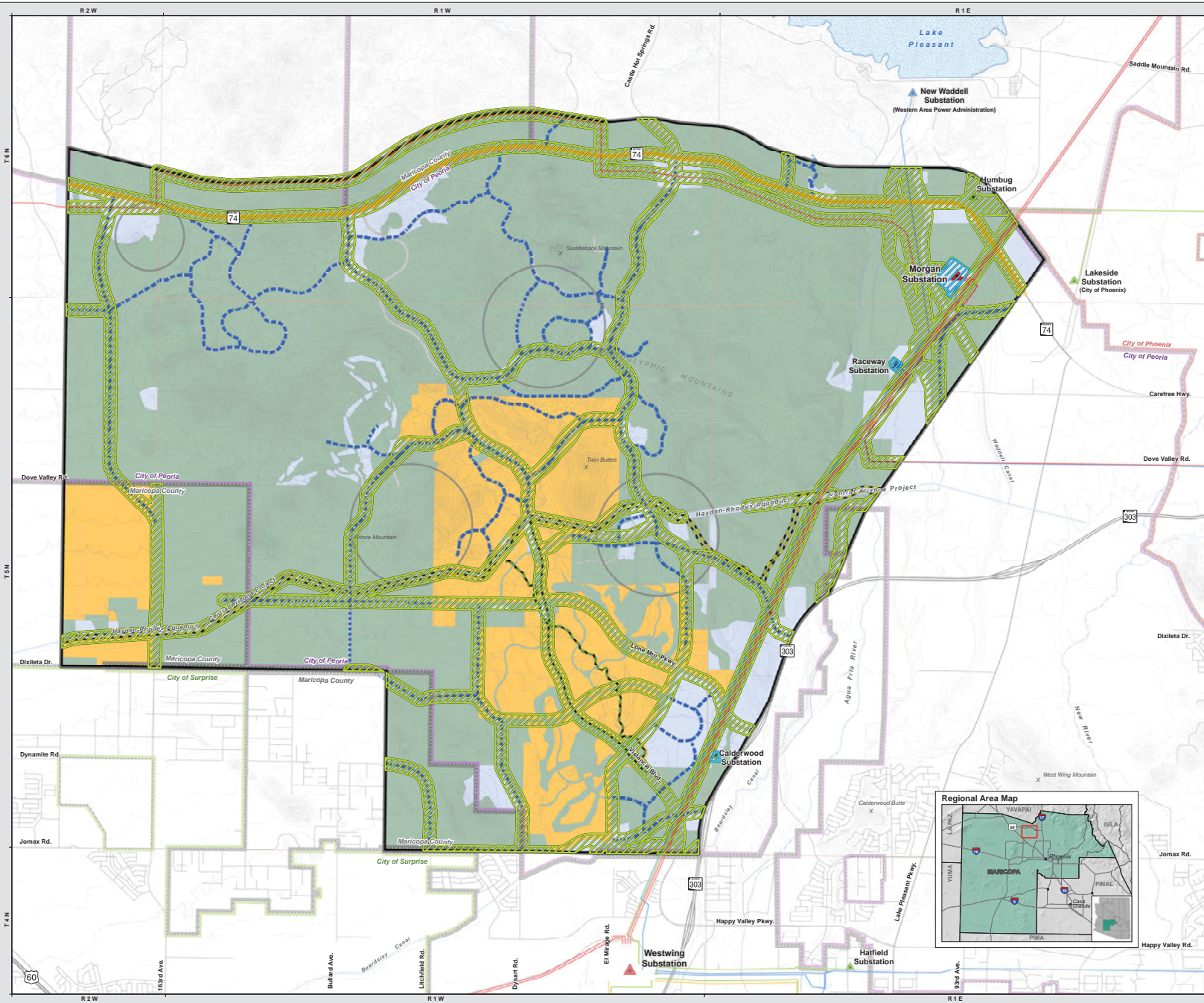
- Reference Features**
- Study Area
  - Local Road
  - Arterial Road
  - Highway
  - Canal
  - Contour (20ft Interval)
  - Township and Range
  - Planned Roadways
  - Trails - Open
  - Trails - Planned



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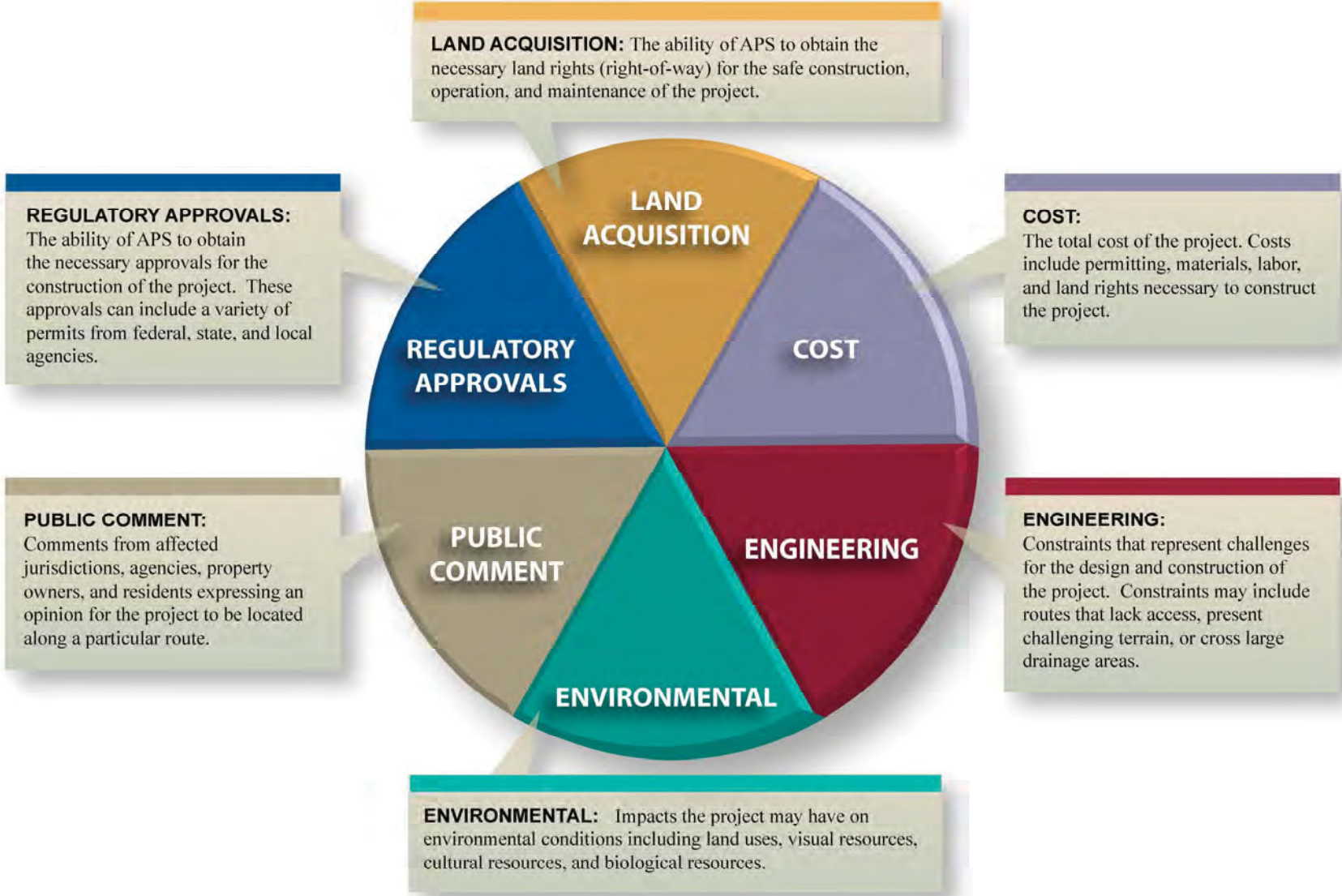
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# Transmission Line Siting Considerations



# Public Comments and Next Steps



# Public and Agency Outreach

- City of Peoria (February)
- Arizona State Land Department (February)
- Regional Real Estate Developers (February, April)
- Central Arizona Project (February)
- Bureau of Land Management (March)
- Project newsletter (April, more to follow)

Outreach is ongoing throughout the process.

# Opportunities for Public Information and Comment

- Fill out and return a comment form tonight
- Future project newsletters will have updated information and opportunities for comment
- Electronic comment forms and project updates available at: [www.aps.com/siting](http://www.aps.com/siting) (see North Peoria Facilities Siting Project under “Current Siting Projects”)
- Comments can also be sent to Stephen Eich, APS Siting Consultant, at: [NorthPeoriaSiting@apsc.com](mailto:NorthPeoriaSiting@apsc.com), or by phone at **1-888-352-4365**
- Media briefings (APS)
- Next public open house expected August/September 2018