# APS
# Three Rivers
# 230kV Powerline Project

## Open House

WELCOME!

Please Sign In

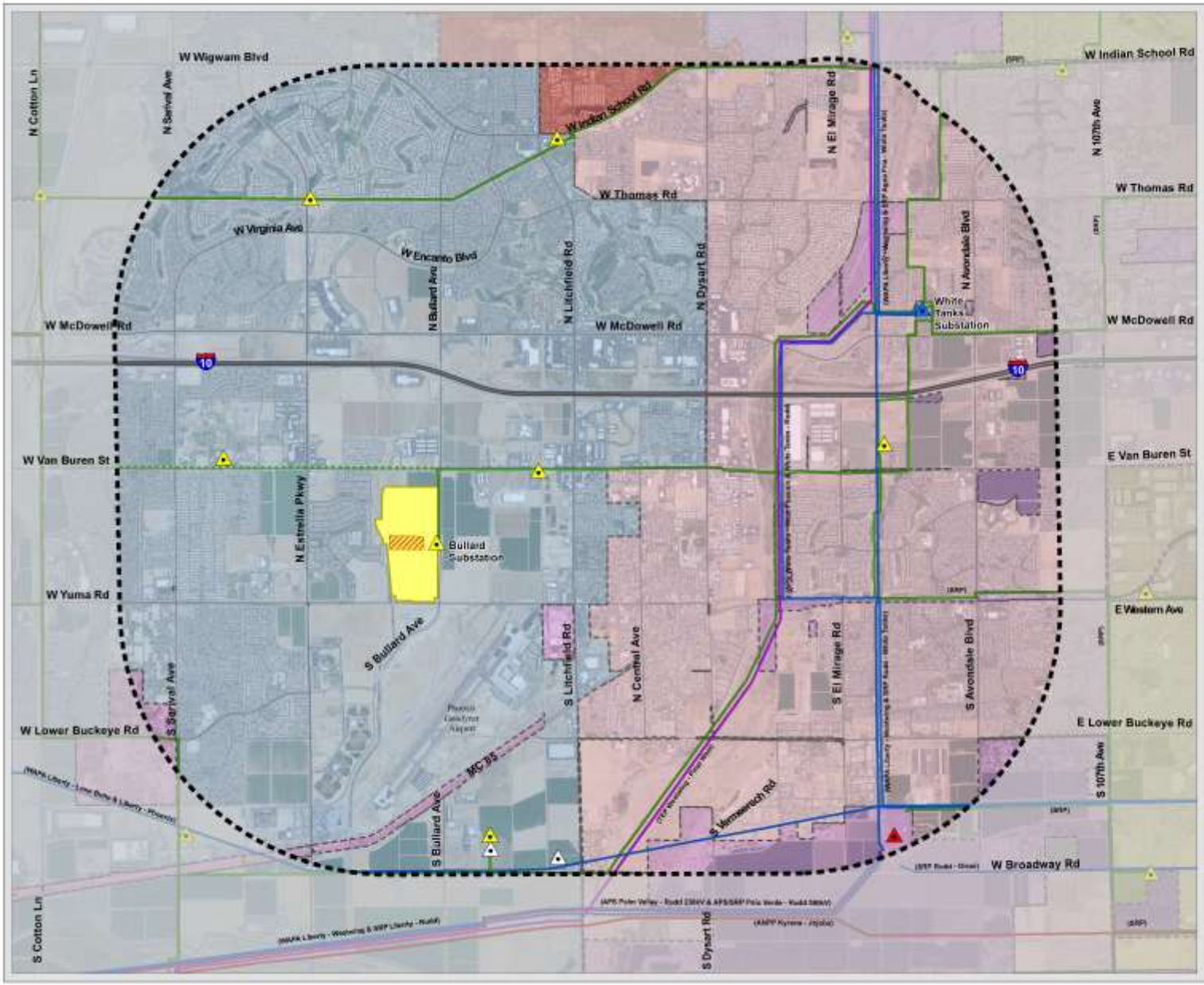
# Project Overview and Need

# Project Overview

- Three Rivers Project
  - One new 230/69kV substation (Three Rivers Substation)
  - Two new 230kV transmission lines from the planned substation to existing 230kV transmission lines

- APS is in the early stages of the planning process and is conducting agency and public involvement outreach prior to identifying preferred powerline routes.

- Following identification of preferred powerline routes, APS will apply for a Certificate of Environmental Compatibility (CEC) with the Arizona Corporation Commission (ACC) for a transmission line route corridor.




# Three Rivers Transmission Line Project (TS-16)

## Jurisdiction

**Jurisdiction**
- Avondale
- Goodyear
- Maricopa County
- Litchfield Park
- Phoenix
- Tolleson

**Project Features**
- Regional Study Area
- Data Center Site

**Planned Transmission Facilities**
- Planned Three Rivers 230kV Substation
- Existing Single-Circuit 69kV Line to be rebuilt as Double-Circuit 69kV Line

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

February 2020

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# Project Need

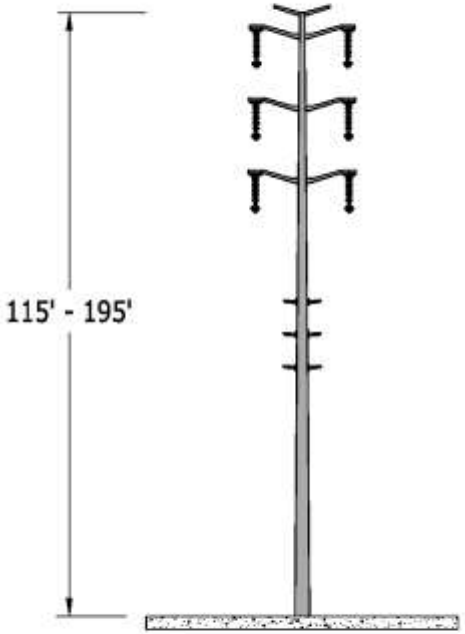
- Provide dedicated and looped 230kV power sources to serve a new data center customer and support overall growth in the west valley

# Project Description and Design Considerations

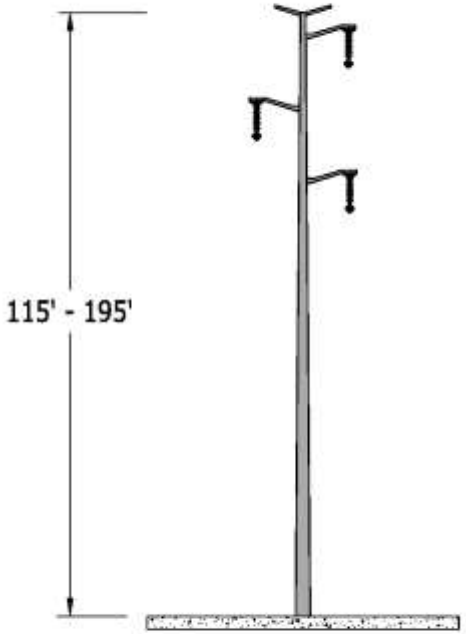
# Project Description

- Three Rivers Project
  - One new 230/69kV substation (Three Rivers Substation)
  - Two new 230kV transmission lines from the planned substation to existing 230kV transmission lines
- New 230kV transmission line routes will require:
  - Right-of-way or easement up to approximately 120 feet wide
  - Construction of new steel transmission line structures, approximately 115 to 195 feet tall, depending on routing and required crossing of other existing structures
- New 230kV substation will require approximately 15-acre site located on customer's property.

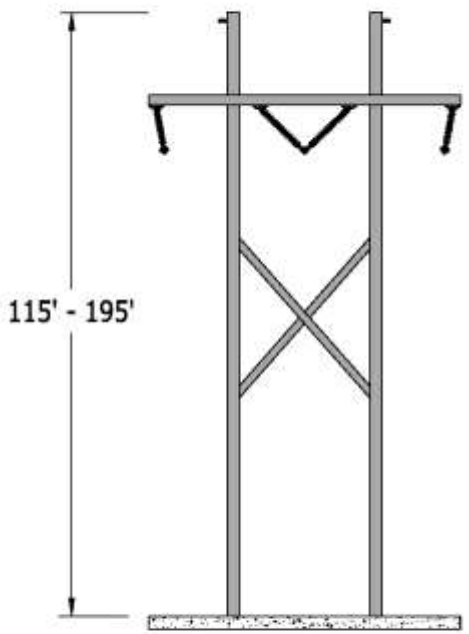
# Typical Structures




*Typical 230kV double circuit with 69kV double circuit underbuild monopole structure*




*Typical 230kV single circuit monopole structure*




*Typical 230kV single circuit H-frame structure*

*Heights may vary according to terrain*

# Typical Structures

# Typical Substation

# 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. The estimated value for magnetic field at the edge of a typical 230kV right-of-way is approximately 4mG.

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

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# Planning Process

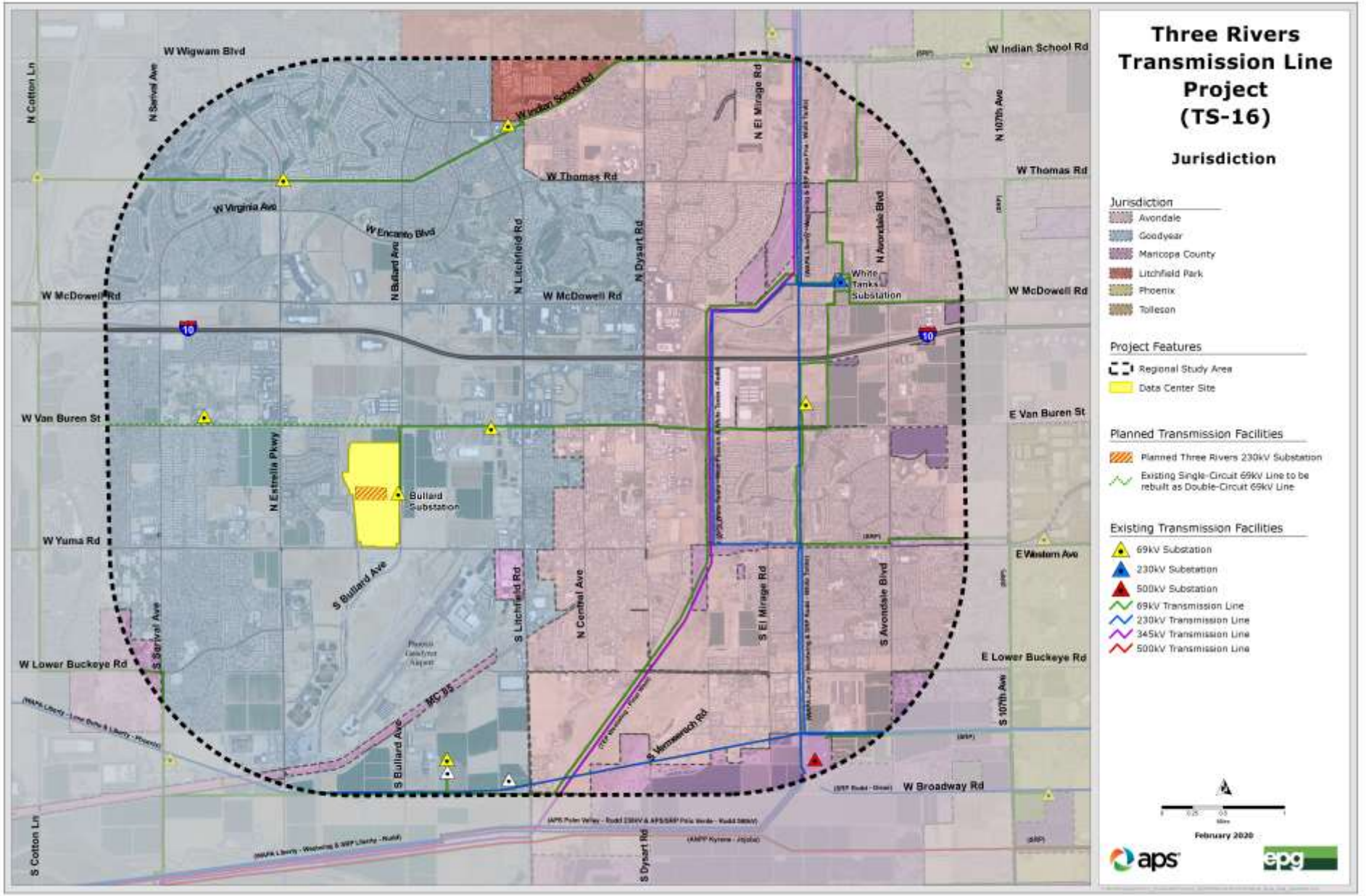
# Next Steps in Planning Process

- Collect, respond to, and document public and agency comments – February/March 2020
- Alternative route/corridor identification – December 2019/January 2020
- Complete detailed inventory – December 2019/January 2020
- Impact assessment – February/March 2020
- Identify and refine preferred route/corridor location alternatives – May/June 2020
- Next open house – May/June 2020
- Submit CEC Application and Publish Notice of CEC Hearing – Q3/Q4 2020
- Arizona Power Plant and Transmission Line Siting Committee holds Evidentiary Hearing on CEC Application – Q4 2020
- ACC makes decision on CEC Application at an ACC Open Meeting – Q4 2020/Q1 2021

Q = Quarter

# Environmental Studies Overview

- Land Use – compatibility with existing/future land use, transportation facilities (roadway and air), and jurisdictional planning guidelines
- Visual – minimize impacts to sensitive viewers (residences, parks, and travel routes)
- Cultural – minimize impacts to culturally or archaeologically sensitive sites (historic buildings)
- Biological – minimal sensitive habitat, based on existing development


Three Rivers Transmission Line Project (TS-16)
Jurisdiction
Jurisdiction
Avondale
Goodyear
Maricopa County
Litchfield Park
Phoenix
Tolleson
Project Features
Regional Study Area
Data Center Site
Planned Transmission Facilities
Planned Three Rivers 230kV Substation
Existing Single-Circuit 69kV Line to be rebuilt as Double-Circuit 69kV Line
Existing Transmission Facilities
69kV Substation
230kV Substation
500kV Substation
69kV Transmission Line
230kV Transmission Line
345kV Transmission Line
500kV Transmission Line
February 2020
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W Wigwam Blvd
W Indian School Rd
W Thomas Rd
W Virginia Ave
W Encanto Blvd
W McDowell Rd
W Van Buren St
E Van Buren St
W Yuma Rd
E Western Ave
W Lower Buckeye Rd
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W Broadway Rd
S Cotton Ln
N Cotton Ln
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N El Mirage Rd
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S Dysart Rd
MC 85
Bullard Substation
White Tanks Substation
Phoenix Goodyear Airport
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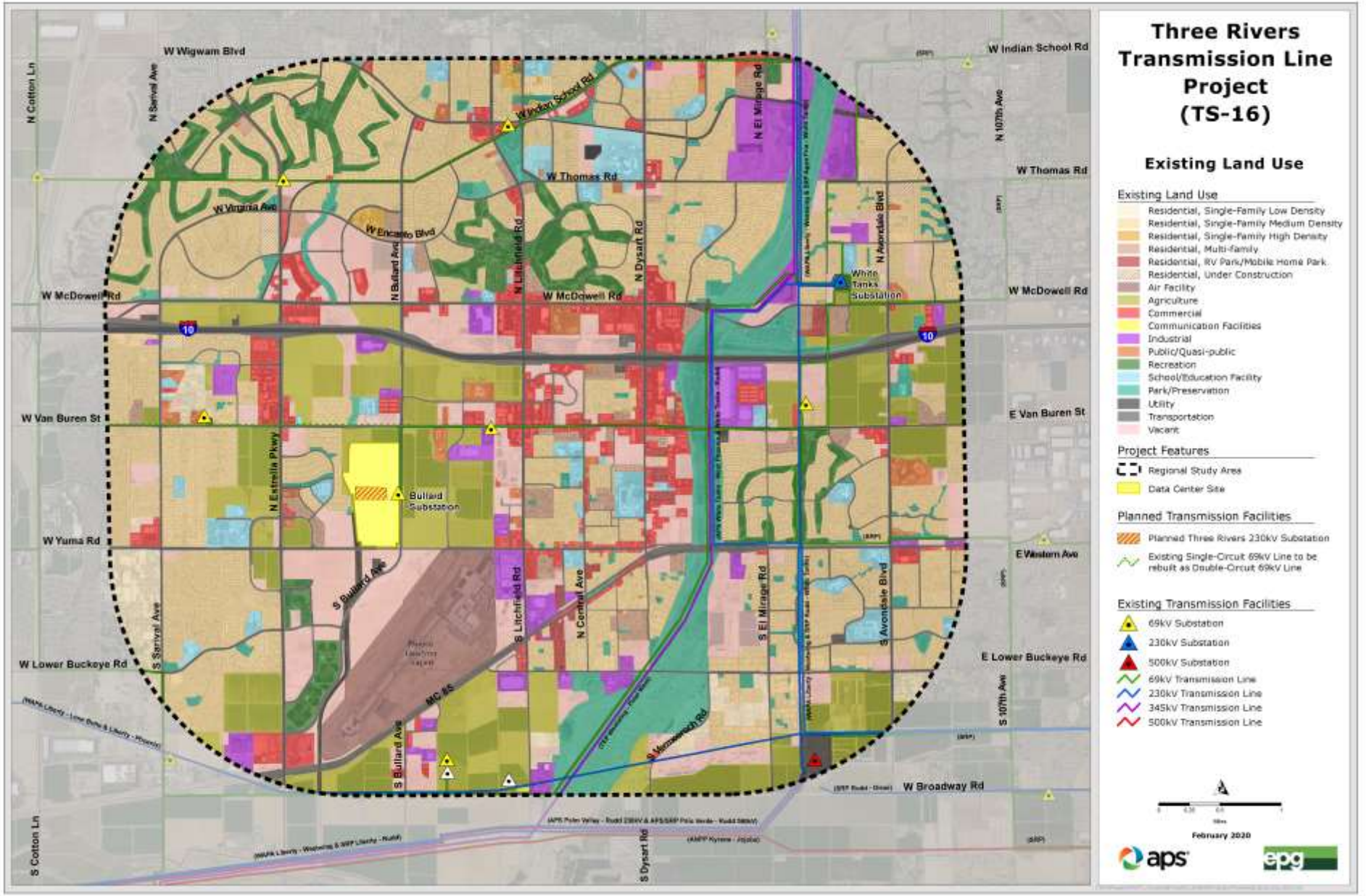
Three Rivers Transmission Line Project (TS-16)
Existing Land Use
Existing Land Use
Residential, Single-Family Low Density
Residential, Single-Family Medium Density
Residential, Single-Family High Density
Residential, Multi-family
Residential, RV Park/Mobile Home Park
Residential, Under Construction
Air Facility
Agriculture
Commercial
Communication Facilities
Industrial
Public/Quasi-public
Recreation
School/Education Facility
Park/Preservation
Utility
Transportation
Vacant
Project Features
Regional Study Area
Data Center Site
Planned Transmission Facilities
Planned Three Rivers 230kv Substation
Existing Single-Circuit 69kV Line to be rebuilt as Double-Circuit 69kV Line
Existing Transmission Facilities
69kV Substation
230kv Substation
500kV Substation
69kV Transmission Line
230kV Transmission Line
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February 2020
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W Wigwam Blvd
W Indian School Rd
W Thomas Rd
W McDowell Rd
W Van Buren St
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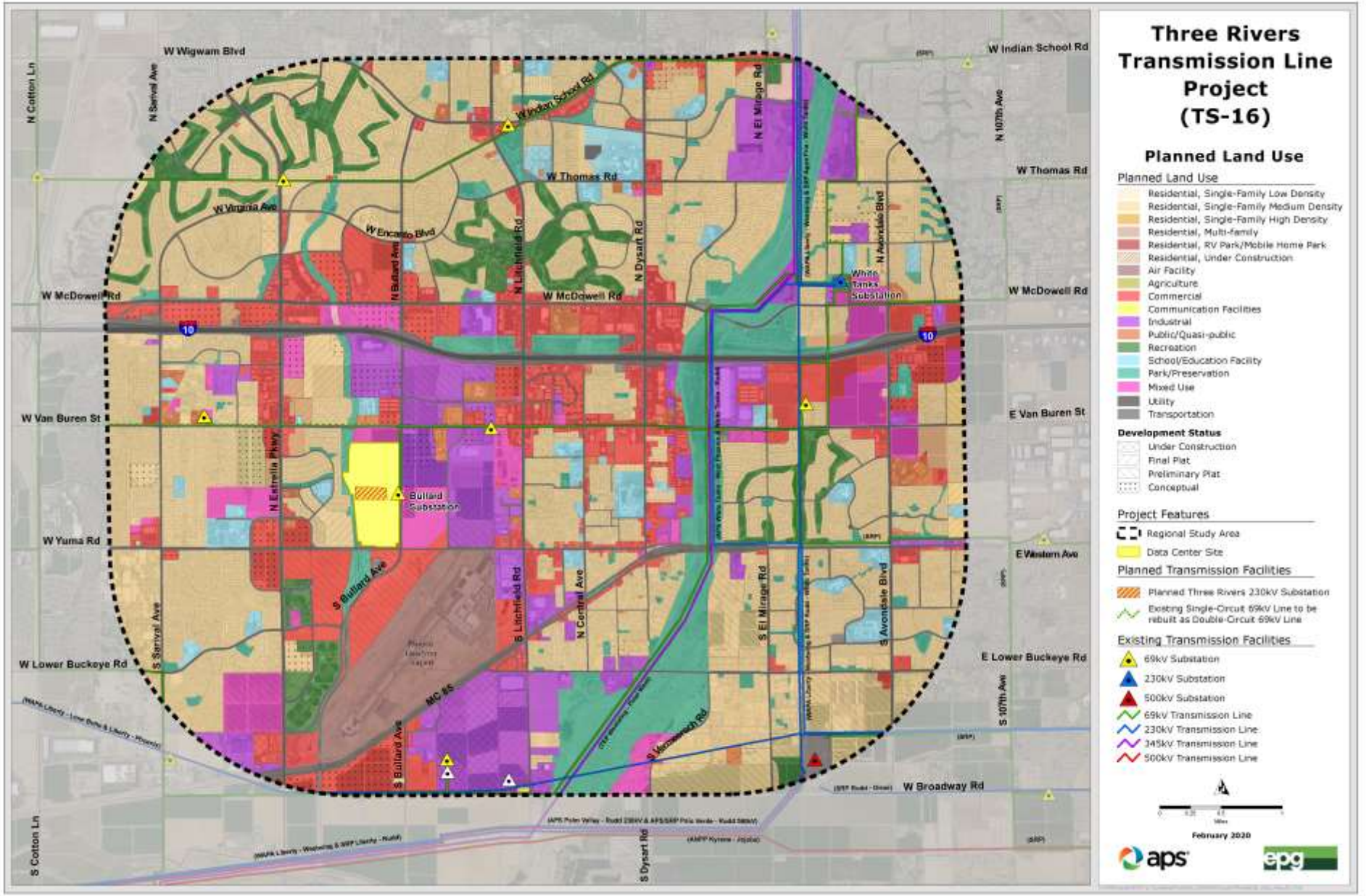
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Residential, Multi-family
Residential, RV Park/Mobile Home Park
Residential, Under Construction
Air Facility
Agriculture
Commercial
Communication Facilities
Industrial
Public/Quasi-public
Recreation
School/Education Facility
Park/Preservation
Mixed Use
Utility
Transportation
Development Status
Under Construction
Final Plat
Preliminary Plat
Conceptual
Project Features
Regional Study Area
Data Center Site
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MC 85
Ballard Substation
White Tanks Substation

# 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 230kV powerlines and substation

# 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 powerlines, roads, and canals

# Preliminary Facility Siting Criteria

| Existing Land Use and Visual Resources Constraints | |
|---|---|
| **Constraints** | **Sensitivity Level** |
| **Existing Land Use and Visual Resources** | |
| 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 |

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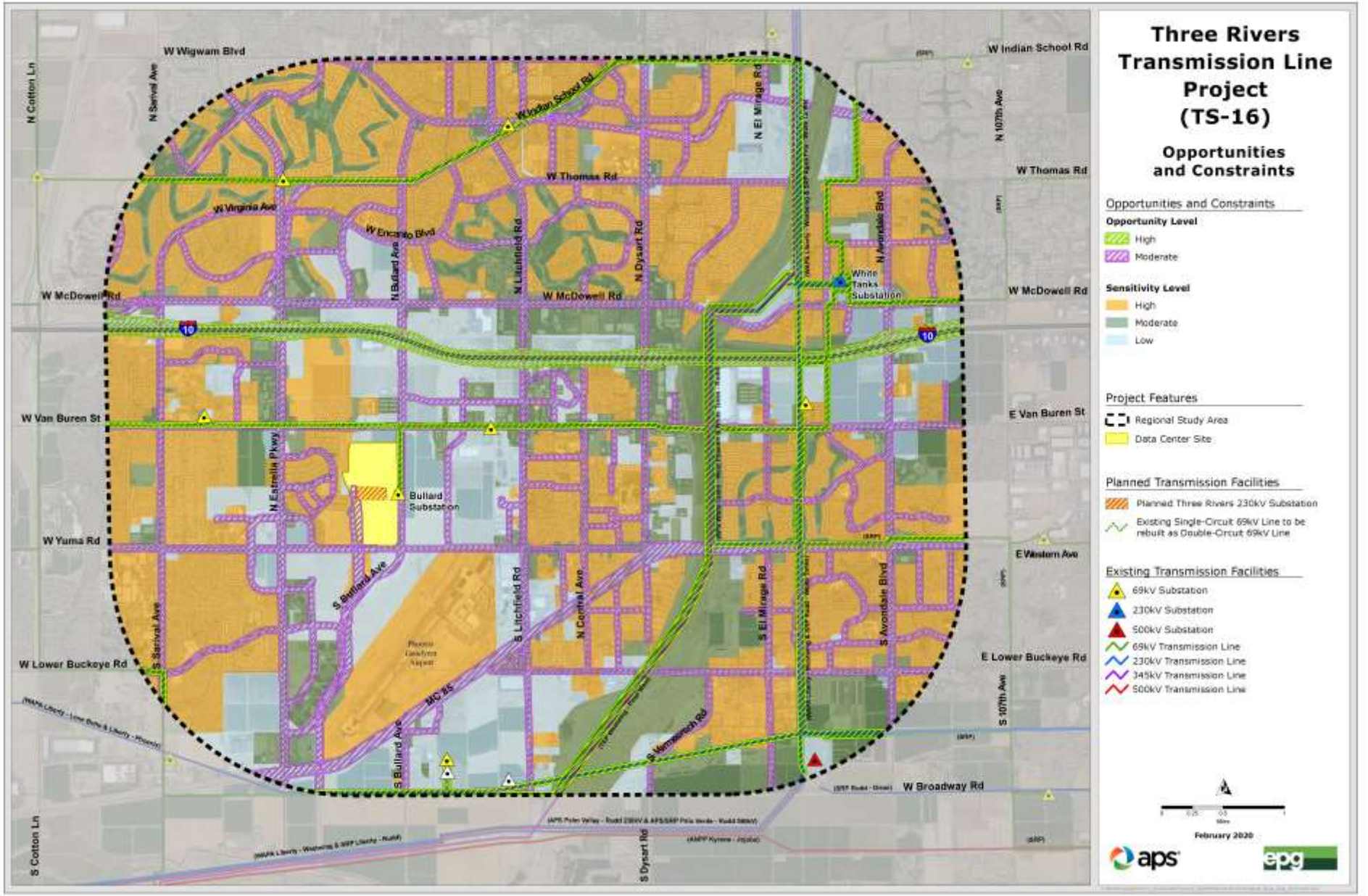
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Opportunities and Constraints
Opportunities and Constraints
Opportunity Level
High
Moderate
Sensitivity Level
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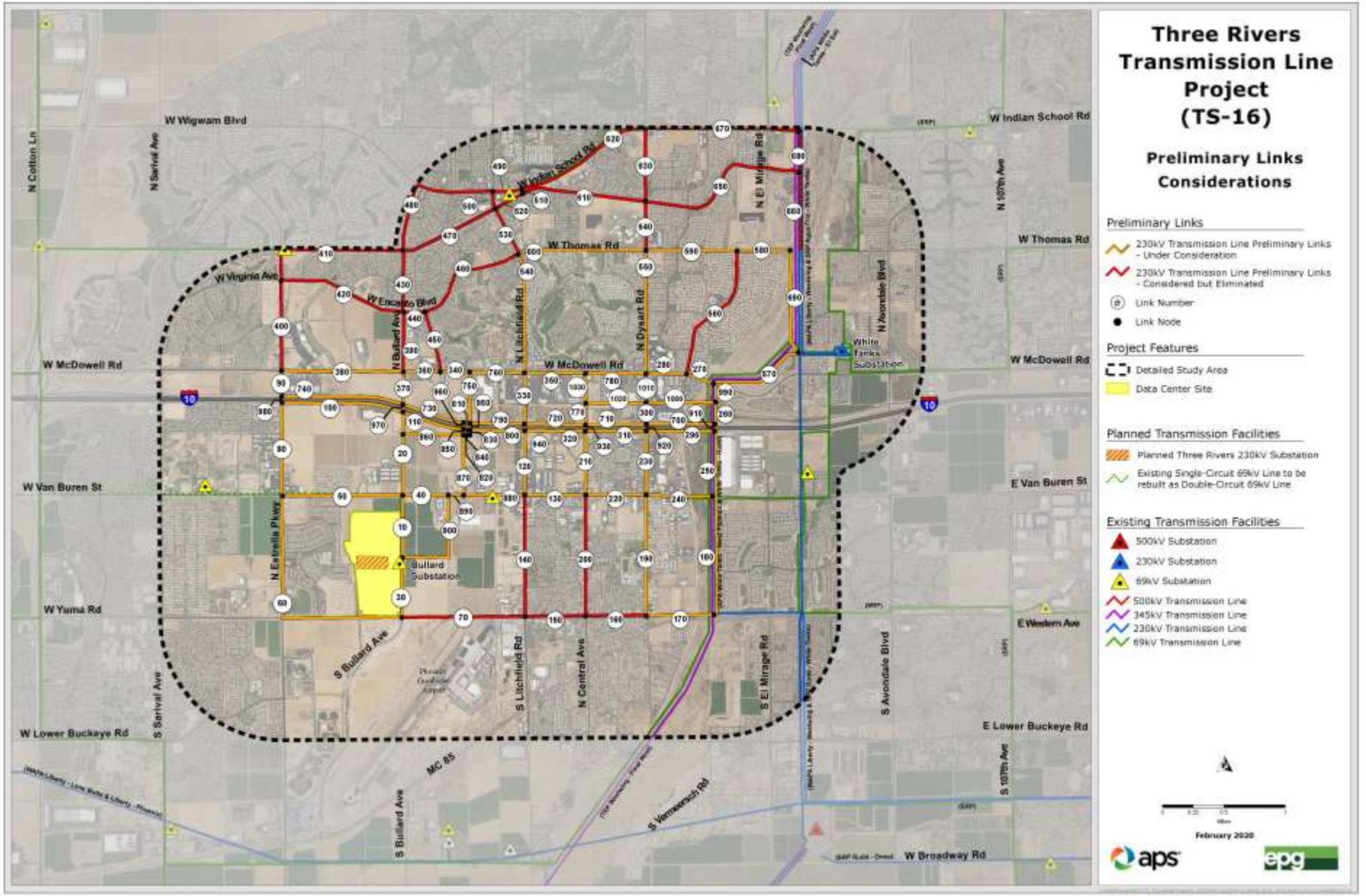
Three Rivers Transmission Line Project (TS-16)
Preliminary Links Considerations
Preliminary Links
230kV Transmission Line Preliminary Links - Under Consideration
230kV Transmission Line Preliminary Links - Considered but Eliminated
Link Number
Link Node
Project Features
Detailed Study Area
Data Center Site
Planned Transmission Facilities
Planned Three Rivers 230kV Substation
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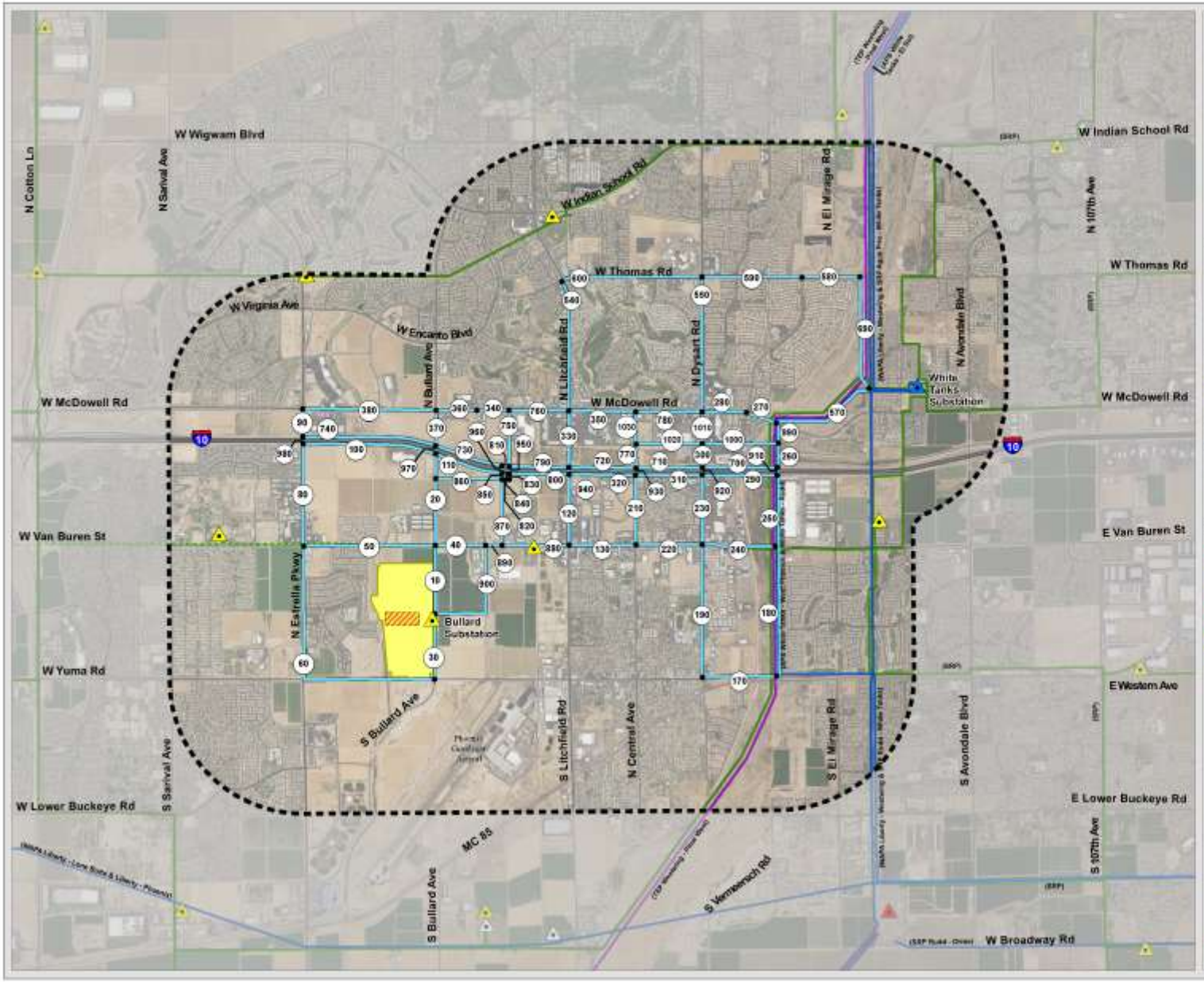


# Three Rivers Transmission Line Project (TS-16)

## Preliminary Links For Further Evaluation

**Preliminary Links**

- 230kV Transmission Line Preliminary Links
- Link Number
- Link Node

**Project Features**

- Detailed Study Area
- Data Center Site

**Planned Transmission Facilities**

- Planned Three Rivers 230kV Substation
- Existing Single-Circuit 69kV Line to be rebuilt as Double-Circuit 69kV Line

**Existing Transmission Facilities**

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

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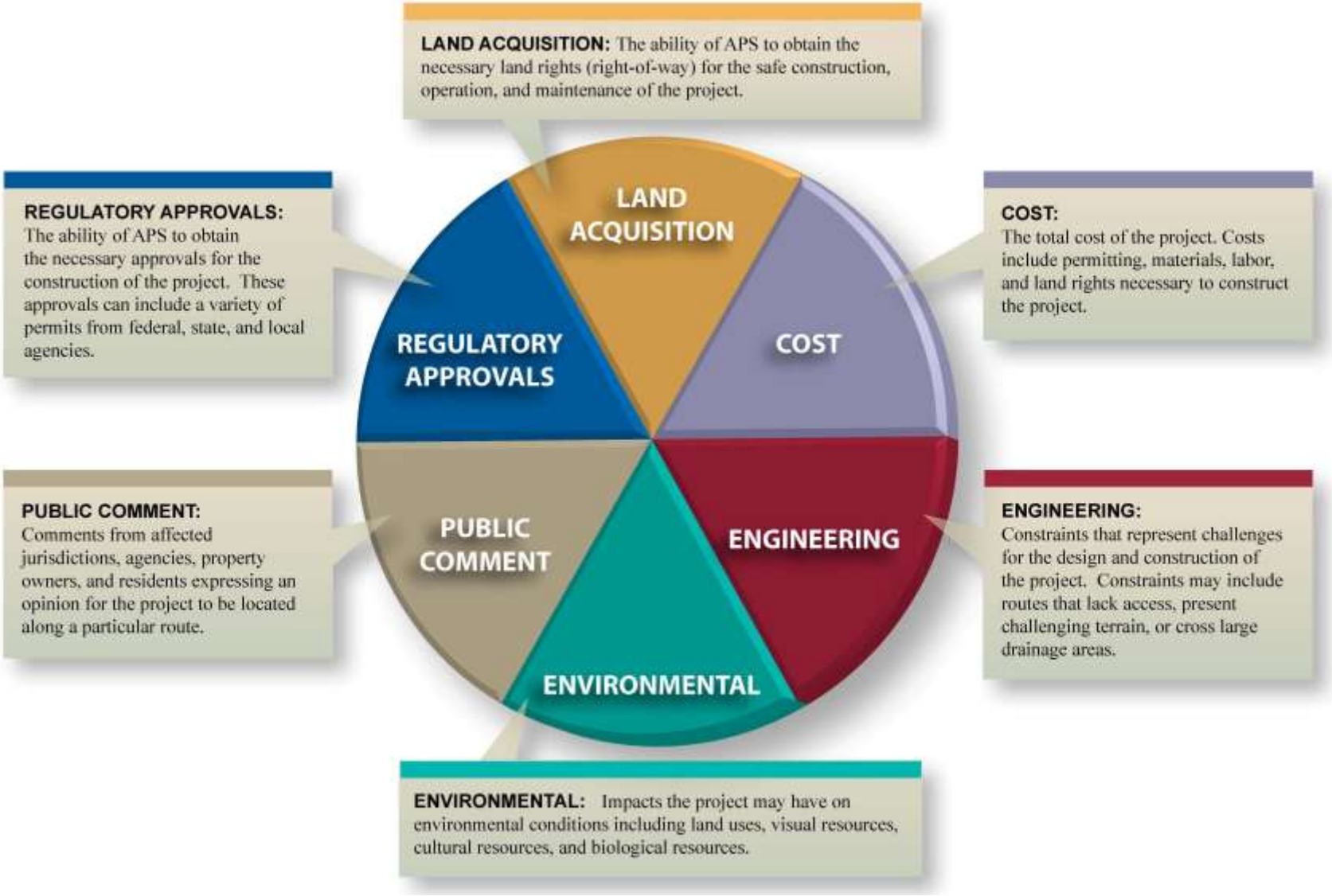
# Transmission Line Siting Considerations



# Public Comments and Next Steps

# Public and Agency Outreach

- Arizona Department of Transportation – October 2019
- City of Avondale – December 2019
- City of Goodyear – November/December 2019
- City of Litchfield Park – November 2019
- Phoenix Goodyear Airport – October 2019
- Project newsletter (February 2020, 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 with updated information.
- Electronic comment forms and project updates available at: **www.aps.com/siting**.
- Comments can also be sent to Stephen Eich, APS Siting Consultant, at: **ThreeRiversSiting@aps.com**, or by phone at **1-833-387-7518.**
- Next public open house expected May/June 2020.
- Public comments will also be heard at the CEC Hearing anticipated in November 2020 and the ACC Open Meeting anticipated in December 2020.