

APS Freedom to Willis 69kV Power Line Siting Study Open House

Welcome! Please sign in.

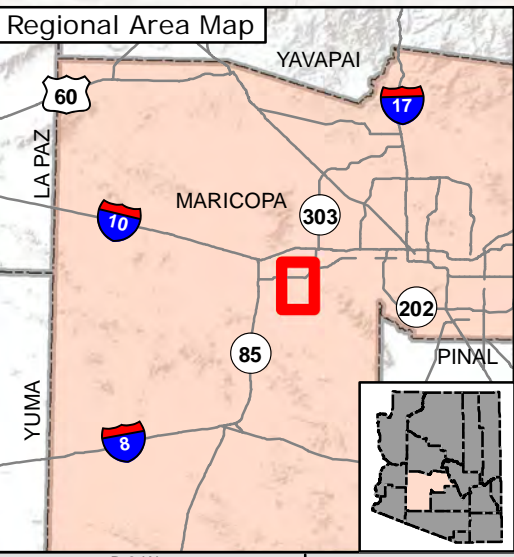
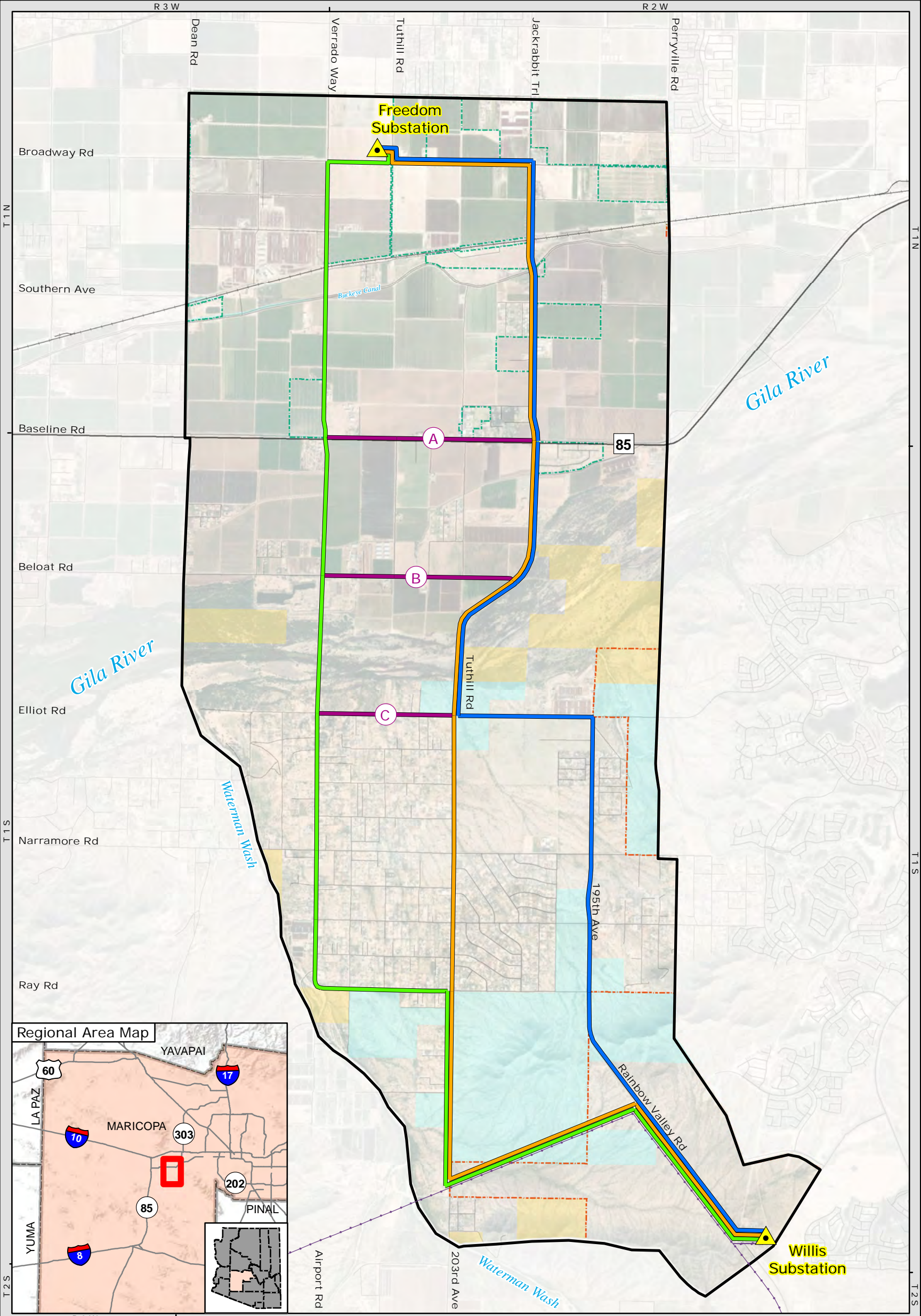
- Identify a route alignment for a new 69kV powerline, connecting the new Freedom Substation (located at South Tuthill Road and West Broadway Road) to the Willis Substation (located at South Rainbow Valley Road and West Willis Road)
- Portions of the proposed Project that follow existing 69kV powerlines would be constructed as “double-circuit”, meaning both powerlines (three wires each) would be consolidated onto one transmission structure alignment
- Portions of the proposed Project that follow existing 12kV powerlines would consolidate and “underbuild” the existing 12kV lines onto the new 69kV poles, meaning the 69kV circuit(s) would be on top and the 12kV circuit would be on bottom
- APS is in the early stages of the planning process and is conducting a public siting study and public agency outreach prior to identifying a preferred powerline route

Project Need

- Provide additional 69kV power source, allowing the system to serve increased electrical load within existing and new developments of the region
- Improve reliability in the area by adding additional 69kV facilities, strengthening the regional electrical system, and helping to prevent potential outages

Project Description

- A new 69kV powerline, up to approximately 12miles in length, from the Freedom Substation (currently under construction) to the existing Willis Substation
- In-Service date of 2022
- A new route will require right-of-way or easement up to 60 feet wide
- Will require construction of new steel monopoles approximately 65 feet tall
 - Portions of the proposed Project that follow existing 69kV and 12kV powerlines would be consolidated onto one transmission structure alignment



**Freedom to Willis
69kV Power Line
Route Alternatives
Maricopa County, Arizona**



- 69kV Potential Routes**
- Blue Route
 - Orange Route
 - Green Route
 - Option Route
- Transmission Facilities**
- Existing Substation
 - Existing 69kV Transmission Line

- Reference Features**
- Study Area
 - Highway
 - Street
 - Railroad
- Municipal Boundaries**
- City of Buckeye
 - City of Goodyear

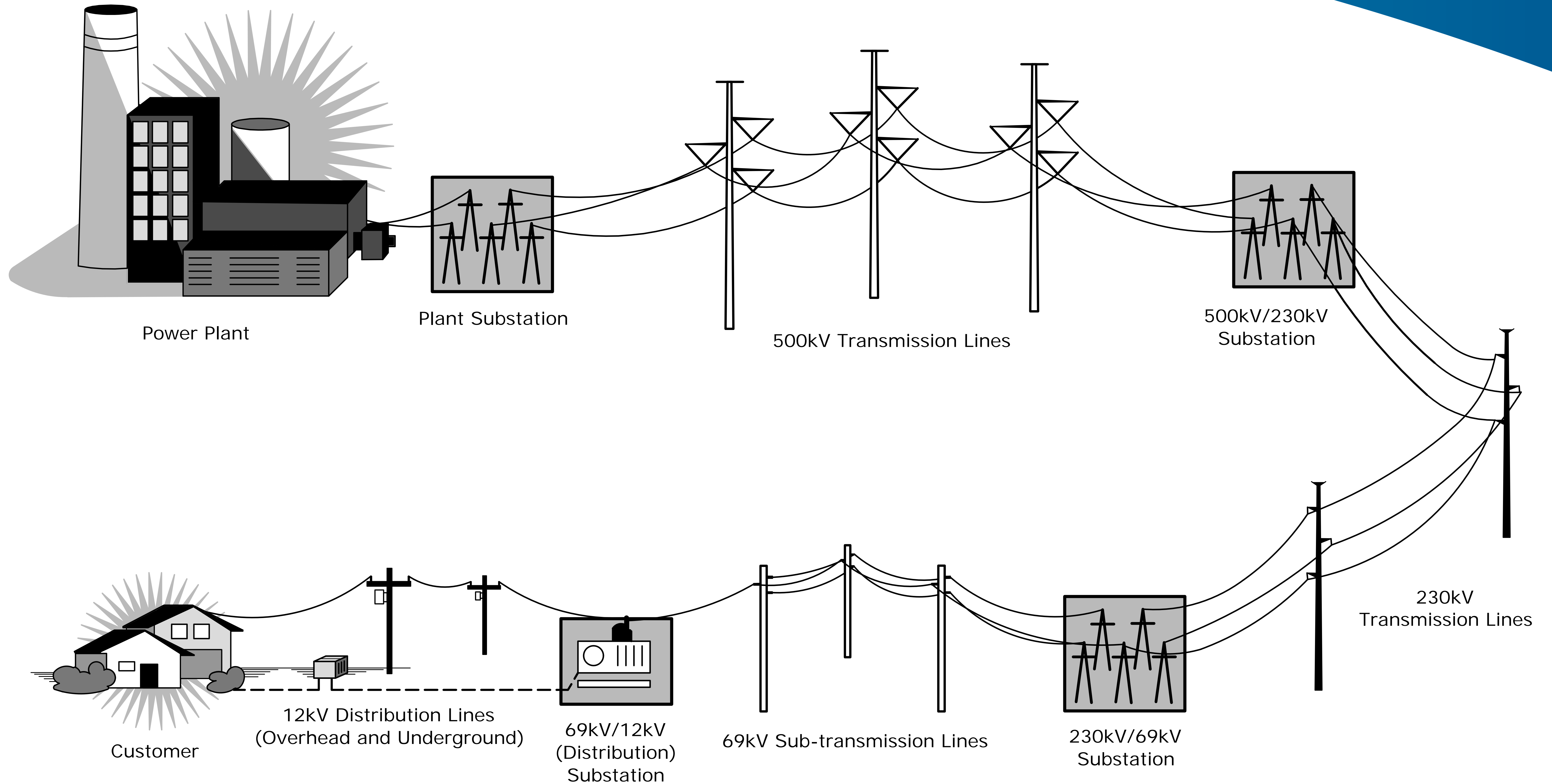
- Land Ownership**
- BLM
 - Private
 - State

Basemap: Esri, DigitalGlobe, GeoEye, I-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Maricopa County, AZ



Electricity

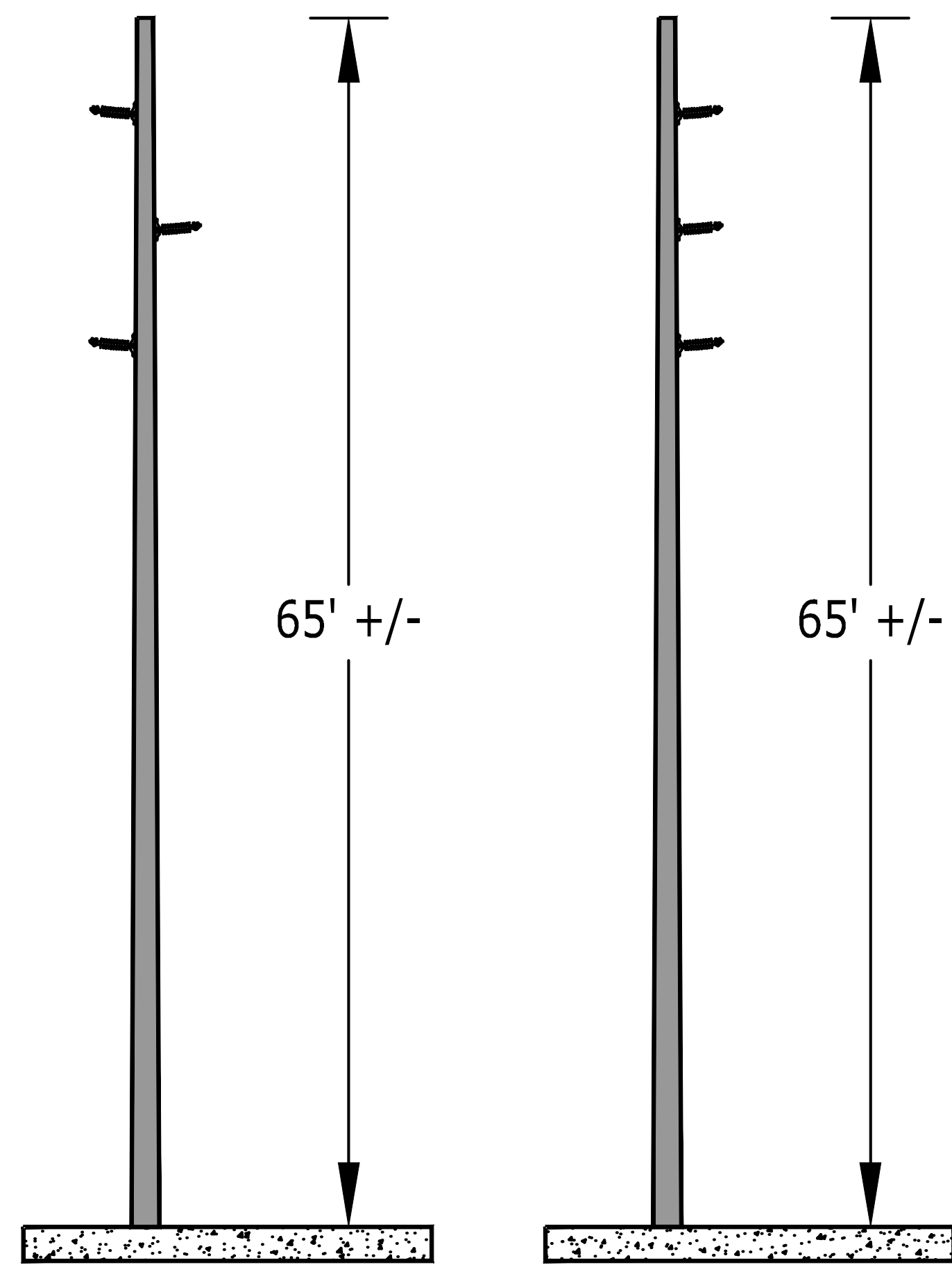
From the Power Plant to the Customer



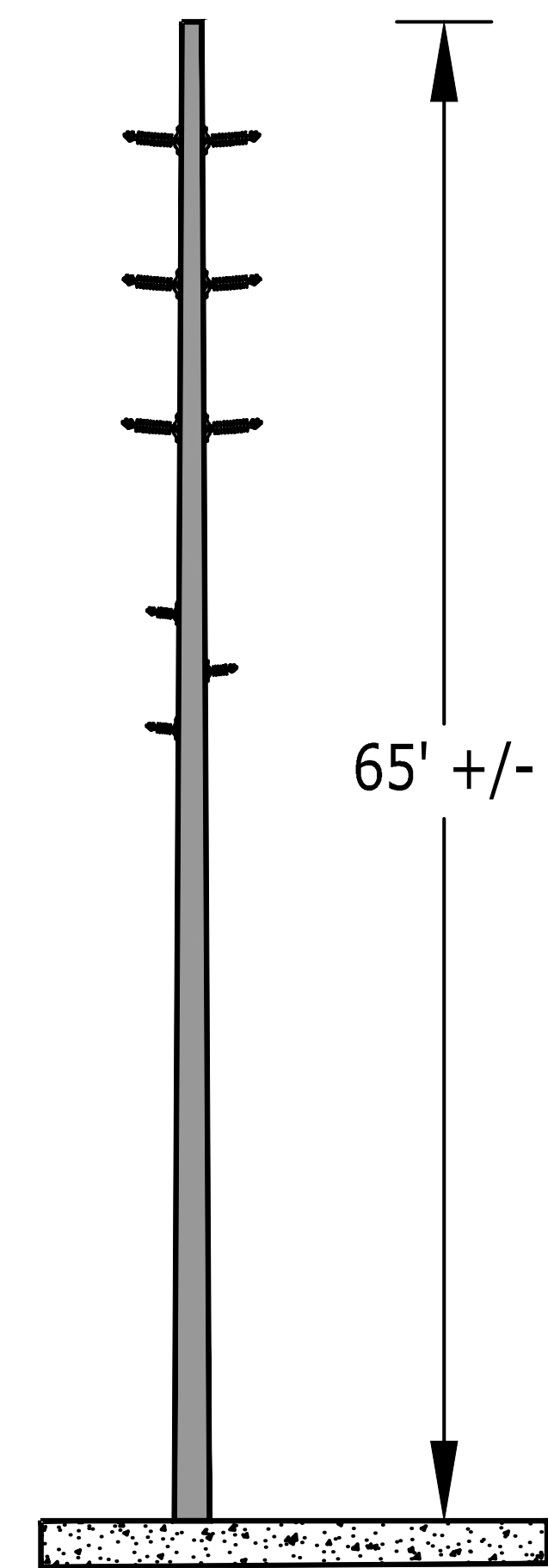
Typical 69kV Structures



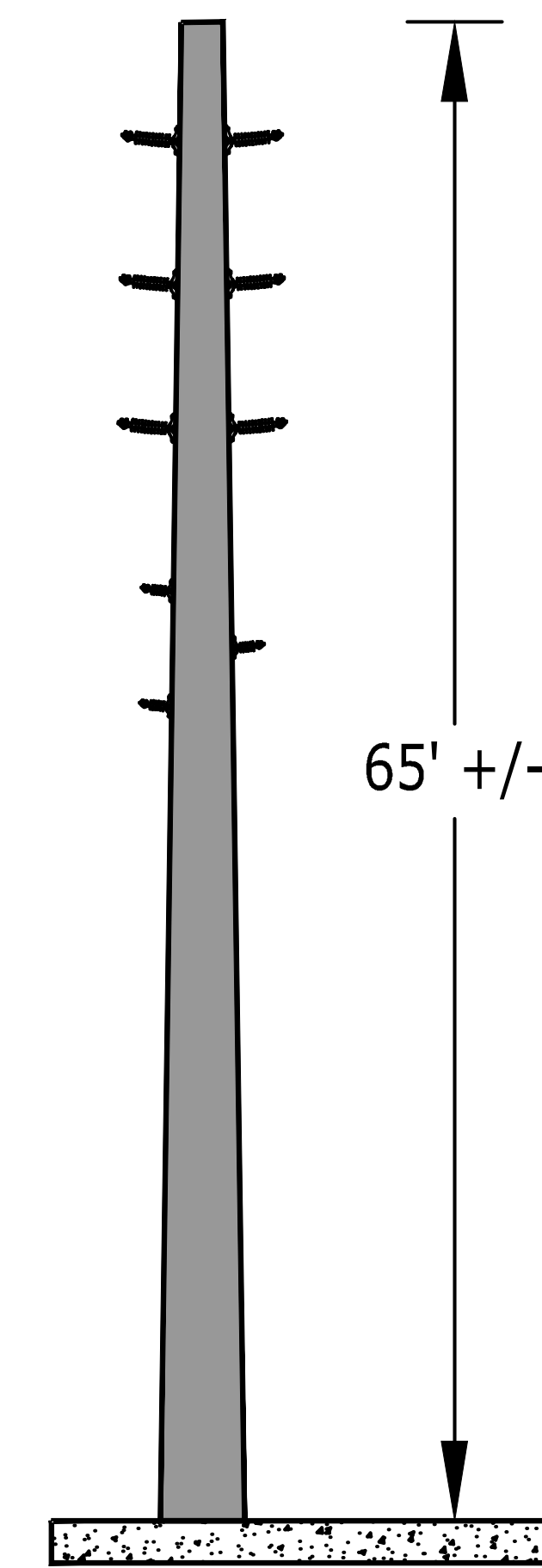
Single-circuit 69kV with 12kV under-build structure



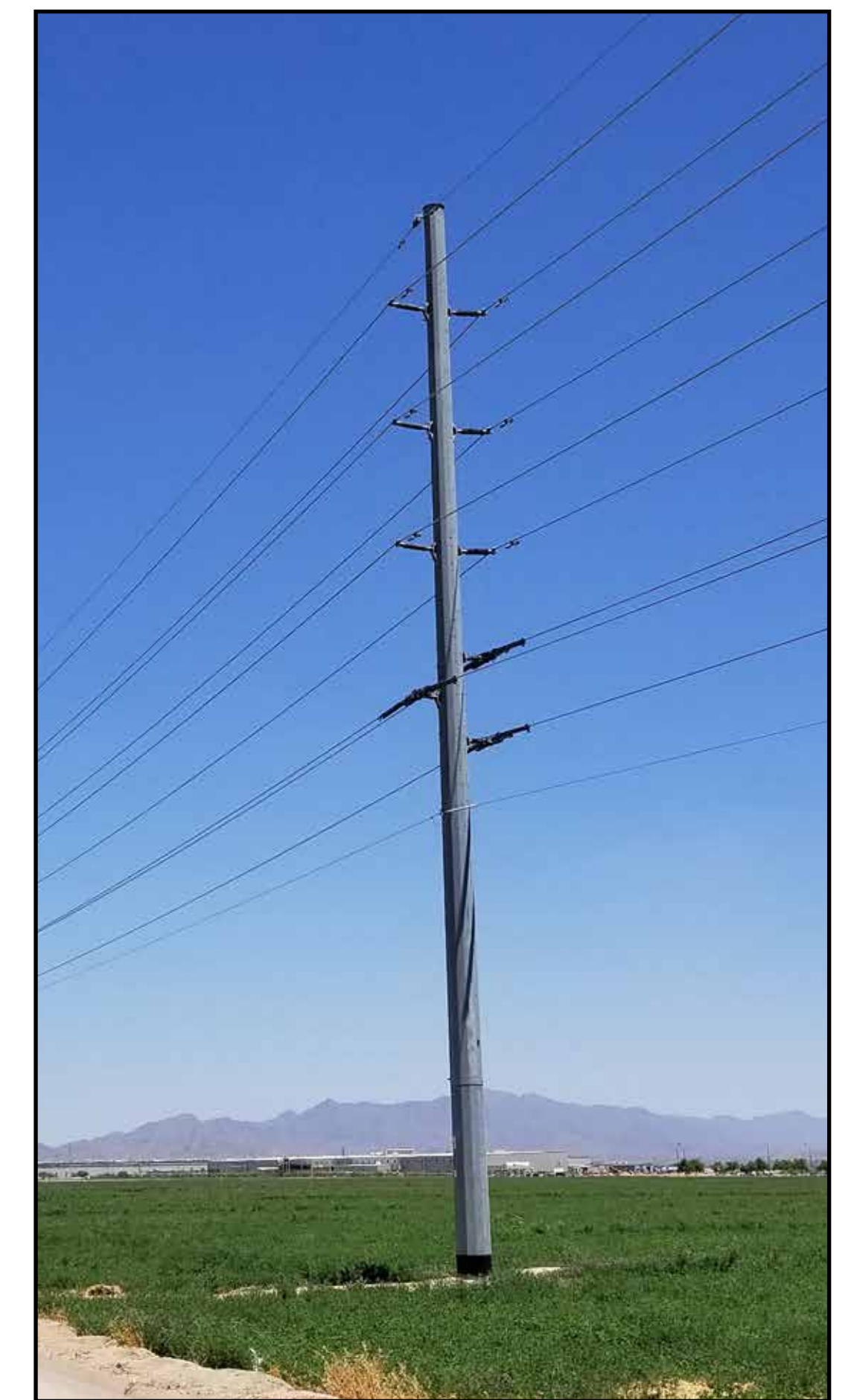
Single-circuit 69kV Structures



Double-circuit 69kV with 12kV Underbuild Structure



Double-circuit 69kV with 12kV Underbuild Turning Structure



Double-circuit 69kV with 12kV under-build structure

Heights and widths may vary according to terrain

Planning Process



Project Start-up

April–May 2019

- Finalize project information
- Review and approve study area
- Participate in stakeholder briefings



Preliminary Alternatives Development and Analysis

April–July 2019

- Provide general engineering and construction input
- Review and approve preliminary alternatives
- Distribute newsletter

Detailed Corridor Inventory

June–December 2019

- Participate in stakeholder meetings
- Participate in public open house
- Review and provide input on preferred alternatives
- Review detailed corridor inventory and select final route



- Define study area
- Prepare base map
- Collect secondary data
- Participate in stakeholder briefings

- Develop preliminary power line siting criteria
- Identify environmental opportunities and constraints
- Identify preliminary alternatives
- Prepare newsletter

- Participate in stakeholder meetings
- Conduct public open house
- Track public comments
- Complete detailed corridor inventory and environmental analysis
- Prepare final report

Planning Process

Completed Steps and Next Steps



Completed

- **Initial stakeholder briefings**
- **Identification of environmental opportunities and constraints**
- **Initial environmental analysis**
- **Alternative route identification**

Next Steps

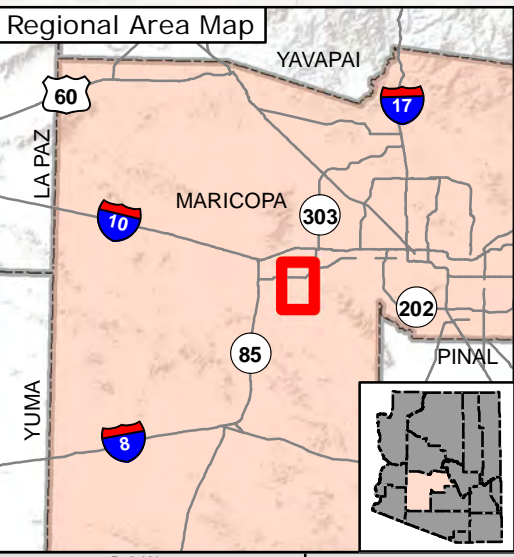
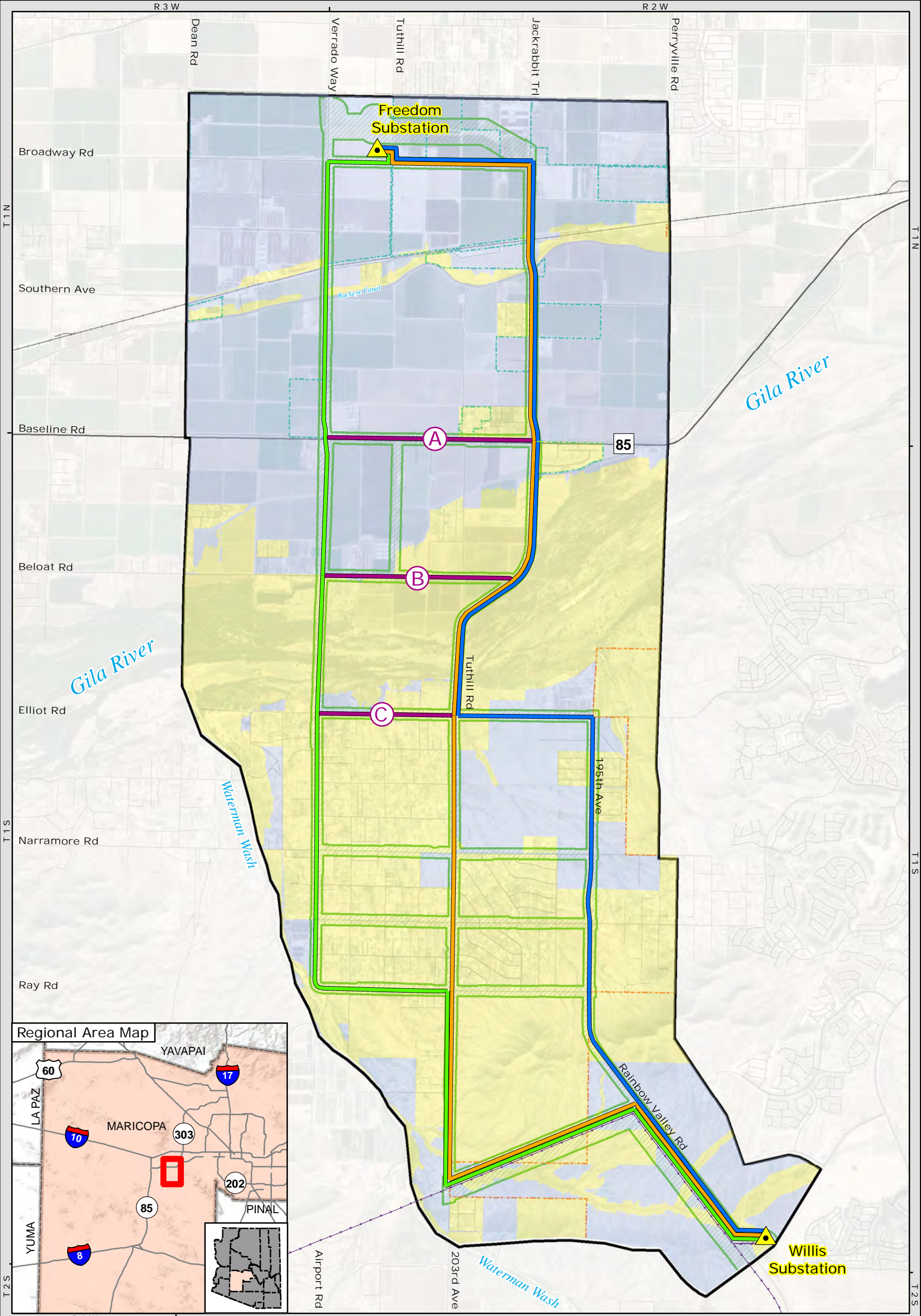
- **Collect, respond, and document public and stakeholder comments**
- **Complete detailed analysis and route comparison**
- **Select final route in late 2019**
- **Final newsletter to announce selected route**

- Identify opportunities and constraints through evaluation of environmental resources within the study area.
- Conduct an analysis of land use and environmental resource sensitivities to construction, operation, and maintenance of the 69kV transmission line.
 - Objectives:
 - » Minimize impacts to sensitive resource areas:
 - ✓ Wildlife habitat
 - ✓ Schools
 - ✓ Residences
 - » Maximize siting opportunities:
 - ✓ Collocate/parallel existing distribution/transmission lines
 - ✓ Road rights-of-way/easements

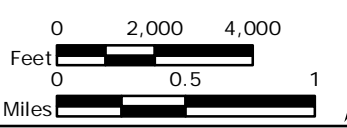
Opportunities	
Opportunities	Opportunity Level
Overhead Transmission Corridor	High
Overhead 12kV Distribution Power Line	High
Existing Railroad Crossing	High
Arterial Roadway	High
Minor Roadway	Moderate
Utility Facility	Moderate

Existing Land Use and Visual Resource Constraints	
Constraints	Sensitivity Level
Rural Residential Zoning	High
Planned Residential Zoning	High
Planned Community Zoning	High
Subdivision: Under Construction	High
School and Education Facilities	High
Parks	High
Landownership: Federal	High
Landownership: State	High
Transportation: Rail	High
Floodplains	High
Sensitive Wildlife Habitat	High
Recreation Areas	Moderate
Open Space	Moderate
Commercial Centers	Moderate
Public Buildings and Facilities	Moderate
Transportation: Road	Moderate
Agricultural and Dairy	Low
Industrial	Low
Mining	Low
Canal	Low
Utility Facilities	Low
Landownership: Private	Low

Planned Land Use and Visual Resource Constraints	
Constraints	Sensitivity Level
Neighborhood	Moderate
Planned Subdivision	Moderate
Master Planned Community	Moderate
Scenic Corridor	Moderate
Recreation Area	Moderate
Transportation: Proposed Parkway	Moderate
School and Education Facilities	Moderate
Industrial	Low
Transportation: Proposed Highway	Low
Park	Low
Proposed Open Space	Low
Rural and Low Density Residential	Low
Commercial	Low
Employment	Low
Public Space	Low



**Freedom to Willis
69kV Power Line
Route Opportunities
Maricopa County, Arizona**



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 - Existing 69kV Transmission Line

- Reference Features**
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 - Railroad
- Municipal Boundaries**
- City of Buckeye
 - City of Goodyear

- Sensitivity Level**
- High
 - Low
- Opportunity Corridors**
- Opportunities

Basemap: Esri, DigitalGlobe, GeoEye, I-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Maricopa County, AZ

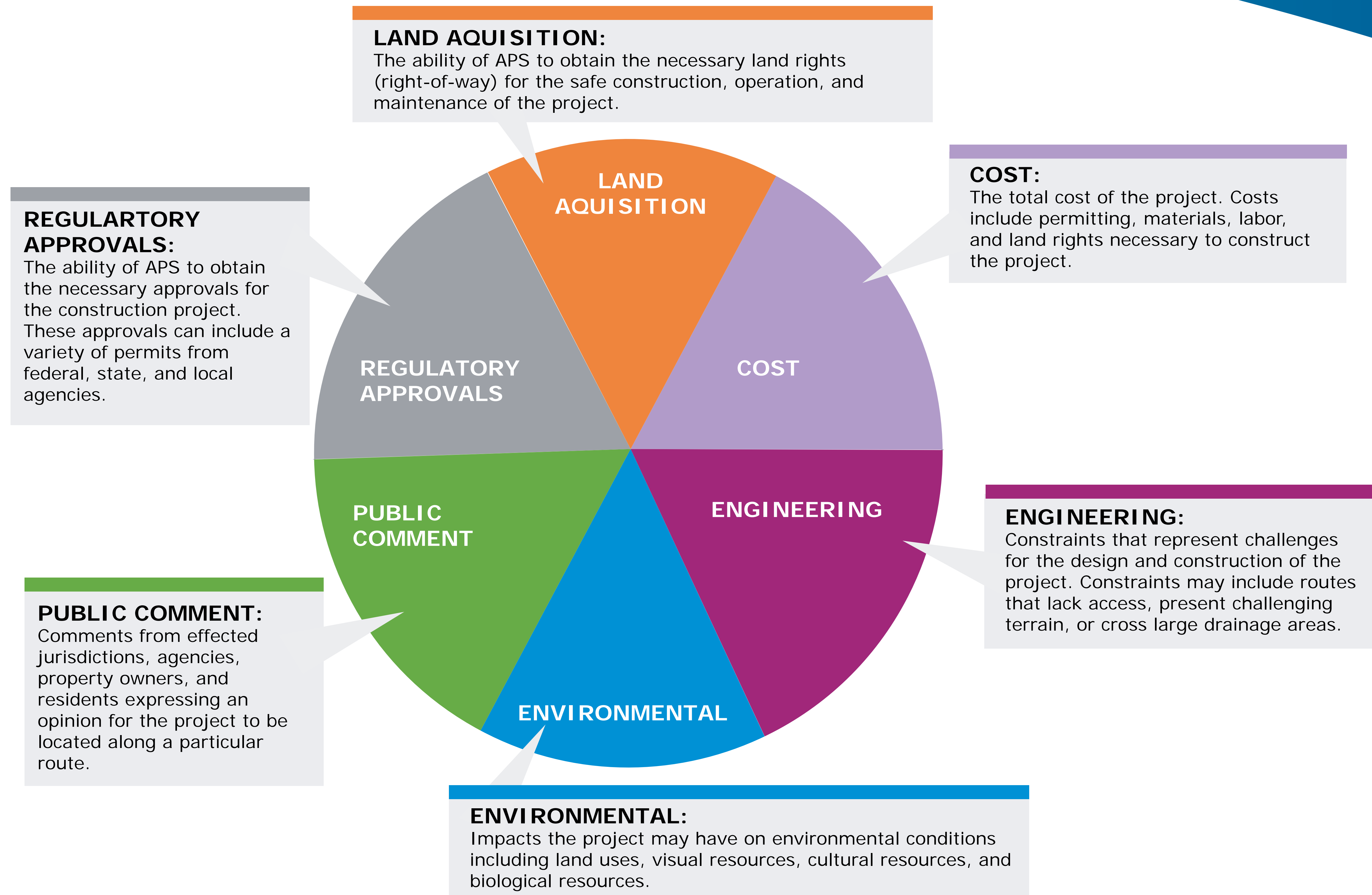


Environmental Studies Overview



STUDY TYPE	PURPOSE
Land Use	Compliance of new 69kV power line with jurisdictional planning guidelines and current and future uses
Visual	Consideration of visually sensitive areas and overall visual impact of new 69kV power line
Biological	Route selection and design considerations to minimize impacts to sensitive habitat (such as riparian areas along the Gila River) or species (such as Sonoran desert tortoise)
Cultural	Route selection and design considerations to minimize impacts to sites of historic or cultural importance
Flood Zones	Route selection and engineering considerations of construction and operation of new 69kV power line in areas with a high risk for flooding (such as areas within and adjacent to the Gila River and Waterman Wash)

Siting Considerations



APS Freedom to Willis 69kV Power Line Siting Study							
Link Comparison Table							
Link ID	Land Use	Visual	ROW	Engineering	Constructability	Overall Compatibility	Recommendations
1	Green	Blue	Blue	Blue	Blue	Blue	Included in route options
2	Green	Blue	Yellow	Yellow	Yellow	Blue	Included in route options
3	Red	Orange	Yellow	Yellow	Yellow	Orange	Included in route options
4	Blue	Blue	Yellow	Blue	Yellow	Blue	Included in route options
5	Blue	Blue	Yellow	Blue	Orange	Yellow	Included in route options
6	Yellow	Yellow	Yellow	Blue	Orange	Yellow	Included in route options
7	Blue	Green	Blue	Green	Blue	Blue	Included in route options
8	Green	Green	Green	Green	Green	Green	Included in route options
9	Blue	Blue	Blue	Blue	Blue	Blue	Included in route options
10	Blue	Yellow	Yellow	Blue	Blue	Blue	Consequential elimination
11	Blue	Yellow	Yellow	Blue	Blue	Blue	Consequential elimination
12	Blue	Yellow	Orange	Blue	Orange	Yellow	Consequential elimination
13	Orange	Red	Blue	Green	Yellow	Yellow	Included in route options
14	Orange	Orange	Blue	Green	Yellow	Yellow	Included in route options
15	Blue	Blue	Blue	Yellow	Blue	Blue	Included in route options
16	Orange	Orange	Blue	Orange	Blue	Yellow	Included in route options
17	Blue	Blue	Blue	Orange	Blue	Blue	Included in route options
18	Orange	Yellow	Orange	Blue	Blue	Yellow	Eliminated
19	Blue	Orange	Blue	Blue	Yellow	Yellow	Included in route options
20	Blue	Green	Blue	Blue	Yellow	Blue	Included in route options
21	Yellow	Orange	Blue	Blue	Blue	Yellow	Included in route options
22	Blue	Yellow	Blue	Yellow	Blue	Blue	Included in route options
23	Orange	Red	Blue	Orange	Blue	Yellow	Eliminated
24	Yellow	Orange	Blue	Blue	Blue	Yellow	Eliminated
25	Blue	Yellow	Blue	Blue	Blue	Blue	Included in route options
26	Yellow	Yellow	Orange	Blue	Blue	Yellow	Eliminated
27	Blue	Yellow	Blue	Blue	Yellow	Blue	Consequential elimination
28	Blue	Yellow	Blue	Yellow	Blue	Blue	Included in route options
29	Blue	Orange	Yellow	Yellow	Yellow	Yellow	Eliminated

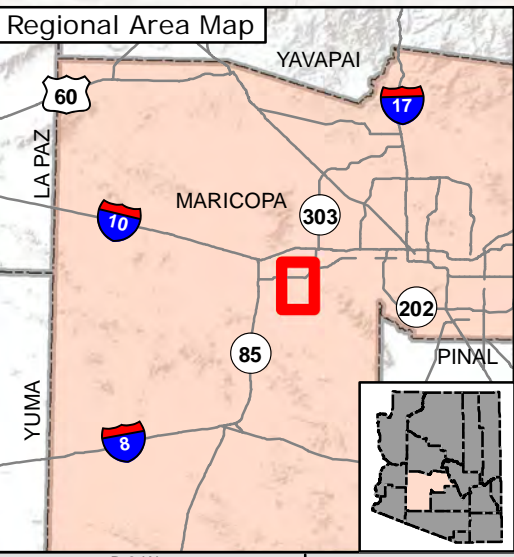
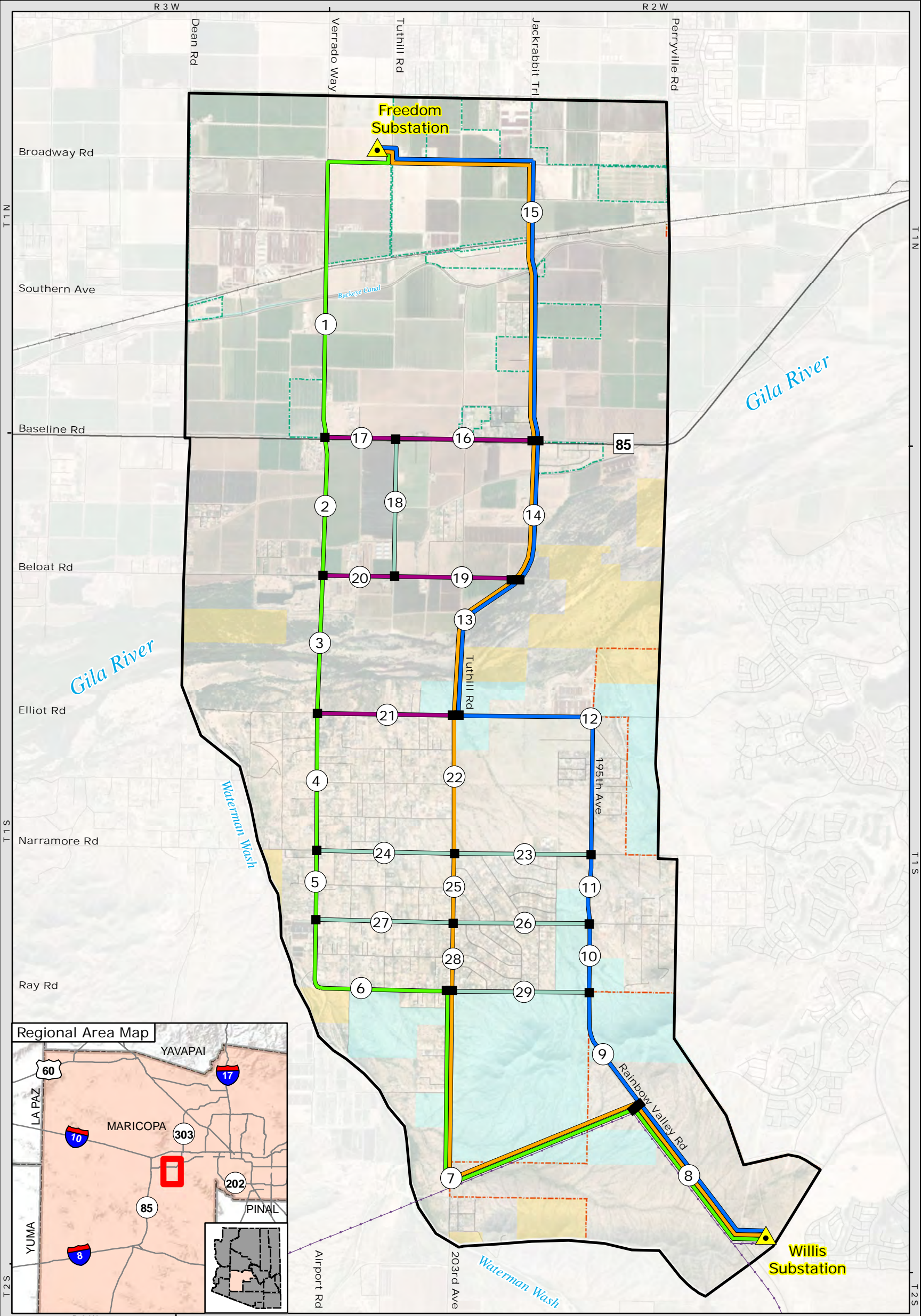
APS Freedom to Willis 69kV Power Line Siting Study						
Route Comparison Table						
Route	Land Use	Visual	ROW	Engineering	Constructability	Overall Compatibility
Blue	Blue	Yellow	Blue	Blue	Blue	Blue
Green	Blue	Yellow	Blue	Blue	Blue	Blue
Orange	Blue	Blue	Yellow	Blue	Yellow	Blue
Option A	Yellow	Yellow	Blue	Orange	Blue	Yellow
Option B	Blue	Yellow	Blue	Blue	Yellow	Blue
Option C	Yellow	Orange	Blue	Blue	Blue	Yellow

Compatibility Scale



MOST

LEAST



**Freedom to Willis
69kV Power Line
Links Considered
Maricopa County, Arizona**



- # Link ID
- Nodes
- Links Considered and Dismissed
- 69kV Potential Routes**
- Blue Route
- Orange Route
- Green Route
- Option Route

- Reference Features**
- Study Area
- Highway
- Street
- Railroad
- Municipal Boundaries**
- City of Buckeye
- City of Goodyear

- Land Ownership**
- BLM
- Private
- State
- Transmission Facilities**
- Existing Substation
- Existing 69kV Transmission Line

Basemap: Esri, DigitalGlobe, GeoEye, I-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Maricopa County, AZ





Existing Condition

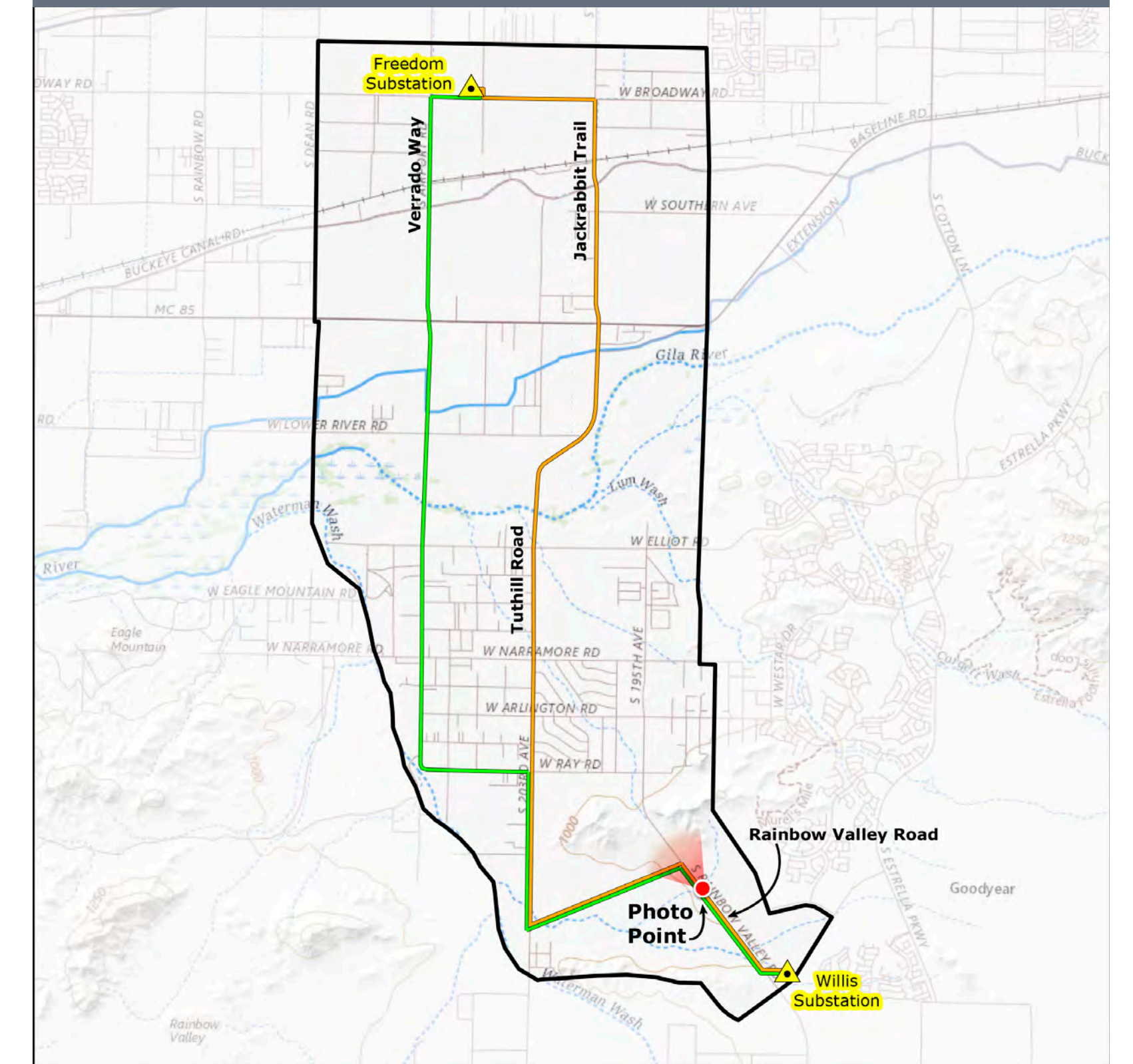
View from Rainbow Valley Road looking northwest



Simulated Condition

View of the Blue/Orange Routes from Rainbow Valley Road

Viewing Location and Simulated Alternatives



Typical 69kV Structures

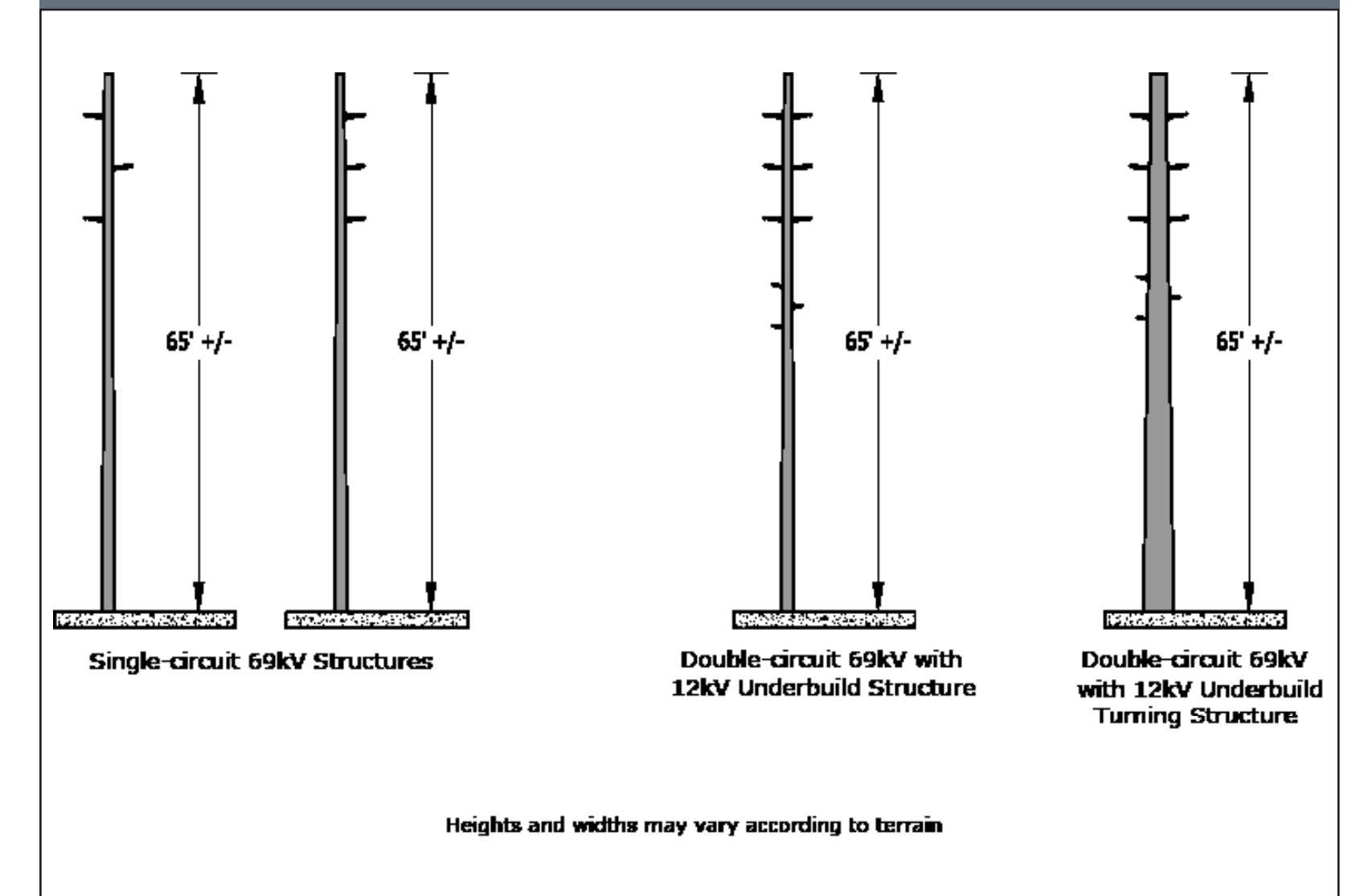


Photo Date and Time: May 24, 2019, 10:46 am
Focal Length: 50mm

The original photographs were taken at 50mm, then stitched together to create this panorama, resulting in a 125-degree field of view.

View Location: Approximate distance to nearest pole from photo location is 150 feet.

Simulations were prepared using information provided by APS. Pole locations, colors, and heights may be different based on final engineering and design.



Existing Condition

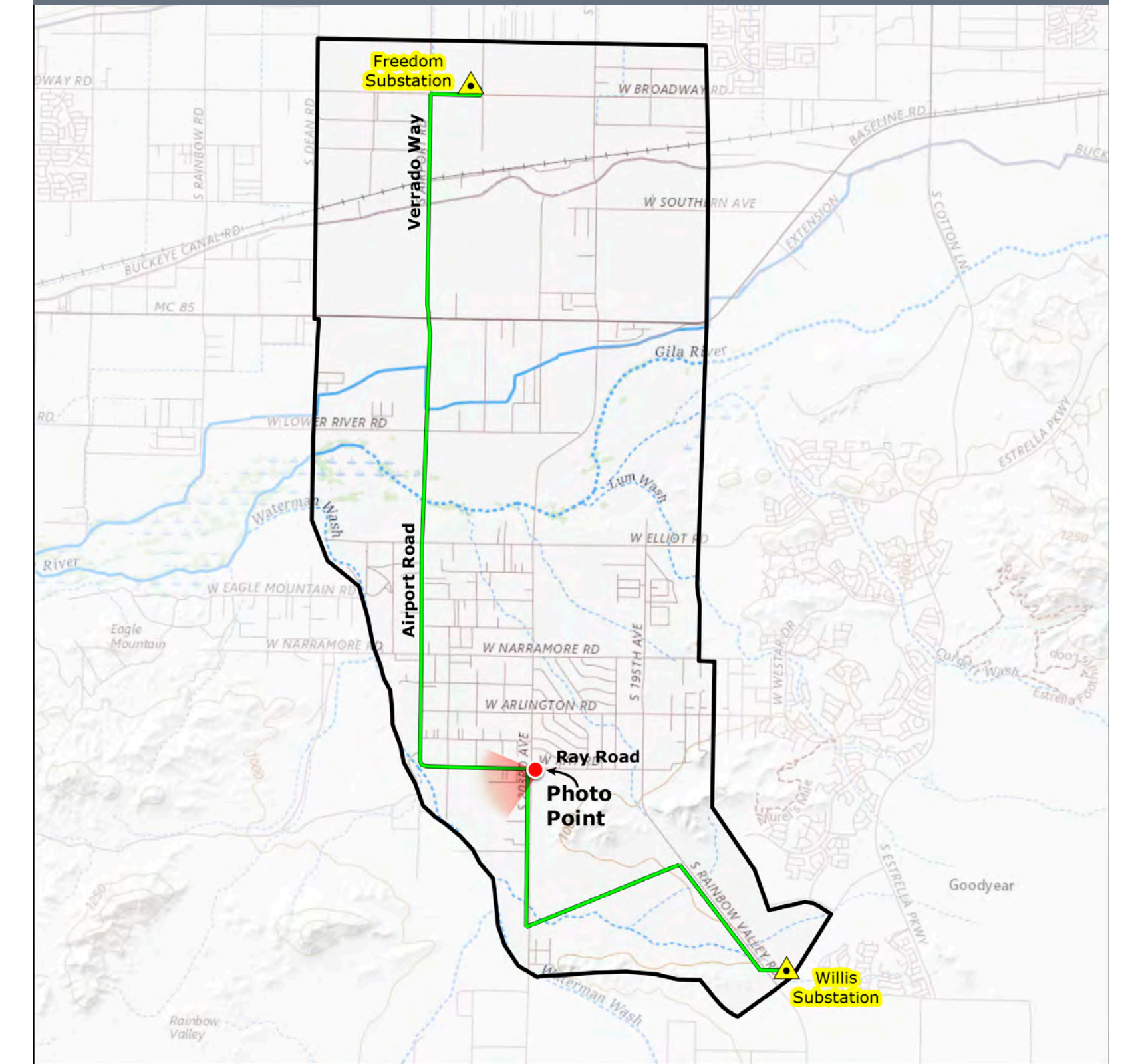
View from the intersection of Tuthill Road and Ray Road looking west



Simulated Condition

View of the Green Route from the intersection of Tuthill Road and Ray Road

Viewing Location and Simulated Alternatives



Typical 69kV Structures

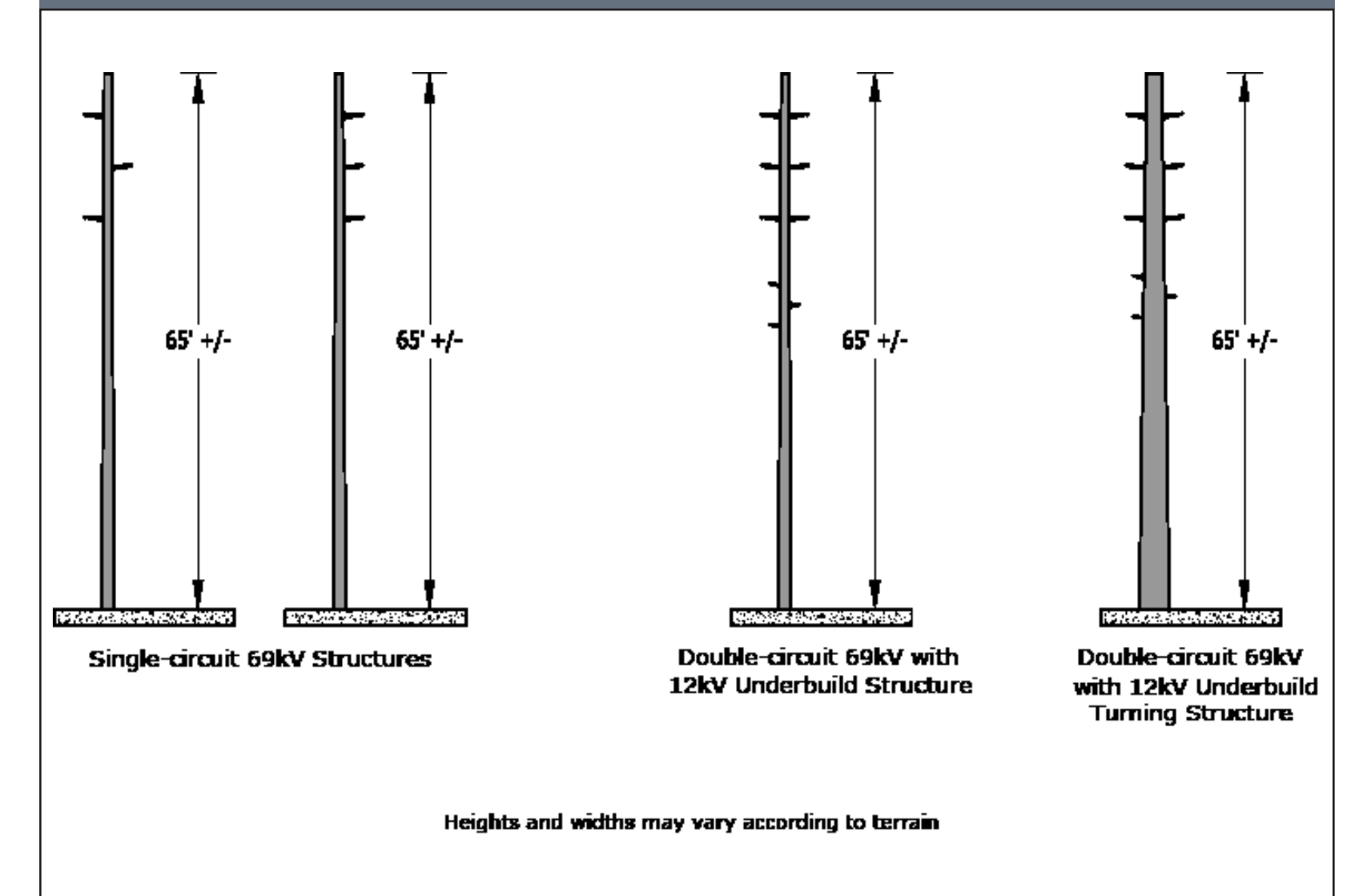


Photo Date and Time: May 24, 2019, 11:06 am
Focal Length: 50mm

The original photographs were taken at 50mm, then stitched together to create this panorama, resulting in a 125-degree field of view.

View Location: Approximate distance to nearest pole from photo location is 250 feet.

Simulations were prepared using information provided by APS. Pole locations, colors, and heights may be different based on final engineering and design.



Existing Condition

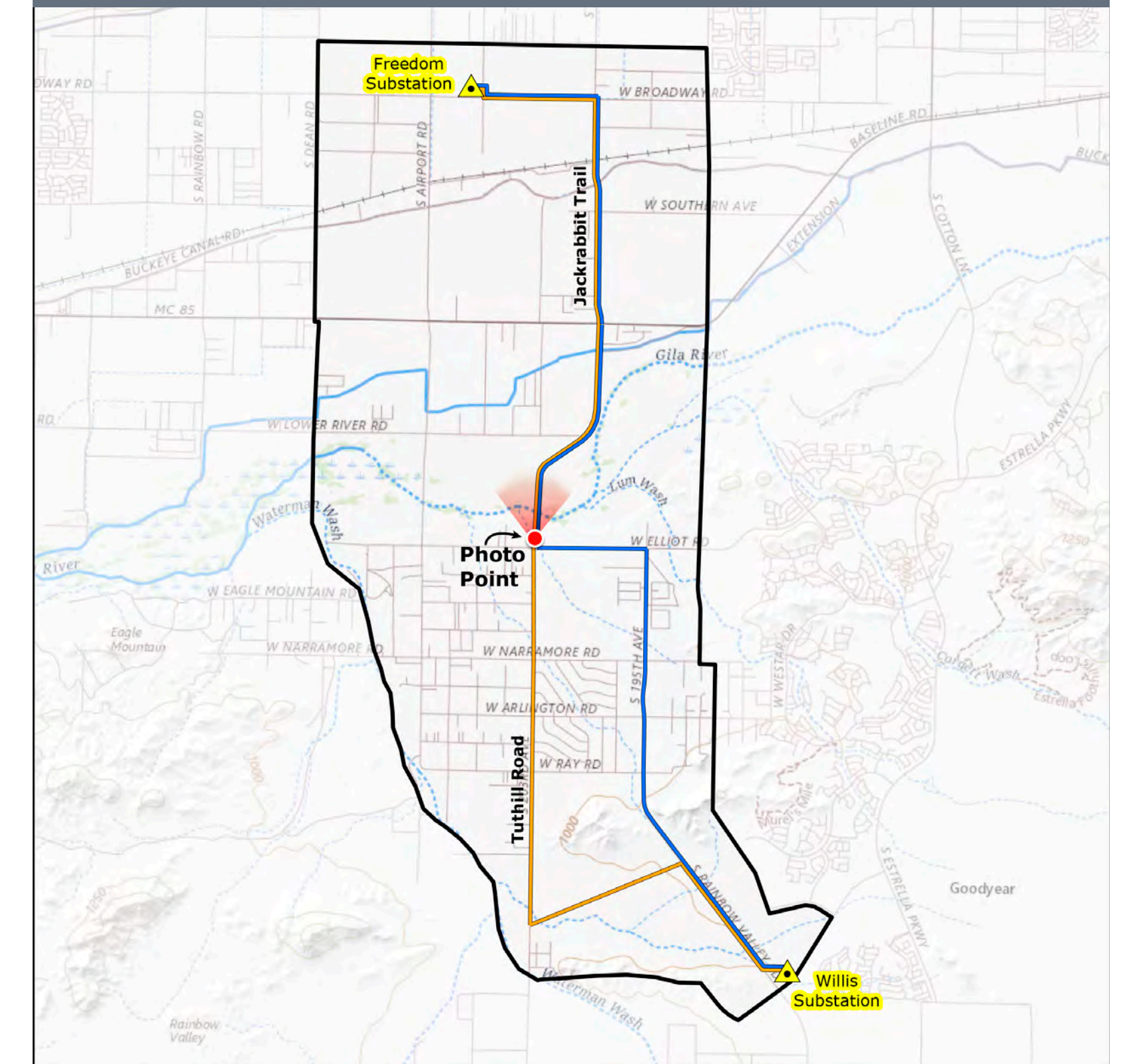
View from the intersection of Tuthill Road and Elliot Road looking north



Simulated Condition

View of the Blue and Orange Routes from the intersection of Tuthill Road and Elliot Road

Viewing Location and Simulated Alternatives



Typical 69kV Structures

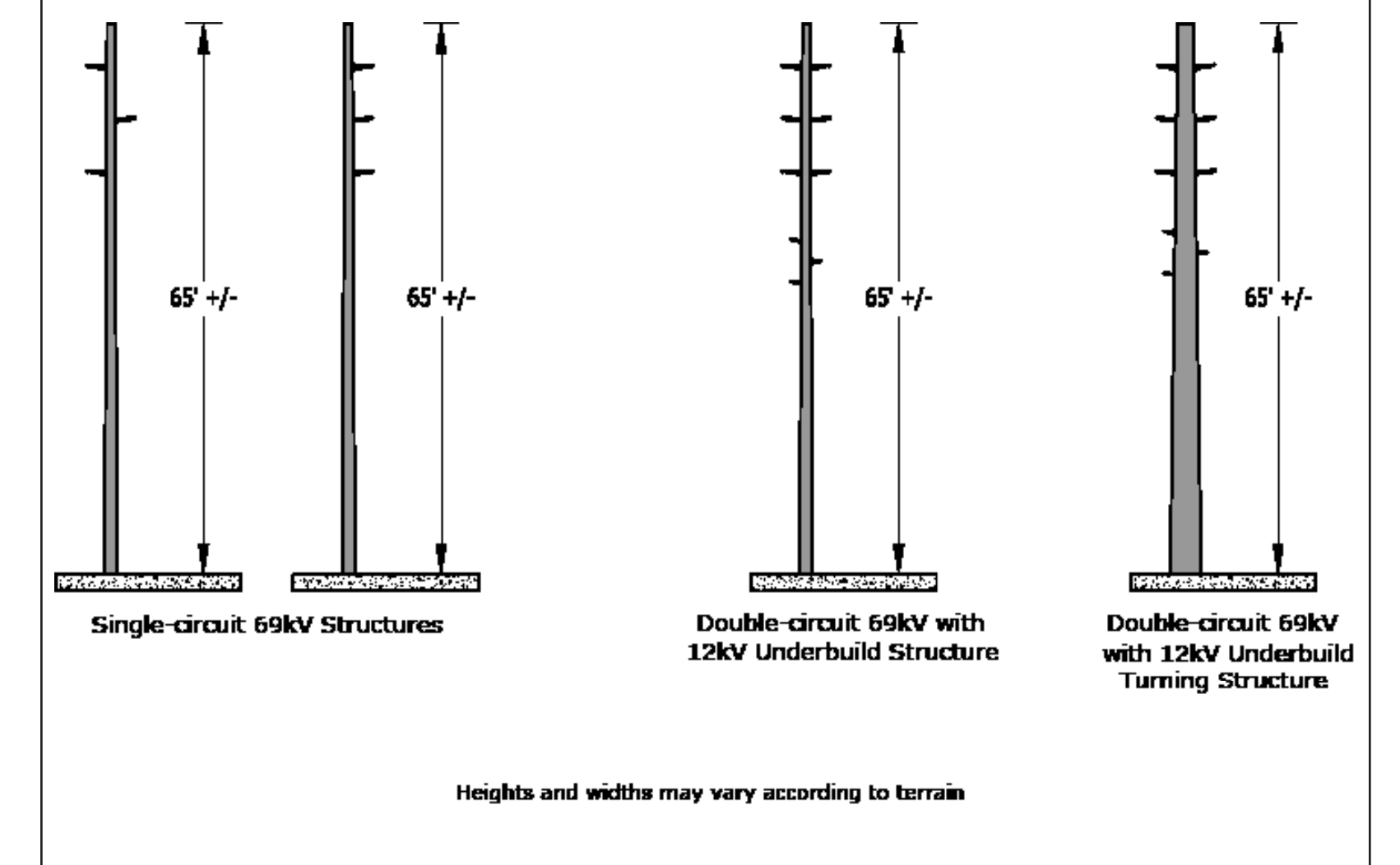


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Focal Length: 50mm

The original photographs were taken at 50mm, then stitched together to create this panorama, resulting in a 125-degree field of view.

View Location: Approximate distance to nearest pole from photo location is 200 feet.

Simulations were prepared using information provided by APS. Pole locations, colors, and heights may be different based on final engineering and design.



Existing Condition

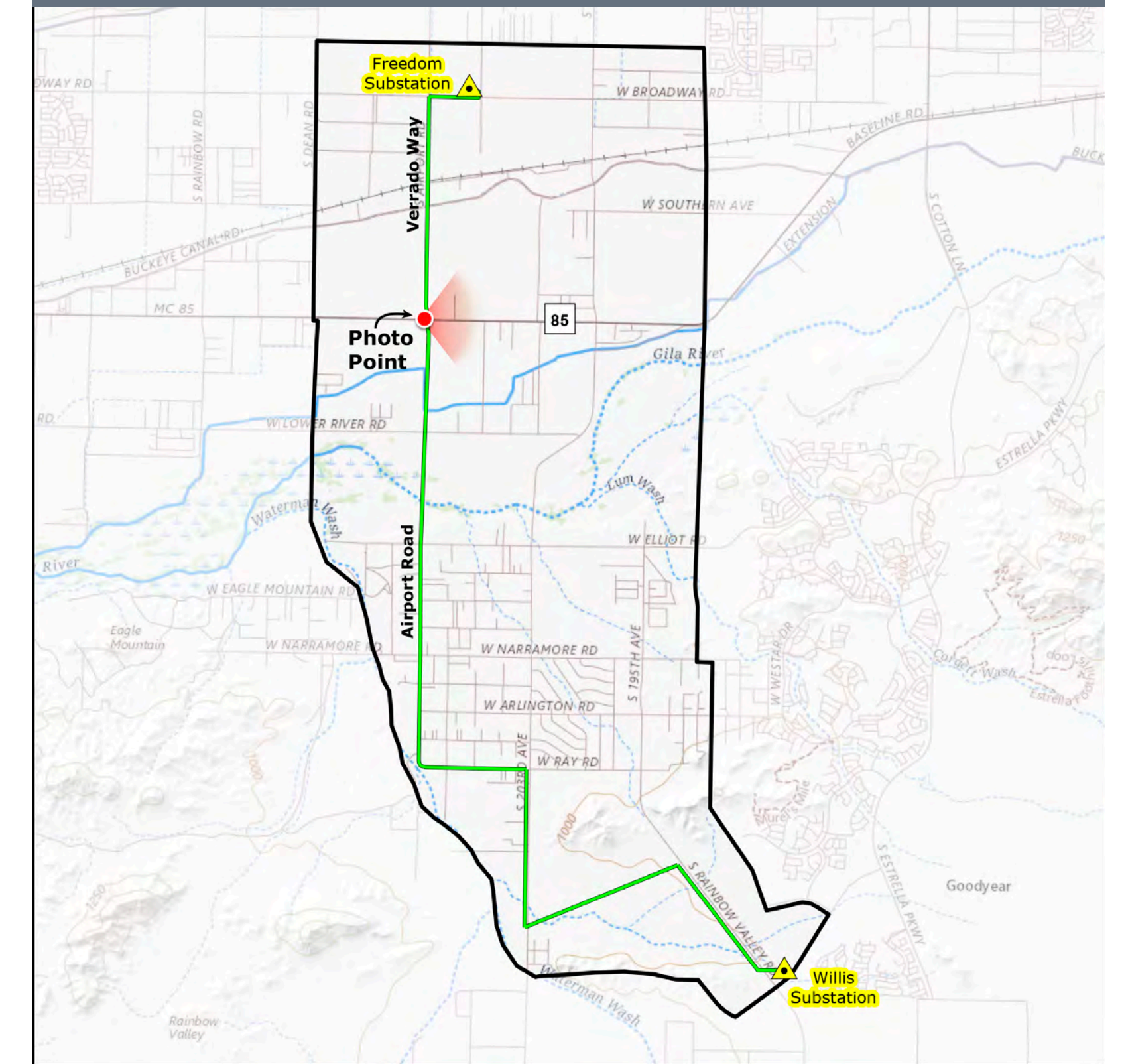
View from the intersection of MC85 and Verrado Way looking east



Simulated Condition

View of the Green Route from the intersection of MC85 and Verrado Way

Viewing Location and Simulated Alternatives



Typical 69kV Structures

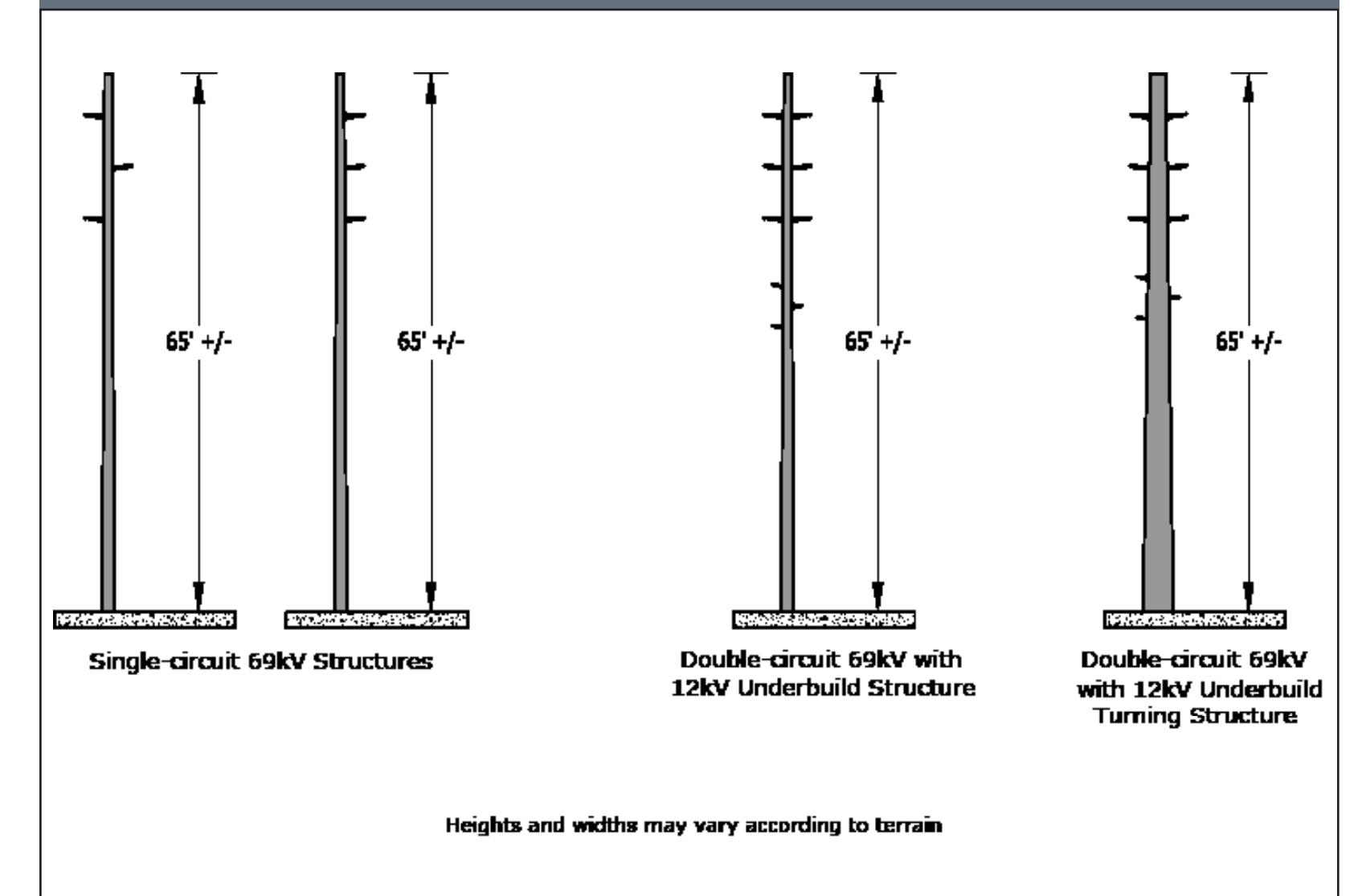
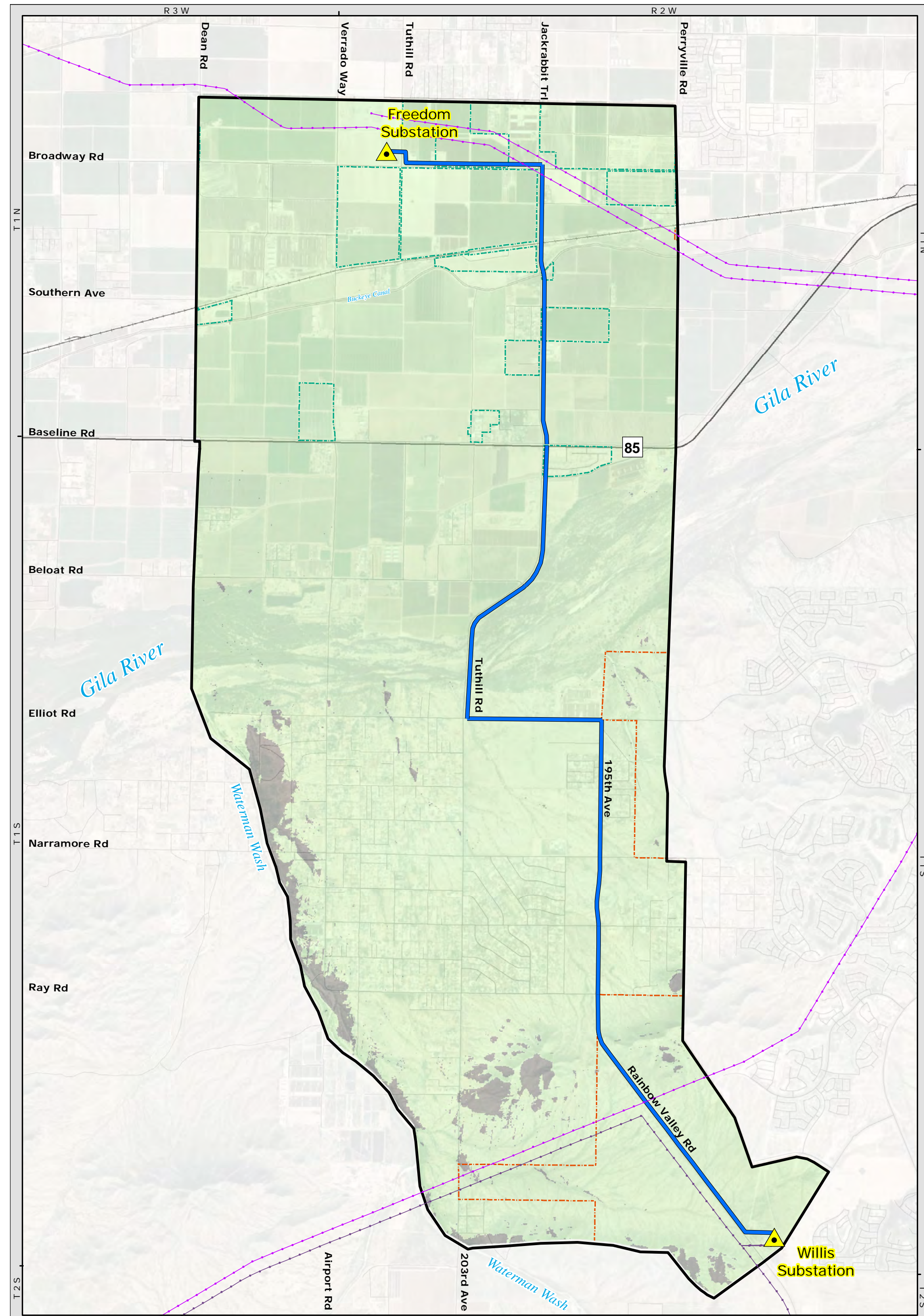


Photo Date and Time: May 24, 2019, 1:17 pm
Focal Length: 50mm

The original photographs were taken at 50mm, then stitched together to create this panorama, resulting in a 125-degree field of view.

View Location: Approximate distance to nearest pole from photo location is 200 feet.

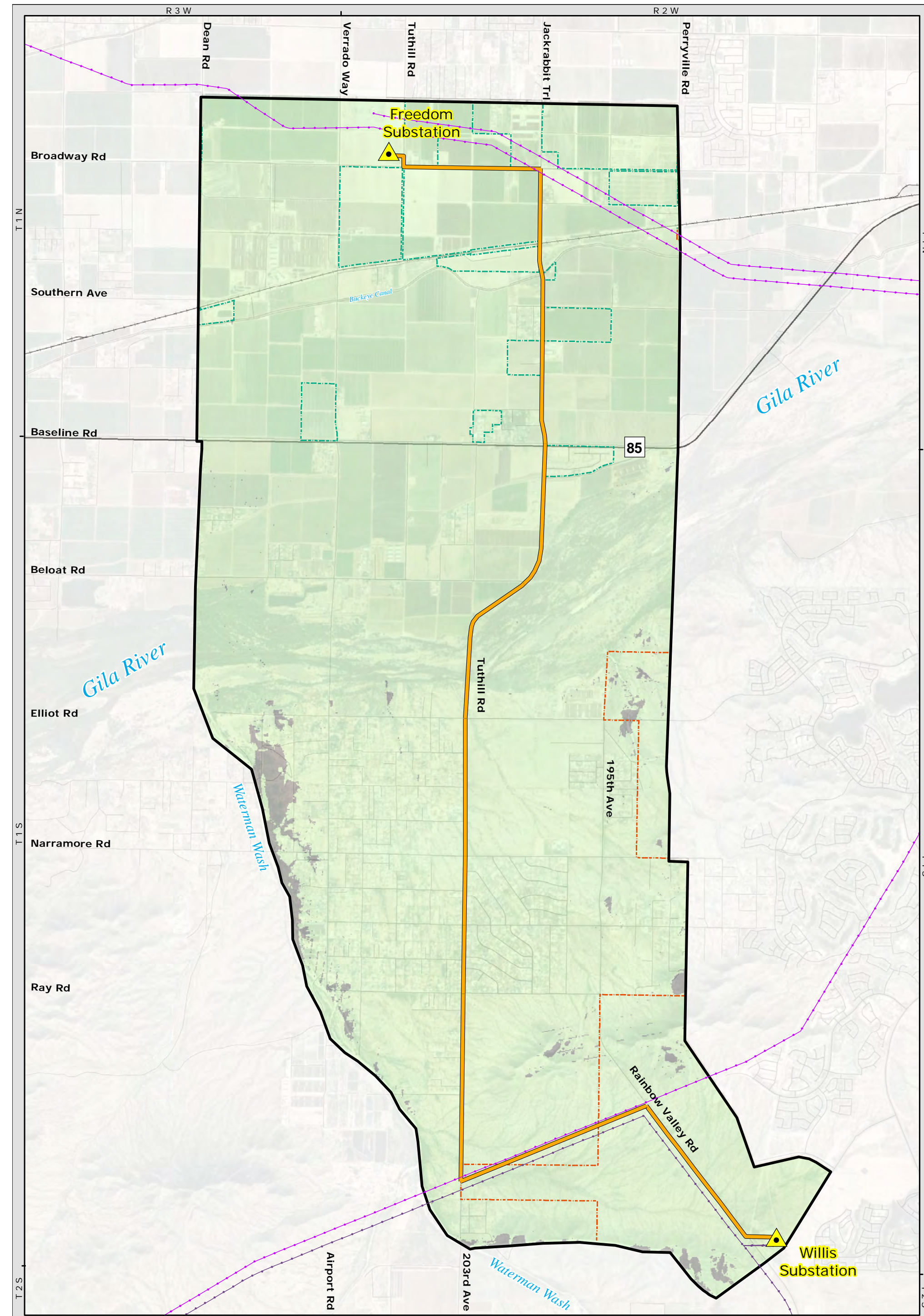
Simulations were prepared using information provided by APS. Pole locations, colors, and heights may be different based on final engineering and design.



Freedom to Willis 69kV Power Line Siting Study Area Blue Route Viewshed
 Maricopa County, Arizona
 Feet 0 2,000 4,000
 Miles 0 0.5 1

69kV Potential Routes Blue Route	Transmission Facilities Existing Substation Existing 69kV Transmission Line Existing Other Transmission Line	Reference Features Study Area Highway Street Railroad Municipal Boundaries City of Buckeye City of Goodyear	Viewshed Visible Not Visible
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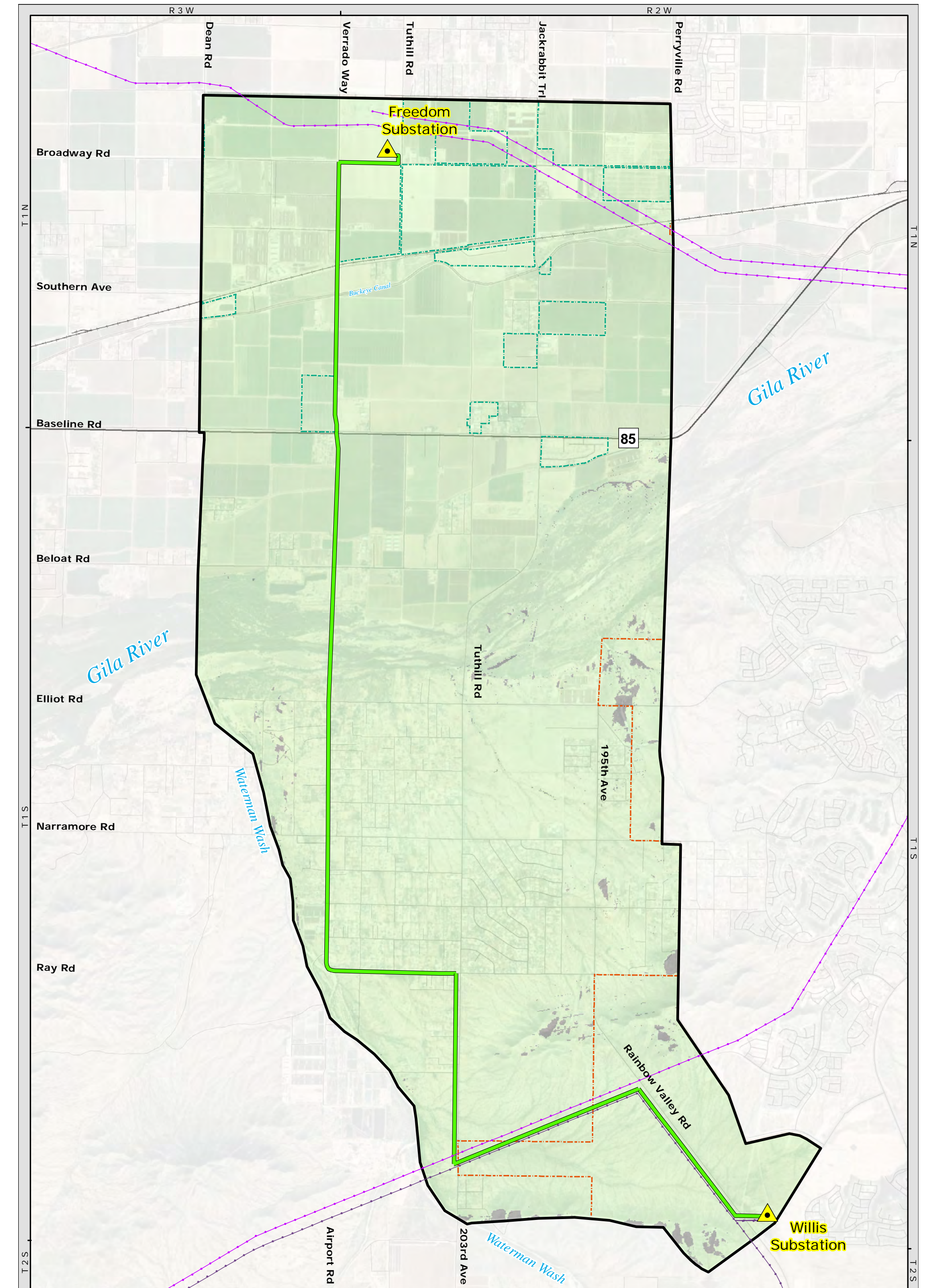
Basemap: Esri, DigitalGlobe, GeoEye, Earthstar USA, USDA, USGS, Aero, GeoMapping, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community Maricopa County, AZ



Freedom to Willis 69kV Power Line Siting Study Area Orange Route Viewshed
 Maricopa County, Arizona
 Feet 0 2,000 4,000
 Miles 0 0.5 1

69kV Potential Routes Orange Route	Transmission Facilities Existing Substation Existing 69kV Transmission Line Existing Other Transmission Line	Reference Features Study Area Highway Street Railroad Municipal Boundaries City of Buckeye City of Goodyear	Viewshed Visible Not Visible
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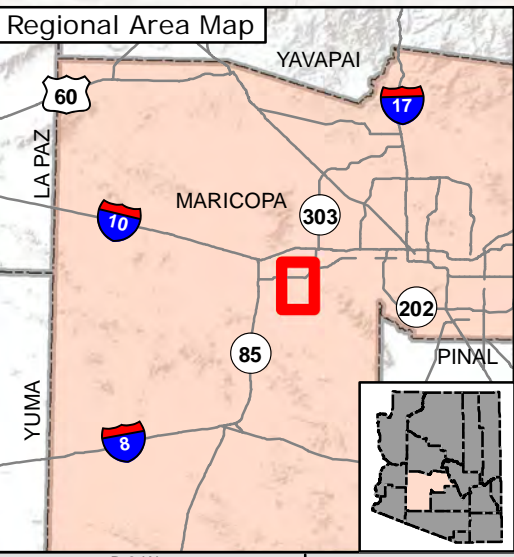
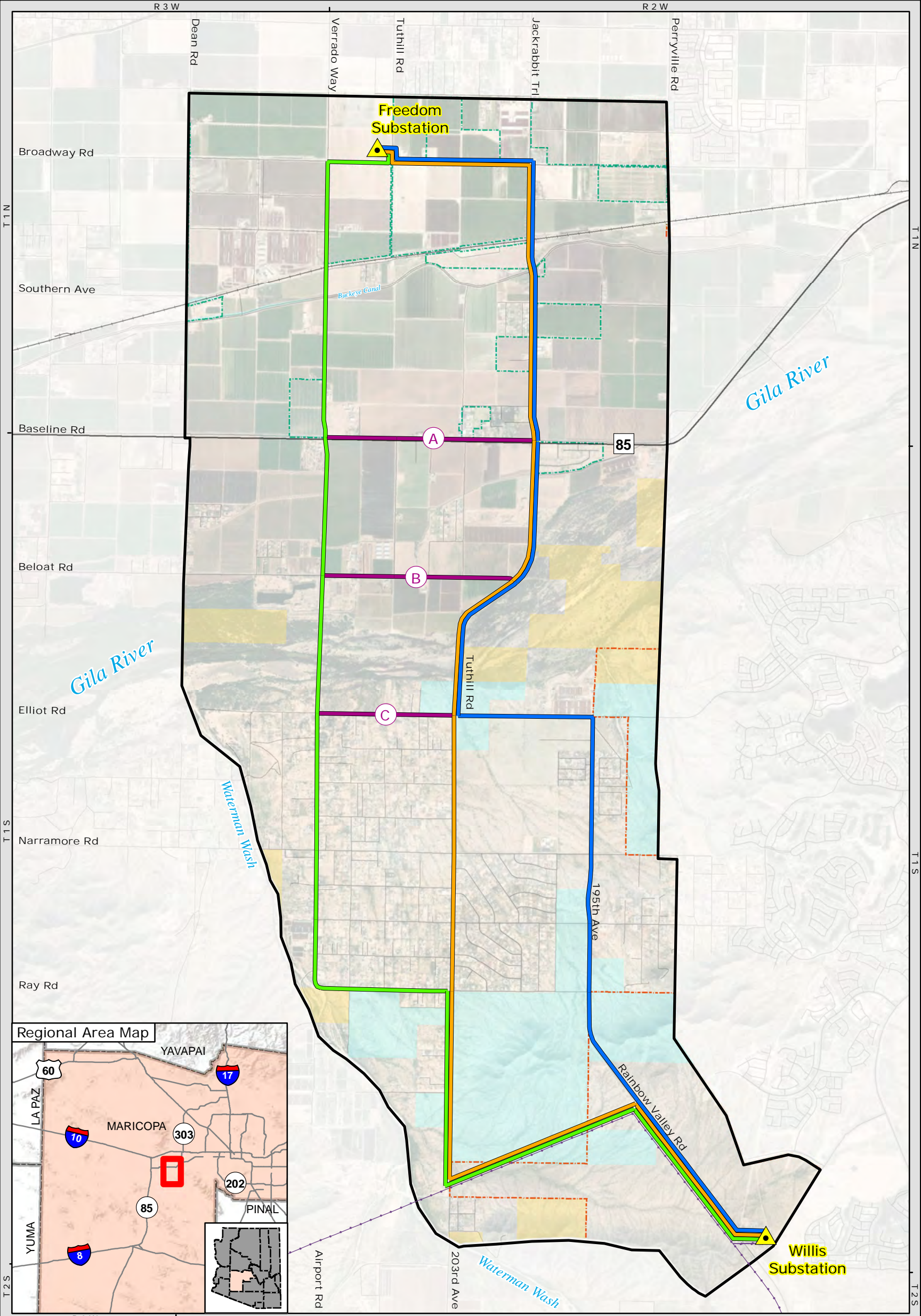
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Freedom to Willis 69kV Power Line Siting Study Area Green Route Viewshed
 Maricopa County, Arizona
 Feet 0 2,000 4,000
 Miles 0 0.5 1

69kV Potential Routes Green Route	Transmission Facilities Existing Substation Existing 69kV Transmission Line Existing Other Transmission Line	Reference Features Study Area Highway Street Railroad Municipal Boundaries City of Buckeye City of Goodyear	Viewshed Visible Not Visible
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Basemap: Esri, DigitalGlobe, GeoEye, Earthstar USA, USDA, USGS, Aero, GeoMapping, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community Maricopa County, AZ



**Freedom to Willis
69kV Power Line
Route Alternatives
Maricopa County, Arizona**



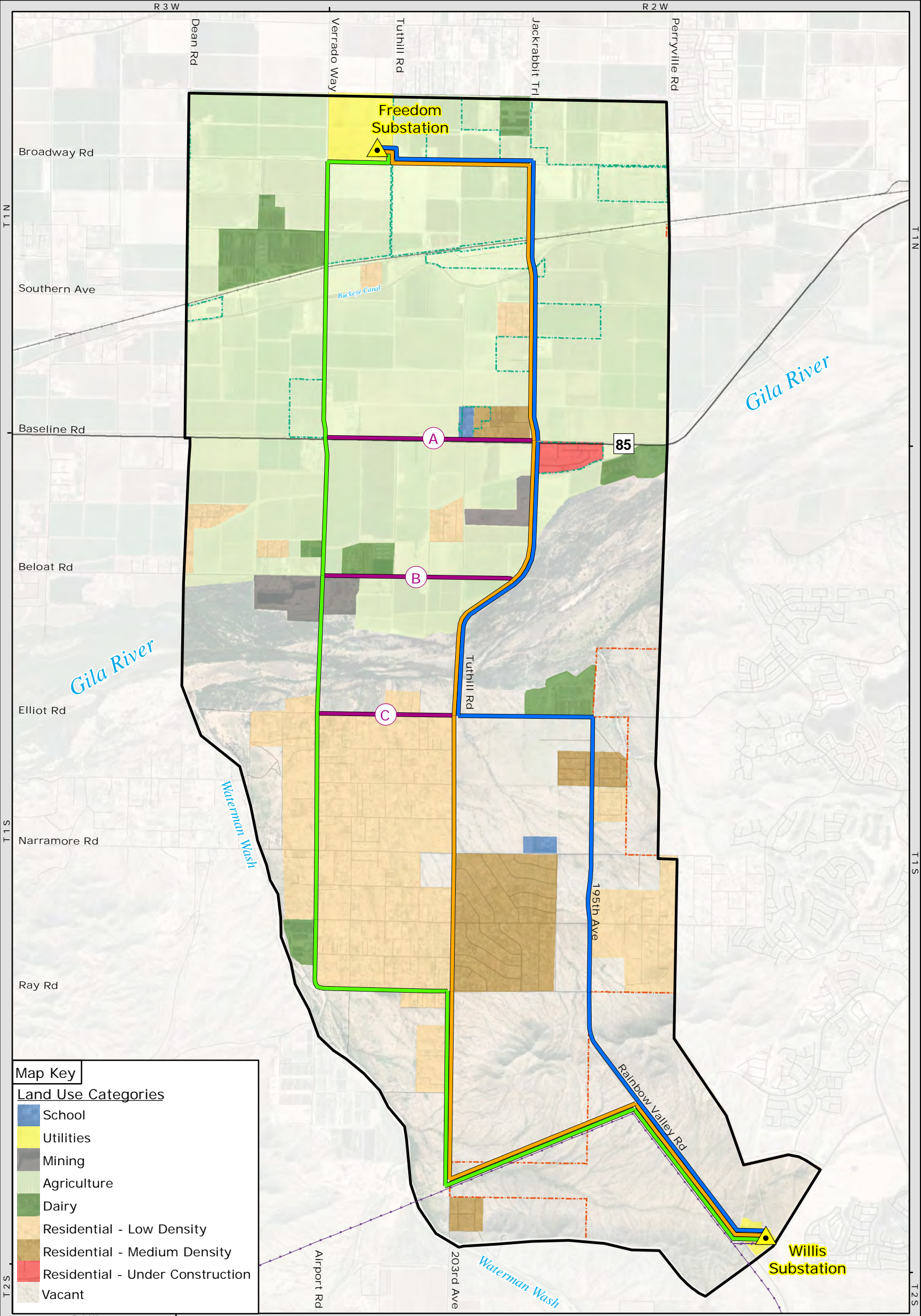
- 69kV Potential Routes**
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 - Orange Route
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 - Option Route
- Transmission Facilities**
- Existing Substation
 - Existing 69kV Transmission Line

- Reference Features**
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- City of Buckeye
 - City of Goodyear

- Land Ownership**
- BLM
 - Private
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Basemap: Esri, DigitalGlobe, GeoEye, I-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Maricopa County, AZ





Map Key	
Land Use Categories	
	School
	Utilities
	Mining
	Agriculture
	Dairy
	Residential - Low Density
	Residential - Medium Density
	Residential - Under Construction
	Vacant

Freedom to Willis
 69kV Power Line
 Current Land Use
 Maricopa County, Arizona

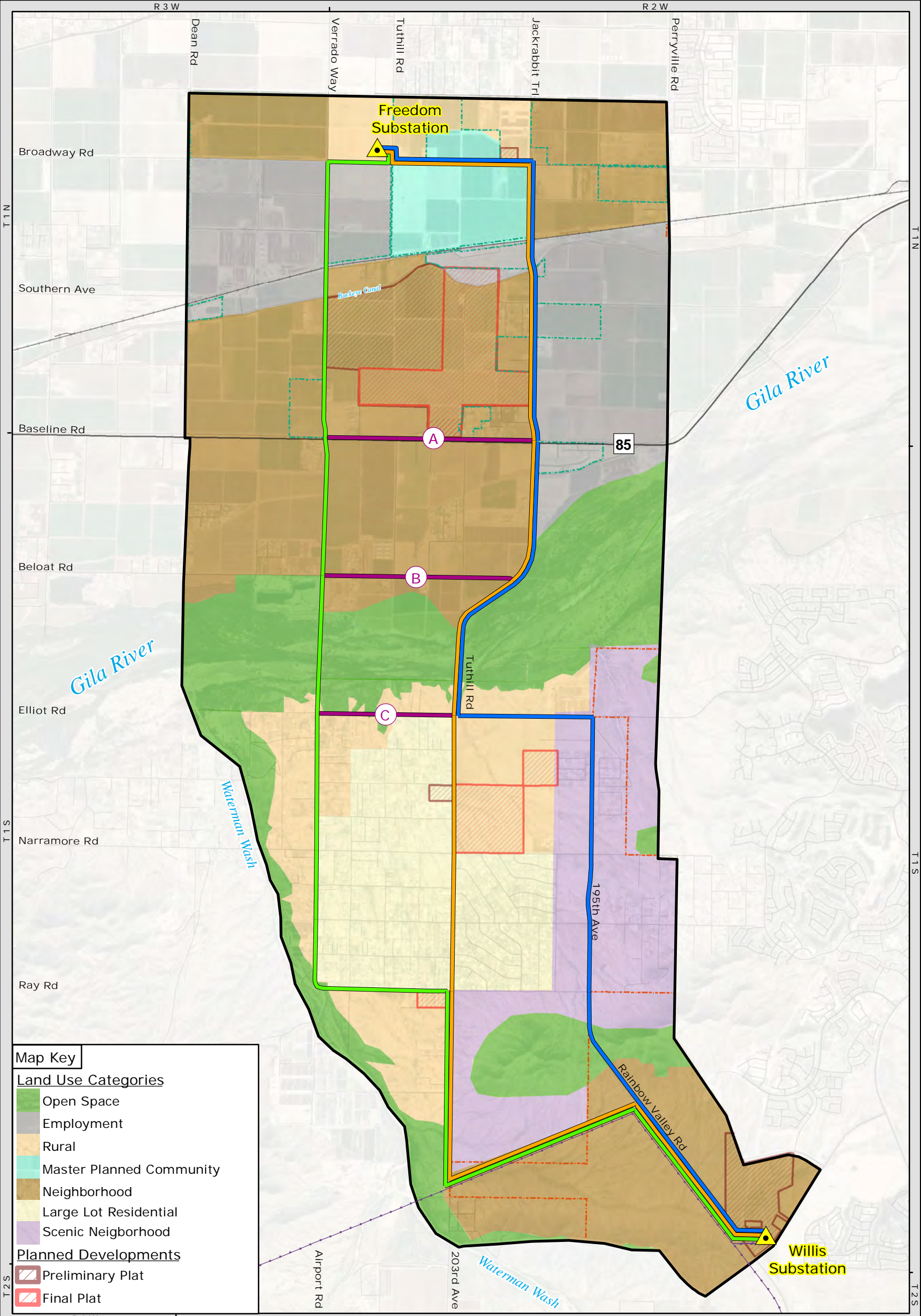


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Map Key

Land Use Categories

- Open Space
- Employment
- Rural
- Master Planned Community
- Neighborhood
- Large Lot Residential
- Scenic Neighborhood

Planned Developments

- Preliminary Plat
- Final Plat

**Freedom to Willis
69kV Power Line
Future Land Use
Maricopa County, Arizona**

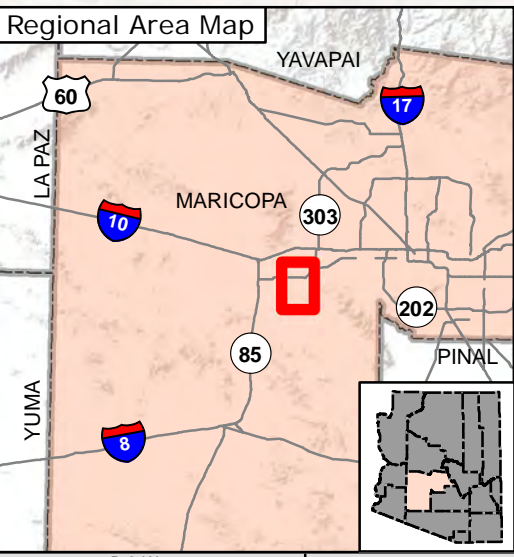
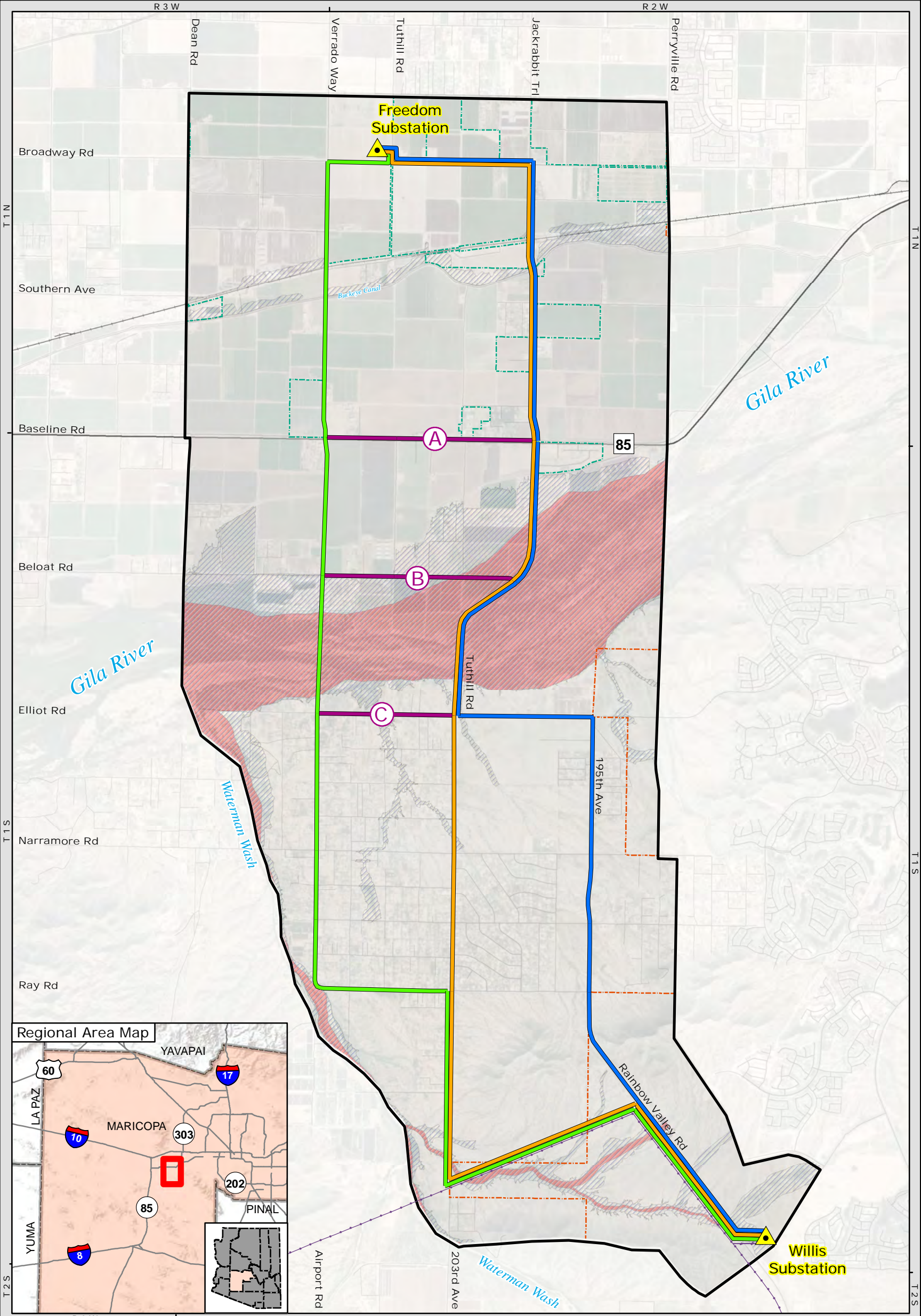


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 - Existing 69kV Transmission Line

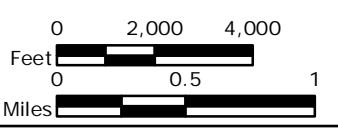
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**Freedom to Willis
69kV Power Line
Flood Zones
Maricopa County, Arizona**



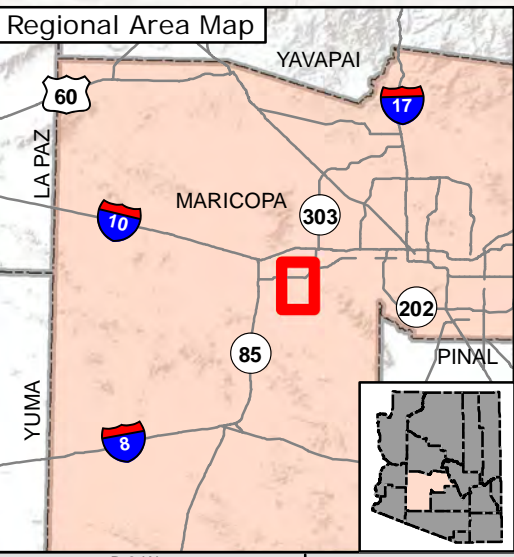
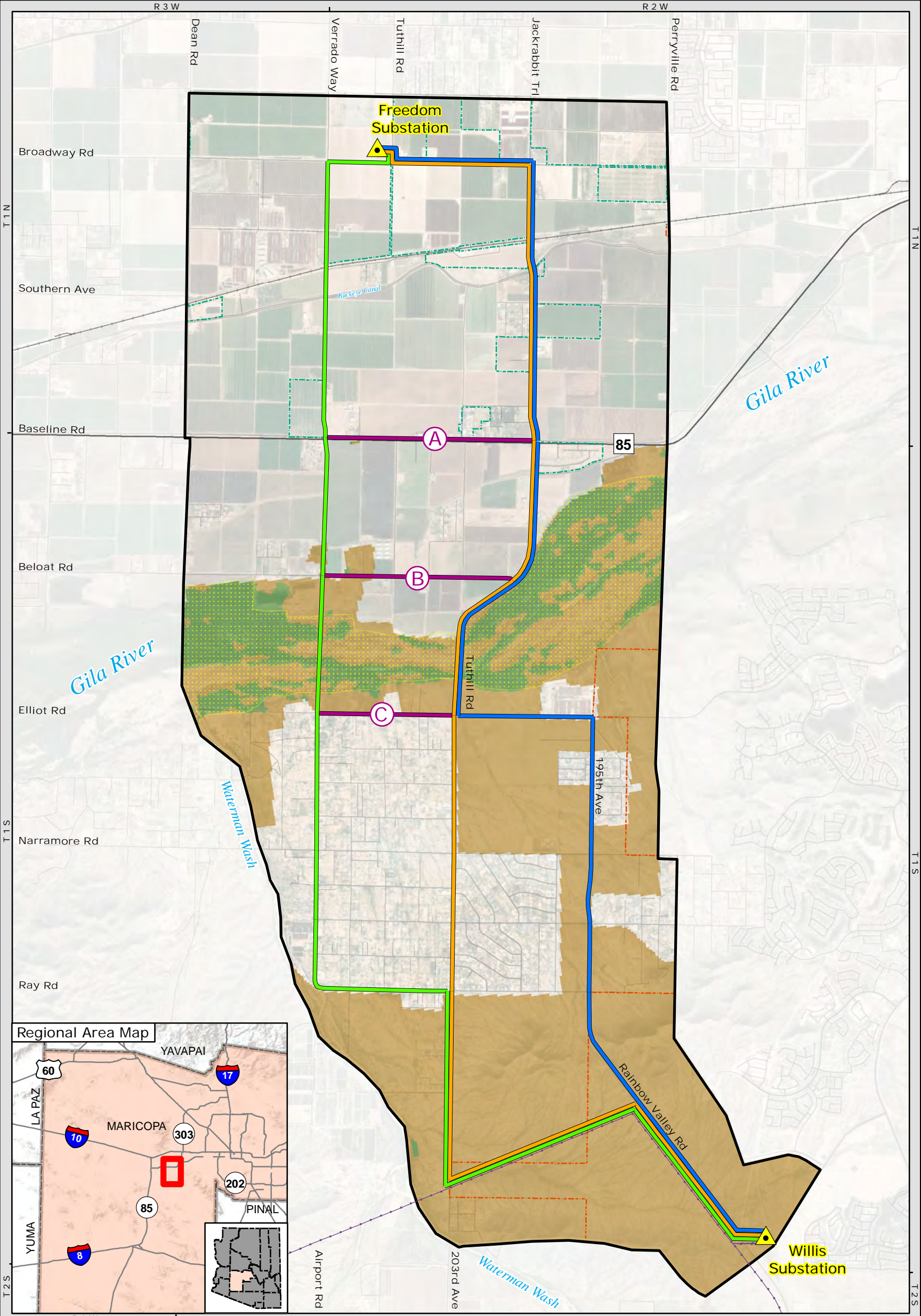
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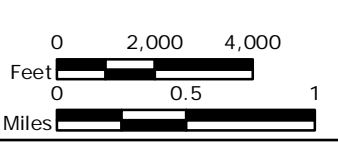
- Flood Zones**
- 100 Year Flood Zone
 - 500 Year Flood Zone
 - Floodway within 100 Year Flood Zone

Basemap: Esri, DigitalGlobe, GeoEye, I-cubed, USDA FSA, USGS, AEX, Getmapping, Aergrid, IGN, IGP, swisstopo, and the GIS User Community Maricopa County, AZ





**Freedom to Willis
69kV Power Line
Habitat
Maricopa County, Arizona**



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- Habitat Types**
- Riparian
 - Desert Scrub
 - Yellow-billed Cuckoo Proposed Critical Habitat

Basemap: Esri, DigitalGlobe, GeoEye, I-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Maricopa County, AZ



- City of Buckeye (April 2019, ongoing)
- City of Goodyear (April 2019, ongoing)
- Maricopa County Planning Department (April 2019, ongoing)
- Maricopa County Department of Transportation (April 2019, ongoing)
- Arizona State Land Department (May 2019, ongoing)
- Project area residents, businesses, and stakeholders, via a project newsletter (June 2019). A newsletter describing the final route selection will be distributed in late 2019.

OUTREACH IS ONGOING THROUGHOUT THE PROCESS

- Fill out and return a comment form tonight
- Access electronic comment forms and project updates at [**www.aps.com/siting**](http://www.aps.com/siting) *(see Freedom to Willis 69kV Power Line Siting Study under Current Siting Projects)*
- Submit comments via:
 - email to Stephen Eich, APS Siting Consultant, [**Freedomwillis@aps.com**](mailto:Freedomwillis@aps.com)
 - by phone at **1-800-680-3484**
- Future project newsletters will contain updated information