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Arizona Corporation Commission

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JAN 31 2017

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GB

January 31, 2017

Docket Control
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

RE: Arizona Public Service Company 2017-2026 Ten-Year Transmission System Plan
Docket No. E-00000D-17-0001

In compliance with A.R.S. § 40-360.02, enclosed please find Arizona Public Service Company's ("APS") 2017-2026 Ten-Year Transmission System Plan (Ten-Year Plan) for major transmission facilities (Attachment A). Also included in this filing are the Renewable Transmission Action Plan (Attachment B) as required by Arizona Corporation Commission ("ACC") Decision No. 70635 (December 11, 2008), and the Technical Study on the Effects of DG/EE on Fifth Year Transmission (Attachment C) as required by ACC Decision No. 74785 (October 24, 2014). The technical study report required by A.R.S. § 40-360.02(7) and the internal planning criteria and system ratings required by ACC Decision No. 63876 (July 25, 2001) will be provided under separate cover with confidential treatment consistent with securing and sharing confidential Critical Energy Infrastructure Information pursuant to FERC Order No. 833 (November 17, 2016, Docket RM16-15-000).

This Ten-Year Plan includes approximately 38 miles of new 500 kV transmission lines, 14 miles of new 230 kV transmission lines, and 5 new bulk transformers. The APS investment needed to construct these projects is currently estimated to be \$195 million. These new transmission projects, coupled with additional distribution and sub-transmission investments, will support reliable power delivery in APS's service area, Arizona, and in the western United States.

If you have any questions, please contact me at (602)250-3341.

Sincerely,

Kerri A. Carnes

KC/jh

cc: Thomas Chenal
Elijah Abinah
Charles Hains
Toby Little

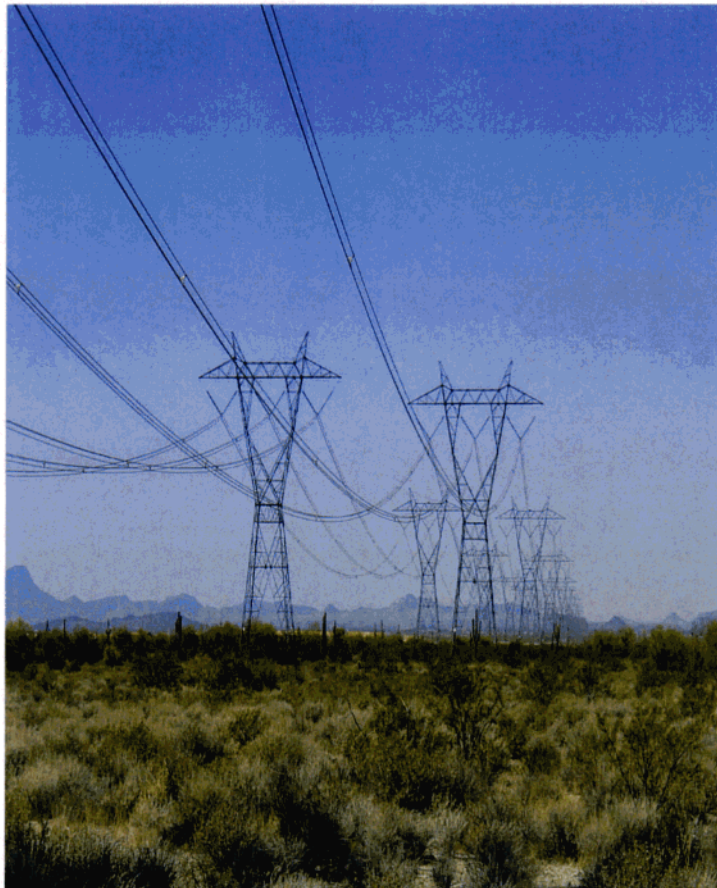
Attachment A

2017-2026 Ten-Year Transmission System Plan



ARIZONA PUBLIC SERVICE COMPANY
2017–2026
TEN-YEAR TRANSMISSION SYSTEM PLAN

Prepared for the
Arizona Corporation Commission



January 2017

**ARIZONA PUBLIC SERVICE COMPANY
2017 - 2026
TEN-YEAR TRANSMISSION SYSTEM PLAN**

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**ARIZONA PUBLIC SERVICE COMPANY
2017–2026
TEN-YEAR TRANSMISSION SYSTEM PLAN**

GENERAL INFORMATION

Pursuant to A.R.S. § 40-360.02, Arizona Public Service Company (APS) submits its 2017–2026 Ten-Year Transmission System Plan (Ten-Year Plan). Also included in this filing are the Renewable Transmission Action Plan (Attachment B) as required by Arizona Corporation Commission (“ACC”) Decision No. 70635 (December 11, 2008), and the Technical Study on the Effects of DG/EE on Fifth Year Transmission (Attachment C) as required by ACC Decision No. 74785 (October 24, 2014). The technical study report required by A.R.S. § 40-360.02(C)(7) and the internal planning criteria and system ratings required by ACC Decision No. 63876 (July 25, 2001) will be provided under separate cover with confidential treatment consistent with securing and sharing confidential Critical Energy Infrastructure Information pursuant to FERC Order No. 833 (November 17, 2016, Docket RM16-15-000).

This Ten-Year Plan describes planned transmission lines of 115kV or higher voltage that APS may construct or participate in over the next ten-year period. Pursuant to A.R.S. § 40-360(10), underground facilities are not included. There are approximately 38 miles of 500kV transmission lines, 14 miles of 230kV transmission lines, and 5 transformers contained in the projects in this Ten-Year Plan. The total investment for the APS projects and the anticipated APS portion of the participation projects as they are modeled in this filing is estimated to be approximately \$195 million.¹ Table 1 provides an overview of the projects included in this Ten-Year Plan.

¹ This value is not comparable to the Capital Expenditures table presented in the “Liquidity and Capital Resources” section of APS’s 10-K filing, which also includes other transmission costs for new subtransmission projects (69kV) and transmission upgrades and replacements.

Table 1: Ten Year Plan Project Breakdown

<u>Description</u>	<u>Projects in Ten-Year Plan</u>
500kV transmission lines	38 miles
230kV transmission lines	14 miles
Transformers	5
Total Investment	\$195 million ²

Consistent with the Commission's Sixth BTA (Decision No. 72031, December 10, 2010) this Ten-Year Plan includes information regarding planned transmission reconductor projects, substation transformer replacements, and reactive compensation projects. At this time, APS does not have any plans for reconductoring any existing transmission lines. These types of plans often change as they typically are in direct response to load growth or generator interconnections. Therefore, in-service dates for transformer replacement/additions and transmission reconductor projects change to reflect the load changes in the local system. Also, there may be projects added throughout the course of the planning year to accommodate changes in system topology, retirement of generation, or new generator interconnections. Table 2 shows a list of the planned substation transformer additions/replacements.

Table 2: Equipment Additions/Replacements

<u>Description</u>	<u>Year</u>
Four Corners 500/345kV Transformer #2	2017
Mazatzal 345/69kV Transformer	2018
North Gila 500/230kV Transformer	2021
Orchard 230/69kV Transformer	2021
Orchard 230/69kV Transformer #2	2021

Some of the facilities reported in prior Ten-Year plan filings have been completed. Others have been canceled or deferred beyond the upcoming ten-year period and are therefore not included here. The projects that have "To Be Determined" ("TBD") in-service dates are projects that have been identified, but are either still

² See footnote 1.

outside of the ten-year planning window or have in-service dates that have not yet been established. They have been included in this filing for informational purposes. A summary of changes from last year's Ten-Year plan is also provided. Additionally, a section is included that briefly describes projects still in the feasibility planning phase.

For convenience of the reader, APS has included planned transmission maps showing the electrical connections and in-service dates for all overhead transmission projects planned by APS for Arizona (p.8), the Phoenix Metropolitan Area (p.9), and the Yuma area (p.10). Written descriptions of each proposed transmission project are provided on subsequent pages in the currently expected chronological order of each project. The line routings shown on the system maps and the descriptions of each transmission line are intended to be general, showing electrical connections and not specific routings, and are subject to revision. Specific routings are recommended by the Arizona Power Plant and Transmission Line Siting Committee and ultimately approved by the Commission when issuing a Certificate of Environmental Compatibility ("CEC") and through subsequent right-of-way acquisition.

APS participates in numerous regional planning organizations. Through membership and participation in these organizations, the needs of multiple entities, and the region as a whole, can be identified and studied, which maximizes the effectiveness and use of new projects. Regional organizations in which APS is a member include the Western Electricity Coordinating Council ("WECC"), the Southwest Area Transmission Planning ("SWAT"), and WestConnect. The plans included in this filing are the result of these coordinated planning efforts. APS provides an opportunity for other entities to participate in future planned projects.

The Commission's Sixth BTA ordered that utilities include the effects of distributed generation and energy efficiency programs on future transmission needs. APS's modeled load, as described in the Technical Study Report, addresses the requirements of the Commission's Sixth BTA. Also, in the Eighth BTA Decision, the Commission directed utilities to conduct or procure a study to more directly identify the effects of DG and EE installations and/or programs on their future transmission needs. The Commission's Ninth BTA Decision

requires utilities to continue these studies annually, addressing the effects of DG and EE on future transmission needs in their Ten-Year filings beginning with this filing. This study is located in Attachment C of this filing.

The Commission's Seventh BTA suspended the requirement for performing Reliability Must Run (RMR) studies in every BTA and implemented criteria for restarting such studies. Since APS's last RMR, there have been no triggering events that would require restarting a RMR study for Phoenix and Yuma load pockets, which are the two major areas in APS's service territory where load cannot be served totally by imports over transmission lines. The Commission's Decisions in the Eighth and Ninth BTAs continues the suspension of the RMR studies as outlined in the Seventh BTA. Also consistent with the Commission's Decisions in the Seventh, Eighth, and Ninth BTAs, APS continues to monitor the reliability in Cochise County. To improve reliability in Cochise County, APS has converted San Pedro Substation to a breakered ring bus, built a new 69kV line between San Pedro and Fairview and moved the normally open backup tie between APS and Sulphur Springs Valley Electric Cooperative to Fairview Substation. APS is finalizing additional plans for system additions in the area that will likely include new and upgraded transmission lines and new transformers. Should the plan be finalized prior to next January's filing, APS will file a supplement to this Ten-Year plan.

In the Eighth BTA decision, the Commission ordered utilities to describe the driving factors for each transmission project in the Ten-Year Plan. If the project's driving factor is due to load growth or reliability, the utility is required to provide a system load level range at which each transmission project is anticipated to be needed. The Commission's Ninth BTA Decision suspended this requirement, instead requiring utilities to describe, in general terms, the driving factors(s) for each transmission project in the Ten-Year Plan.

The Commission's Ninth BTA Decision also confirmed the suspension of the requirement for TEP to file the Southwest Area Transmission Planning Group ("SWAT") Coal Reduction Assessment Task Force ("CRATF") report on behalf of the Arizona utilities within 30 days of completion as directed in Decision No. 74785. Utilities shall participate in the WestConnect Regional Planning process and coordinate Arizona reliability studies with WestConnect study and scenario results, and TEP will report the findings on behalf of the utilities in future BTA Proceedings.

Power flow analysis was conducted to identify thermal overloads under normal and contingency conditions in compliance with NERC Reliability Standards and WECC System Performance Criteria. The projects identified in this Ten-Year Plan, with their associated in-service dates, will ensure that APS's transmission system meets all applicable reliability criteria for Category P0 and P1-P7 conditions as defined in NERC Reliability Standard TPL-001-4. Changes in regulatory requirements, regulatory approvals, or underlying assumptions such as load forecasts, generation or transmission expansions, economic issues, retirement of generation, changes in the system topology, and other utilities' plans may substantially impact this Ten-Year Plan and could result in changes to anticipated in-service dates or project scopes. Additionally, future federal and regional mandates may impact this Ten-Year Plan specifically and the transmission planning process in general. This Ten-Year Plan contains tentative information only and is subject to change without notice at the discretion of APS (A.R.S. § 40-360.02(F)).

CHANGES FROM 2016-2025 TEN-YEAR PLAN

The following is a list of projects that were removed or changed from APS's January 2016 Ten-Year Plan filing, along with a brief description of the change that was made:

- Delaney – Palo Verde 500kV line has been completed. The project went in-service in May 2016.
- Delaney – Sun Valley 500kV line has been completed. The project went in-service in May 2016.
- The first circuit of the Sun Valley – Trilby Wash 230kV line has been completed. The project went in-service in May 2016. The in-service date for the second circuit for this project is TBD. The project description page reflects only the remaining portions of the project.
- The Mazatzal 345/69kV Substation in-service date has moved from December 2017 to June 2018.

NEW PROJECTS IN THE 2017-2026 TEN-YEAR PLAN

There is one new transmission project included in the 2017-2026 Ten-Year Plan that was not in the 2016-2025 Ten-Year Plan.

- The Bagdad 115/69kV Back-up Project is a new project and currently has a TBD in-service date.

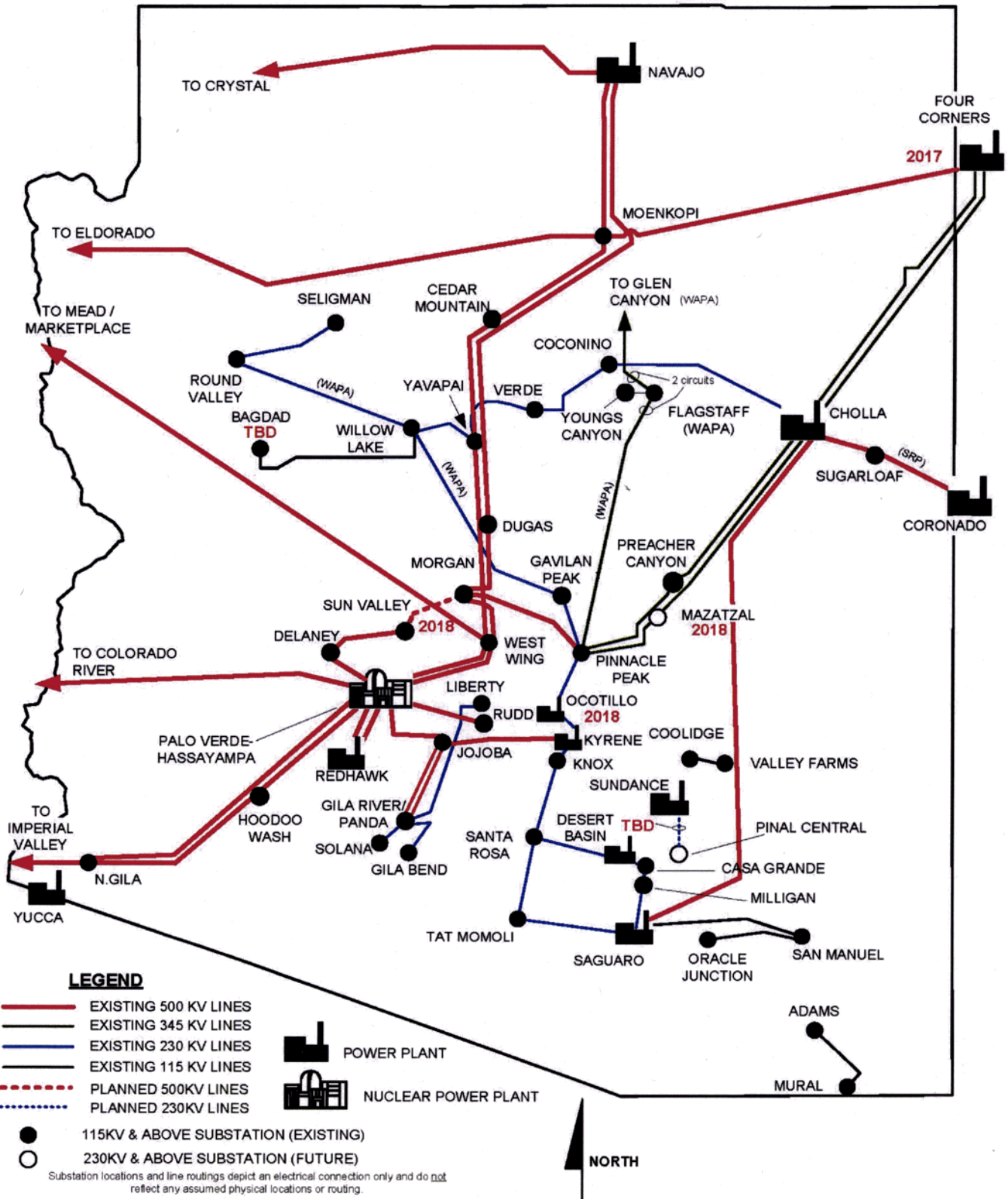
CONCEPTUAL PROJECTS IN THE FEASIBILITY PLANNING PHASE

Palo Verde/Gila Bend Area to Valley Transmission Capacity

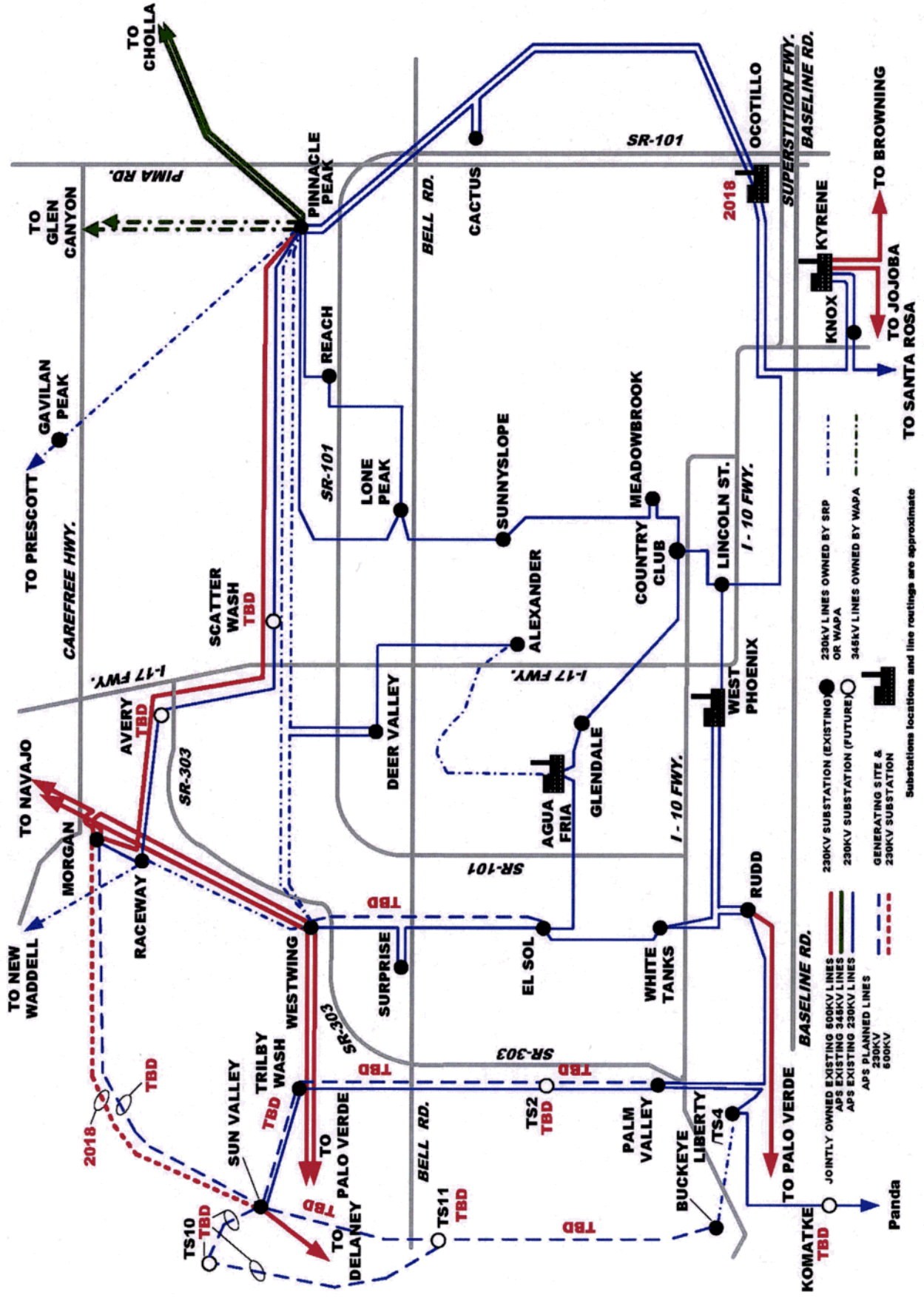
Additional transmission capacity will be studied from the Palo Verde/Gila Bend areas to the Phoenix load center. This transmission capacity is a robust component of the overall APS transmission and resource need. The areas around and west of Palo Verde as well as the Gila Bend area contain some of the best solar resources in the country. These areas also provide access to existing gas resources and, in the case of Palo Verde, potential new gas resources and market purchases.

PLANNED TRANSMISSION MAPS

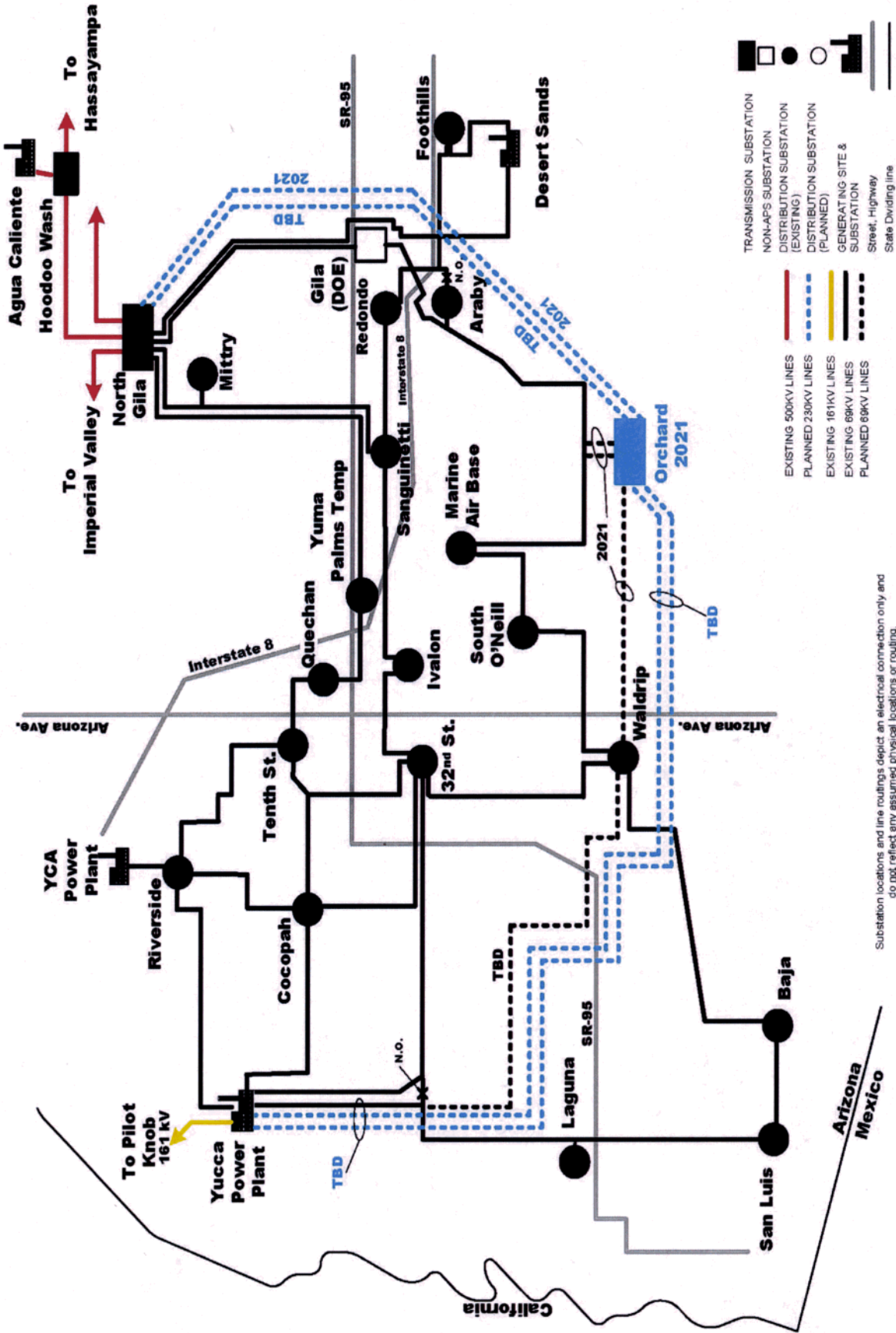
APS EHV & OUTER DIVISION 115/230 KV TRANSMISSION PLANS



PHOENIX METROPOLITAN AREA TRANSMISSION PLANS



Yuma Area Transmission Plans



Substation locations and line routings depict an electrical connection only and do not reflect any assumed physical locations or routing.

PROJECT DESCRIPTIONS

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

2018

<u>Project Name</u>	Mazatzal 345/69kV Substation
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	345kV AC
(b) Facility Rating	150 MVA
(c) Point of Origin	Cholla-Pinnacle Peak 345kV line; near Sec. 3, T8N, R10E
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Mazatzal Substation to be in-service by 2018; Sec. 3, T8N, R10E
(f) Length	Less than 1 mile
<u>Routing</u>	The Mazatzal 345/69kV Substation will be constructed adjacent to the Cholla-Pinnacle Peak 345kV line corridor.
<u>Purpose</u>	Driving Factor(s): To provide the electric source and support to the sub-transmission system in the area of Payson and the surrounding communities.
<u>Date</u>	
(a) Construction Start	2015
(b) Estimated In-Service	2018
<u>Permitting / Siting Status</u>	<i>CEC issued on 5/4/11 (Case No. 160, Decision No. 72302, Mazatzal Substation and 345kV Interconnection Project). On August 26, 2015, in Decision No. 75249, the Commission approved APS's application to extend the term of the CEC to 2021.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

2018

<u>Project Name</u>	Ocotillo Modernization Project Interconnection Facilities
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	To be determined
(c) Point of Origin	Ocotillo GT2-6 Collection Yard
(d) Intermediate Points of Interconnection	None
(e) Point of Termination	Ocotillo 230kV Substation
(f) Length	Less than 1 mile
<u>Routing</u>	This project will include two onsite 230kV generation interconnection circuits for interconnection to the existing onsite Ocotillo 230kV Substation. One circuit will be routed along a portion of the northern boundary of the site. The second circuit will be routed along portions of the western and northern boundaries of the site.
<u>Purpose</u>	Driving Factor(s): To interconnect new generators being constructed as part of the Ocotillo Modernization Project. These circuits will connect the new units to the existing Ocotillo 230kV Substation and are going into service in 2018. The new generators are planned to come online starting in the fall of 2018 and completed by the spring of 2019.
<u>Date</u>	
(a) Construction Start	2016
(b) Estimated In-Service	2018
<u>Permitting / Siting Status</u>	<i>CEC issued on 11/13/2014. (Case No. 169, Decision No. 74812, Ocotillo Modernization Project). Note – Ocotillo 230kV Generation Interconnections is now referred to as Ocotillo Modernization Project.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

2018

<u>Project Name</u>	Morgan – Sun Valley 500kV Line
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	Central Arizona Water Conservation District (CAWCD)
<u>Size</u>	
(a) Voltage Class	500kV AC
(b) Facility Rating	3000 A
(c) Point of Origin	Sun Valley Substation; Sec. 29, T4N, R4W
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Morgan Substation; Sec. 33, T6N, R1E
(f) Length	Approximately 38 miles
<u>Routing</u>	Generally the line will head north-northeast out of the Sun Valley Substation and then east to the Morgan Substation.
<u>Purpose</u>	<p>Driving Factor(s): To increase import capability to the Phoenix Metropolitan area, as well as increase the export/scheduling capability from the Palo Verde Hub area, which includes both solar and gas resources. This line is the final section of a new 500kV path from Palo Verde around the western and northern edges of the Phoenix area and terminates at Pinnacle Peak. This full path, Palo Verde-Delaney-Sun Valley-Morgan-Pinnacle Peak 500kV, will also increase the reliability of the EHV system by completing a 500kV loop that connects the Palo Verde Transmission system, the Southern Navajo Transmission system, and the Southern Four Corners system, which provides support for multiple element contingencies.</p> <p>This project is 500/230kV double-circuit capable. This is a joint participation project with APS as the project manager.</p>
<u>Date</u>	
(a) Construction Start	2017
(b) Estimated In-Service	2018
<u>Permitting / Siting Status</u>	<i>CEC issued on 3/17/09 (Case No. 138, Decision No. 70850, TS5-TS9 500/230kV Project). On May 19, 2015, in Decision 75092, the Commission approved APS's application to extend the term of the CEC to 2021 for the 500kV circuit and approved four corridor modifications.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

2021

<u>Project Name</u>	North Gila – Orchard 230kV Line Circuit #1
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	3000 A
(c) Point of Origin	North Gila Substation; Sec. 11, T8S, R22W
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Orchard 230kV Substation to be in-service by 2021; Sec. 20, T9S, R22W
(f) Length	Approximately 13 miles
<u>Routing</u>	Line will proceed south from the North Gila Substation until County 6 ½ Street, where it will head east for approximately 1 mile. It will follow the existing WAPA utility right-of-way south to County 9 ½ Street, where it will proceed east for approximately 0.3 mile before heading south on Avenue 10E. Then the route will proceed southwest adjacent to the Union Pacific RR and then adjacent to the A Canal until it turns south along the Yuma Area Service Highway alignment. The route proceeds west along the County 13 ½ Street alignment to Avenue 5 ½E, where it will turn south to the Orchard Substation.
<u>Purpose</u>	Driving Factor(s): To increase ability to import resources into the Yuma load pocket. The project will also be used to improve reliability, serve the need for electric energy, and provide continuity of service for the greater Yuma area by adding a transmission source in a new area of the Yuma system. This project will have double-circuit capability with one circuit in-service in 2021 and the second circuit in-service TBD.
<u>Date</u>	
(a) Construction Start	2019
(b) Estimated In-Service	2021
<u>Permitting / Siting Status</u>	<i>CEC issued 2/2/12 (Case No. 163, Decision No. 72801). Note – North Gila to TS8 230kV Transmission Line is now referred to as North Gila – Orchard 230kV Line.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Scatter Wash 230/69kV Substation
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	188 MVA
(c) Point of Origin	Pinnacle Peak-Raceway 230kV line; Sec. 8, T4N, R3E
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Scatter Wash Substation; Sec. 8, T4N, R3E
(f) Length	Less than 1 mile
<u>Routing</u>	The Scatter Wash Substation will be located adjacent to the Pinnacle Peak-Raceway 230kV line.
<u>Purpose</u>	Driving Factor(s): To provide electric energy in the northern portions of the Phoenix Metropolitan area as well as increase the reliability for these areas. The in-service date for this substation will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>CEC issued on 6/18/03 (Case No. 120, Decision No. 65997, North Valley Project. The Scatter Wash Substation was referred to as TS6 in Case 120). On April 10, 2013, Decision No. 73824, the Commission approved APS's application to extend the term by 10 years to June 18, 2023 and to relocate the Scatter Wash Substation to the north side of the approved corridor.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Bagdad 115/69kV Back-up
<u>Project Sponsor</u>	Arizona Electric Power Cooperative (AEPCO)
<u>Other Participants</u>	Arizona Public Service Company
<u>Size</u>	
(a) Voltage Class	115kV AC
(b) Facility Rating	To be determined
(c) Point of Origin	Willow Lake – Bagdad 115kV line; Sec. 06, T14.0N, R09.0W
(d) Intermediate Points of Interconnection	
(e) Point of Termination	AEPCO Bagdad 69kV Switchyard; Sec. 01, T14.0N, R10.0W
(f) Length	Approximately 1 mile
<u>Routing</u>	The line will be tapped off the existing Willow Lake - Bagdad 115kV line near the Bagdad substation. The line will run approximately 1 mile generally in a southwest direction and be terminated in the AEPCO yard that contains a single 69kV breaker.
<u>Purpose</u>	Driving Factor(s): The purpose of this project is to provide a back-up source for both APS and Mohave Electric Cooperative (MEC) by creating a normally open tie between APS and AEPCO. A 115/69kV transformer will be added in the AEPCO yard (to be provided by AEPCO). This provides backup power for the town of Bagdad should the Willow Lake - Bagdad 115kV line be loss. In addition, this provides backup power for AEPCO & Mohave Electric Cooperative's loads west of Bagdad should the Parker source be lost.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>An application for a CEC has not yet been filed. AEPCO expects to start permitting activities in 2017.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Morgan – Sun Valley 230kV Line
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	To be determined
(c) Point of Origin	Sun Valley Substation; Sec. 29, T4N, R4W
(d) Intermediate Points of Interconnection	To be determined
(e) Point of Termination	Morgan Substation; Sec. 33, T6N, R1E
(f) Length	Approximately 38 miles
<u>Routing</u>	This line will be built as a second circuit with the Morgan-Sun Valley 500kV line, which generally heads north-northeast out of the Sun Valley Substation and then east to the Morgan Substation.
<u>Purpose</u>	Driving Factor(s): To provide a transmission source to serve future load that emerges in the currently undeveloped areas south and west of Lake Pleasant. The in-service date will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>CEC issued on 3/17/09 (Case No. 138, Decision No. 70850, TS5-TS9 500/230kV Project). On May 19, 2015, in Decision 75092, the Commission approved APS's application to extend the term of the CEC to 2030 for the 230kV circuit and approved corridor modifications in four areas.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Sun Valley – Trilby Wash 230kV Line Circuit #2
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	3000 A
(c) Point of Origin	Sun Valley Substation; Sec. 29, T4N, R4W
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Trilby Wash Substation; Sec. 20, T4N, R2W
(f) Length	Approximately 15 miles
<u>Routing</u>	East from the Sun Valley Substation along the CAP canal to approximately 243rd Ave., south to the existing 500kV transmission line corridor, and then east along the corridor to the Trilby Wash Substation.
<u>Purpose</u>	Driving Factor(s): To serve the need for electric energy in the western Phoenix Metropolitan area. The first circuit went in-service in 2016. The in-service date for the second circuit will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>CEC issued 5/5/05 (Case No. 127, Decision No. 67828, West Valley North 230kV Transmission Line project). On April 23, 2015, in Decision No. 75045, the Commission approved APS's application to extend the term of the CEC to May 5, 2020 for the first circuit and to May 5, 2030 for the second circuit.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Palm Valley – TS2 – Trilby Wash 230kV Circuit #2
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	3000 A
(c) Point of Origin	Palm Valley Substation; Sec. 24, T2N, R2W
(d) Intermediate Points of Interconnection	TS2 Substation to be in-service by TBD; Sec. 25, T3N, R2W
(e) Point of Termination	Trilby Wash Substation; Sec. 20, T4N, R2W
(f) Length	Approximately 12 miles
<u>Routing</u>	North from the Palm Valley Substation, generally following the Loop 303 to Cactus Road, west on Cactus Road to approximately 191st Avenue, and then north on 191st Avenue to the Trilby Wash Substation.
<u>Purpose</u>	Driving Factor(s): To serve the need for electric energy in the western Phoenix Metropolitan area. The first circuit went in-service in 2015. The in-service date for the TS2 Substation and the second circuit will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>The Palm Valley-TS2 segment of the 230kV line was approved in the West Valley South 230kV Transmission Line project and a CEC was issued 12/22/03 (Case No. 122, Decision No. 66646). On 6/27/2013 (Decision No. 73937), the Commission approved APS's application to extend CEC term to 12/23/2018 for the first circuit of the Project and to 12/23/2028 for the second circuit and other facilities. The Trilby Wash-TS2 segment of the 230kV line was approved in the West Valley North 230kV Transmission Line project and a CEC was issued 5/5/2005 (Case No. 127, Decision No. 67828). On April 23, 2015, (Decision No. 75045) the Commission approved APS's application to extend CEC term to May 5, 2020 for the first circuit and to May 5, 2030 for the second circuit and other modifications to the CEC.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Avery 230/69kV Substation
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	188 MVA
(c) Point of Origin	Pinnacle Peak-Raceway 230kV line; Sec. 8, T4N, R3E
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Avery Substation; Sec. 15, T5N, R2E
(f) Length	Less than 1 mile
<u>Routing</u>	The Avery Substation will be constructed adjacent to the Pinnacle Peak-Raceway 230kV line at approximately the Dove Valley Rd. and 39 th Ave. alignments.
<u>Purpose</u>	Driving Factor(s): To provide electric energy in the northern portions of the Phoenix Metropolitan area as well as increase the reliability for these areas. The in-service date for this substation will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>CEC issued on 6/18/03 (Case No. 120, Decision No. 65997, North Valley Project). On April 10, 2013, Decision No. 73824, the Commission approved APS's application to extend the term to June 18, 2023 and make other minor modifications unrelated to this substation.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Pinal Central – Sundance 230kV Line
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	ED-2
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	3000 A
(c) Point of Origin	Sundance Substation; Sec. 2, T6S, R7E
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Pinal Central Substation; Sec. 30, T6S, R8E
(f) Length	Approximately 6 miles
<u>Routing</u>	The project will originate at a new substation on the Sundance property, proceeding west and then south along Curry Road to the half-section between State Route 287 and Earley Road. The final west to east alignment connecting into the Pinal Central Substation will be located within an ACC-approved corridor and is subject to further design and right-of-way acquisition analysis.
<u>Purpose</u>	Driving Factor(s): To serve increasing loads in Pinal County and throughout the APS system, and to improve reliability and continuity of service for the communities in the area. To increase the reliability of Sundance by providing a transmission line in a separate corridor than the existing lines that exit the plant. The project will be constructed as a 230kV double-circuit capable line, but initially operated as a single-circuit. The in-service date for this substation will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>CEC issued 4/29/08 (Case No. 136, Decision No. 70325, Sundance to Pinal South 230kV Transmission Line project). Note – the Pinal South Substation is now referred to as Pinal Central. The Sundance – Faul 230 kV Line (construction was limited to inside the Sundance Property) was placed in-service in May 2010 as a portion of this project.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Komatke 230/69kV Substation
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	188 MVA
(c) Point of Origin	Liberty (TS4)-Panda 230kV line; Sec. 25, T2S, R4W
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Komatke 230/69kV Substation with an in-service TBD; Sec. 25, T2S, R4W
(f) Length	Less than 1 mile
<u>Routing</u>	The Komatke 230/69kV Substation will be constructed adjacent to the Liberty (TS4)-Panda 230kV line.
<u>Purpose</u>	Driving Factor(s): To provide electric energy as well as increase the reliability for these areas. The in-service date for this substation will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>CEC issued 10/16/00 (Case No. 102, Decision No. 62960) for the Gila River Transmission Project, including the interconnection of the 230kV substation. Note – Jojoba 230/69kV Substation is now referred to as Komatke 230/69kV Substation.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Orchard – Yucca 230kV Line
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	To be determined
(c) Point of Origin	Yucca Substation; Sec. 36, T7S, R24W
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Orchard 230kV Substation to be in-service by 2021; Sec. 20, T9S, R22W
(f) Length	Approximately 19 miles
<u>Routing</u>	The line will proceed west from the Orchard Substation along County 14 th Street to the A Canal. Then the route will proceed southwest along the A Canal to Avenue 4E, where it will continue west along County 14 ½ Street to US 95. The line will proceed north along US 95 to the County 13 ½ Street alignment and proceed west along County 13 ½ and County 13 th Street. At Avenue F the line will proceed north to Levee Road, where it will proceed northeast until the 8 th Street alignment. The line will proceed east along 8 th Street until Calle Agua Salada Road, where it will proceed north to the Yucca Power Plant.
<u>Purpose</u>	Driving Factor(s): Double-circuit 230kV project to serve the need for electric energy, improve reliability, and continuity of service for the greater Yuma area. This project will provide a second electrical source to the future Orchard Substation. The ability to transmit electric energy generated by renewable resources in the region may be an additional benefit subject to study by APS in regional planning forums. The in-service date for this line will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>CEC issued 2/2/12 (Case No. 163, Decision No. 72801, North Gila to TS8 to Yucca 230kV Transmission Line Project). Note – TS8 to Yucca 230kV Line is now referred to as Orchard – Yucca 230kV Line.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Sun Valley – TS10 –TS11 230kV Line
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	To be determined
(c) Point of Origin	Sun Valley Substation; Sec. 29, T4N, R4W
(d) Intermediate Points of Interconnection	A future TS10 substation; location to be determined
(e) Point of Termination	A future TS11 substation; location to be determined
(f) Length	To be determined
<u>Routing</u>	The routing for this line has not yet been determined.
<u>Purpose</u>	Driving Factor(s): To provide a transmission source to serve future load that emerges in the currently undeveloped areas northwest of the White Tank Mountains. This line is anticipated to be a 230kV line originating from the Sun Valley Substation, with the future TS10 230/69kV Substation to be interconnected into the 230kV line. The in-service date for this line will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>An application for a CEC has not yet been filed.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Buckeye – TS11 – Sun Valley 230kV Line
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	To be determined
(c) Point of Origin	Sun Valley Substation; Sec. 29, T4N, R4W
(d) Intermediate Points of Interconnection	A future TS11 Substation; location to be determined
(e) Point of Termination	Buckeye Substation; Sec. 7, T1N, R3W
(f) Length	To be determined
<u>Routing</u>	The routing for this line has not yet been determined.
<u>Purpose</u>	<p>Driving Factor(s): To serve the need for electric energy in the largely undeveloped areas west of the White Tank Mountains. This project will provide the first portion of the transmission infrastructure in this largely undeveloped area and will provide a transmission connection between the northern and southern transmission sources that will serve the area. Improved reliability will result for this portion of Maricopa County. The in-service date for this line will be continuously evaluated in planning studies to keep pace with system needs.</p> <p>It is anticipated that this project will be constructed with double-circuit capability, but initially operated as a single-circuit. The in-service date and location of the TS11 230/69kV Substation will be determined in future planning studies based upon the development of the area.</p>
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>An application for a CEC has not yet been filed.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	El Sol – Westwing 230kV Line
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	None
<u>Size</u>	
(a) Voltage Class	230kV AC
(b) Facility Rating	To be determined
(c) Point of Origin	Westwing Substation; Sec. 12, T4N, R1W
(d) Intermediate Points of Interconnection	
(e) Point of Termination	El Sol Substation; Sec. 30, T3N, R1E
(f) Length	Approximately 11 miles
<u>Routing</u>	Generally following the existing Westwing-Surprise-El Sol 230kV corridor.
<u>Purpose</u>	Driving Factor(s): To increase system capacity to serve the Phoenix Metropolitan area, while maintaining system reliability and integrity for delivery of bulk power from Westwing south into the APS Phoenix Metropolitan area 230kV transmission system. The in-service date for this line will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	<i>CEC issued 7/26/73 (Case No. 9, Docket No. U-1345). Note that this CEC authorizes two double-circuit lines. Construction of the first double-circuit line was completed in March 1975. Construction of the second line, planned to be built with double-circuit capability, but initially operated with a single-circuit, is described above.</i>

**Arizona Public Service Company
2017 – 2026
Ten-Year Plan
Planned Transmission Description**

To Be Determined

<u>Project Name</u>	Palo Verde – Saguaro 500kV Line
<u>Project Sponsor</u>	Arizona Public Service Company
<u>Other Participants</u>	To be determined
<u>Size</u>	
(a) Voltage Class	500kV AC
(b) Facility Rating	To be determined
(c) Point of Origin	Palo Verde switchyard; Sec. 34, T1N, R6W
(d) Intermediate Points of Interconnection	
(e) Point of Termination	Saguaro Substation; Sec. 14, T10S, R10E
(f) Length	Approximately 130 miles
<u>Routing</u>	Generally south and east from the Palo Verde area to a point near Gillespie Dam, then generally easterly until the point at which the Palo Verde-Kyrene 500kV line diverges to the north and east. The corridor then continues generally south and east again, adjacent to a gas line corridor, until converging with the Tucson Electric Power Company's Westwing-Pinal West-South 345kV line. The corridor follows the 345kV line until a point due west of the Saguaro Generating Station. The corridor then follows a lower voltage line into the 500kV yard just south and east of the Saguaro Generating Station.
<u>Purpose</u>	Driving Factor(s): To increase the adequacy of the existing EHV transmission system and increase power delivery throughout the state. The in-service date for this line will be continuously evaluated in planning studies to keep pace with system needs.
<u>Date</u>	
(a) Construction Start	To be determined
(b) Estimated In-Service	To be determined
<u>Permitting / Siting Status</u>	CEC issued 1/23/76 (Case No. 24, Decision No. 46802).

Attachment B

Renewable Transmission Action Plan

**Arizona Public Service Company
Renewable Transmission Action Plan
January 2017**

In the Fifth Biennial Transmission Assessment ("BTA") Decision, (Decision No. 70635, December 11, 2008), the Arizona Corporation Commission ("ACC" or "Commission") ordered Arizona Public Service Company ("APS" or "Company") to file a document identifying their top potential Renewable Transmission Projects ("RTPs") that would support the growth of renewable resources in Arizona. As such, on January 29, 2010, APS filed with the Commission its top potential RTPs, which were identified in collaboration with the Southwest Area Transmission planning group ("SWAT") and its subgroups, other utilities and stakeholders. In its filing, APS included a Renewable Transmission Action Plan ("RTAP"), which included the method used to identify RTPs, project approval and financing of the RTPs.

On January 6, 2011, the Commission approved APS's RTAP (Decision No. 72057, January 6, 2011¹), which allows APS to pursue the development steps indicated in the APS RTAP. The Decision, in part, ordered:

IT IS FURTHER ORDERED that the timing of the next Renewable Transmission Action Plan filing shall be in parallel with the 2012 Biennial Transmission Assessment process.

IT IS FURTHER ORDERED that Arizona Public Service Company shall, in any future Renewable Transmission Action Plans filed with the Commission, identify Renewable Transmission Projects, which include the acquisition of transmission capacity, such as, but not limited to, (i) new transmission line(s), (ii) upgrade(s) of existing line(s), or (iii) the development of transmission project(s) previously identified by the utility (whether conceptual, planned, committed and/or existing), all of which provide either:

1. *Additional direct transmission infrastructure providing access to areas within the state of Arizona that have renewable energy resources, as defined by the Commission's Renewable Energy Standard Rules (A.A.C. R14-2-1801, et seq.), or are likely to have renewable energy resources; or*
2. *Additional transmission facilities that enable renewable resources to be delivered to load centers.*

Renewable expansion in the APS service territory (solar) has been trending toward the development of smaller scale renewable projects. APS has received many interconnection requests for these smaller solar projects, which interconnect directly into the local distribution system (69kV or below) rather than APS's high voltage transmission system. The number of interconnection requests has continued to be much lower the last couple of years as compared to the large volume of activity seen at the start of the decade. The current activity also seems to be cyclical and coincide with the release of RFPs from APS or California utilities.

The APS 2017-2026 Ten-Year Transmission System Plan does not show a need for additional RTPs beyond what the Commission previously approved in Decision No. 72057. As a result, in this RTAP, APS is not proposing new RTPs. APS will explore new renewable transmission opportunities when appropriate.

¹ *Commission Decision No. 72057 found that APS's 2010 RTAP process and Plan is appropriate and consistent with the Commissions' Fifth Biennial Transmission Assessment final order.*

**Arizona Public Service Company
Renewable Transmission Action Plan
January 2017**

Two of the three RTPs that APS filed in its original RTAP have been completed. One of the filed RTPs, Hassayampa-North Gila 500kV line #2, was completed and placed into service in May, 2015. A second filed RTP, Palo Verde-Delaney 500kV line, has been completed and was placed into service in May, 2016.

The remaining RTP that APS filed in its original RTAP continues to be viable and will be developed as reliability and resource needs arise. The following section describes the remaining RTP (approved by the Commission in Decision No. 72057) and the current status.

1. Proposed development plan for a Palo Verde to Liberty and Gila Bend to Liberty projects

Description: The Palo Verde to Liberty and Gila Bend to Liberty are conceptual 500kV transmission line projects from the Palo Verde hub and from the Gila Bend/Gila River area to a new substation near the existing Liberty substation located in the west valley.

Current Status: The APS 2017 Ten-Year Plan Study does not currently show a need for these projects and, as a result, no further progress on the development plan has been made. This is primarily due to the previous downturn in the economy, a slowdown of large-scale renewable energy development in the area, and the completion of the projects described above. APS will revisit these projects when appropriate.

Attachment C

Technical Study on the Effects of Distributed
Generation/Energy Efficiency on Fifth Year Transmission Plan



Technical Study
Effects of Distributed Generation and
Energy Efficiency on
Future Transmission Needs

ARIZONA PUBLIC SERVICE COMPANY

January, 2017

Executive Summary

In Decision No. 74785 (October 24, 2014), the Eighth Biennial Transmission Assessment (Eighth BTA), the Commission ordered Arizona utilities with retail load to study the effects of Distributed Generation (DG) and Energy Efficiency (EE) on their future planned transmission systems in their fifth planning year – 2021 Heavy Summer model (“the Study”).

Arizona Public Service Company (APS) utilized the APS 2021 Ten-Year Plan base case, which was coordinated through the Southwest Area Transmission (SWAT) sub-regional planning group.

- The first case is the base case or typical system peak planning load which includes the effects of DG and EE in the load.
- The second case is the base case with the projected increases in DG and EE over the next 5 years backed out of the load forecast. The projected increases of DG and EE from 2017 to 2021 are 585 MW; 65 MW for DG and 520 MW for EE.

The Study indicates that delayed or non-implemented DG and EE have no effect on APS’s Bulk Electric System (BES) as currently planned in 2021. This study only addresses APS’s BES and there may be some impacts at the subtransmission level due to variations in timing and quantity of implemented DG and EE.

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1. Introduction

In Decision No. 74785 (October 24, 2014), the Eighth Biennial Transmission Assessment (Eighth BTA), the Commission ordered Arizona utilities with retail load to study the effects of Distributed Generation (DG) and Energy Efficiency (EE) installations and/or programs on their future planned transmission systems. The Decision states:

The technical study should be performed on the fifth year transmission plan by disaggregating the utilities' load forecasts from effects of DG and EE and performing contingency analysis with and without the disaggregate DG and EE. The technical study should at a minimum discuss DG and EE forecasting methodologies and transmission loading impacts. The study should monitor transmission down to and including the 115kV level. ...Alternative methodologies or study approaches will be acceptable on condition that the study results satisfy the minimum requirements [above].¹

2. Study Requirements and Assumptions

2.1. Study Requirements

To fulfill this requirement in the Eighth BTA, the Study looks at two load scenarios, outlined in Table 1 below. The first case includes the forecasted load including the effects of DG and EE, per the typical planning process. The second case includes the forecasted load excluding the effects of projected increases in DG and EE between 2017 and 2021. This scenario is equivalent to “disaggregating the utilities load forecasts from effects of DG and EE.”²

Table 1 - Summary of Cases

Case	Scenario	Load	EE	DG	Utility Solar
1	Base	Peak	On	On	On
2	EE/DG	Peak	Pre 2017 only	Pre 2017 only	On

The Study monitored the loading impacts to the transmission system and performed reliability analysis similar to how APS analyzes it in the ten year planning process. For the two cases, Bulk Electric System (BES) facilities (>100kV) are examined to ensure there are no thermal criteria

¹ Decision No. 74785 at 9:22-27 and 10:1-2.

² *Id.* at 9:22-24.

violations with all lines in-service and for all single contingencies. Voltage limits and voltage deviation criteria are also monitored.

2.2. Base Case Assumptions

This study utilized the 2021 power flow case used in APS's 2017-2026 Ten-Year Plan. The 2021 heavy summer case was a "seed case" coordinated through the Southwest Area Transmission Arizona (SWAT-AZ) subcommittee. The case was reviewed and updated by all the Arizona utilities and the Imperial Irrigation District (IID). The APS load in the 2021 planning case was increased to reflect the values of DG and EE, as described below.

- For APS, 77% of the MW contributions of DG were estimated to be from metro Phoenix load areas, while 23% of the MW contributions of DG were estimated to be from areas outside the metro area. Similarly, 75% of the MW contributions of EE were estimated to be from metro Phoenix load areas, while 25% of the MW contributions of EE were estimated to be from areas outside the metro area. Identified large industrial loads were not scaled during the process of creating the scenario cases.
- Available generation within Arizona was increased to account for the increased load.

3. Distributed Generation and Energy Efficiency Forecasting Methodology Description

While DG and EE have impacts on APS's system load, EE was the primary contributor to impacts found in this study. Estimates were developed to determine what each program's role was at the time of the system peak in 2021. The combined total DG and EE impacts in 2021 are estimated to be 585 MW. This total is comprised of 89% EE and 11% DG. The details of the EE and DG estimates can be seen below.

3.1. Energy Efficiency Impact

To forecast the EE program impact (net of demand response curtailment) on system peak in 2021, several steps were taken. First, efficiency measures in 2017 – 2021 were forecasted by assuming continued compliance with the EE Rules and Commission Orders, consistent with A.A.C. R14-2-2405, and outlined in APS's 2016 Demand Side Management Implementation Plan³. Then, when the EE amounts were determined, as defined above, they were assessed to establish the programs overall impact coincident to APS's system peak:

³ Details on the program used in the determination of the EE impact are defined in APS's 2016 Demand Side Management Implementation Plan in Docket E-01345A-15-0182.

- (a) Existing EE impact at peak hour (defined as EE installed on or before 2016):
~700MW
- (b) Projected increases in EE at peak hour 2017 – 2021.

Table 2: Energy Efficiency Forecast 2017-2021⁴

	2017	2018	2019	2020	2021
EE installed 2017+ impact to peak	113 MW	229 MW	345 MW	461 MW	520 MW

Note: Values are cumulative

3.2. Distributed Generation Impact

The DG impact to load from installed DG systems in 2017 – 2021 was estimated using the average monthly volume of installations onto APS’s system in 2016. That rate was then applied to each month of the forecast period until 2021 to forecast the total amount of DG installed on the network. From this, the impacts to the 2021 system coincident peaks from DG can be determined.

To determine the base system peak loading in the fifth year, 2021, following load values are determined:

- (a) Existing DG impact at peak hour (defined as DG installed on or before 2016):
~200MW
- (b) Forecasted incremental DG at peak hour 2017 – 2021.

Table 3: Distributed Generation Forecast 2017-2021

	2017	2018	2019	2020	2021
DG installed 2017+ impact to peak	16 MW	33 MW	44 MW	54 MW	65 MW

Note: Values are cumulative

⁴ Data in above items represent a smoothed EE 2021 compliance target. Changes to represent annual or incremental compliance would be minimal, but can fluctuate annual impacts by 10MW to 15MW.

4. Conclusion

The Study indicates that delayed or non-implemented DG and EE have no effect on APS's Bulk Electric System (BES) as currently planned in 2021. Studies performed with the load increased by 585 MW, indicated there were no new reliability planning criteria violations observed. Therefore, no project advancements or new projects would be required to reliably meet the increased load. This study only addresses APS's BES and there may be some impacts at the subtransmission level due to variations in timing and quantity of implemented DG and EE.