

APS/SRP Stakeholder Meeting For Transmission Planning

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FERC Order 890
SRP Attachment K
APS Attachment E

APS FACILITY
PHOENIX, ARIZONA
JUNE 20, 2013
9-11 AM,

Agenda

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- 1. Welcome, Introductions, and Stakeholder Meeting Overview**
- 2. Status of Action Items - 12/20/2012 Joint APS/SRP 4th Quarter Public Planning Meeting**
- 3. Purpose of Today's meeting – SRP Planning**
- 4. Purpose of Today's meeting – APS Planning**
- 5. Stakeholder Questions/Comments**
- 6. Action Items Review**

2. Status of Action Items

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- **A/I: Brian Keel (SRP) will investigate with regulatory and resource planning departments at SRP if it is possible to open Resource Planning process to the public.**

ANSWER: SRP conducted public workshops relative to our resource plan and sustainable portfolio in 2009 and 2011. Conducting these workshops was beneficial to SRP, and based on feedback was also beneficial to the majority of participants.

SRP will continue to identify meaningful ways to engage our customers and other stakeholders in resource planning discussions that support our objective to provide low-cost, reliable power over the long term. One of these ways may include additional workshops at times when fundamental strategic questions are being considered. We would also note that SRP filed an Integrated Resource Plan with WAPA in December 2012.

- **A/I: Jason Spitzkoff (APS) will take the question about transmission interconnections back to APS regulatory department and research the confidentiality requirements of Transmission Interconnections.**

ANSWER: At this time APS does not disclose any information regarding any Transmission Interconnection requests in order to protect the confidentiality of the requestor.

3. Purpose of Today's meeting

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- **Per SRP's OATT, SRP conducts the 2nd quarter public planning meeting to**
 - A) review its current transmission study plan
 - B) provide an opportunity for transmission customers to update their loads, resources and other data that were submitted by September 1, 2012
 - C) provide an opportunity for stakeholder input on any aspect of the study plan
 - D) review any stakeholder proposals previously submitted to SRP for study plan alternatives
 - E) invite submittal of additional stakeholder study plan proposals for review and discussion
 - F) provide updates on SRP's planned transmission projects

3A – SRP's Study Plan

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- **SRP has two distinct, but related, transmission study plans**
 - NERC Compliance
 - SRP's budgetary planning
- **The difference between the two plans:**
 - NERC Compliance: 3 seasons/scenarios, 2 discrete years (near and long term)
 - SRP's annual planning: 1 season, 10 consecutive years (first 6 years are for budget, remaining 4 for compliance purposes)
- **The similarities between the two plans:**
 - Similar load forecasts, demand response
 - They are reliability studies

3.A. 2013 NERC Compliance Study Methodology

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- **Coordinated Base Cases (Seed Cases)**
 - ✦ 2013 – AZ coordinated case used to build 2014-2017
 - ✦ 2018 – AZ coordinated case used to build 2019-2022
 - ✦ 2023 – AZ coordinated case used
 - ✦ The intermediate cases are APS/SRP coordinated
- SRP NERC Compliance cases
 - ✦ 2015 and 2019
- **69kV transmission models incorporated**
- **Most up-to-date forecasts for peak summer loads**

3.A. 2013 NERC Compliance Study Methodology

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NERC Compliance Studies Cases

- 2015 & 2019 Summer Peak & Off-peak Cases
- 2015 & 2019 Off-peak Cases are Low Load (winter conditions) and High Import (shoulder cases with low generation in the Phoenix Metro Area)
- Following analysis are conducted:
 - Thermal analysis
 - Post-Transient
 - Transient Stability

3.A. NERC Compliance Studies

NERC STANDARD		Type of Studies Completed		
TPL-001 (N-0)		Thermal	Transient Stability	Post-transient
2015	Peak	X		
2015	Low Load	X		
2015	High Import	X		
2019	Peak	X		
2019	Low Load	X		
2019	High Import	X		
2019	All-in	X		
TPL-002 (N-1)		Thermal	Transient Stability	Post-transient
2015	Peak	X	X	X
2015	Low Load	X	X	X
2015	High Import	X	X	X
2019	Peak	X	X	X
2019	Low Load	X	X	X
2019	High Import	X	X	X

3.A. NERC Compliance Studies

NERC STANDARD		Type of Studies Completed		
TPL-003 (N-2)		Thermal	Transient Stability	Post-transient
2015	Bus outages	X	X	X
2015	Contingency of towers	X	X	X
2015	Stuck breaker	X	X	X
2015	Common Corridor	X	X	X
2015	N-1-1	X	X	X
2019	Bus outages	X	X	X
2019	Contingency of towers	X	X	X
2019	Stuck breaker	X	X	X
2019	Common Corridor	X	X	X
2019	N-1-1	X	X	X
TPL-004 (N-X)		Thermal	Transient Stability	Post-transient
2015	Substations with generation	X	X	
2015	Common Corridor/Substation without generation	X	X	

Note: TPL-003 studies were performed on Peak, Low Load & High Import cases

3.A. NERC Compliance Results?

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- **2012 Results?**
 - SRP is fully compliant with NERC Transmission Planning Standards
- **2013 Progress?**
 - Case building under way

3.A. 2013-2022 Ten Year Plan Methodology

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- **Coordinated Base Cases**
 - See NERC Compliance Methodology slide #6
- **69kV transmission models incorporated**
- **Most up-to-date forecasts for peak summer loads**
- **TPL-001 & TPL-002 Studies Conducted for all ten years**

3.A. 2013-2022 Ten Year Plan Results

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- **2012 Results**

Potential Mesquite 500/230kV transformer overload in later years. Result of dispatch of natural gas and solar plants that exceeds rating of a single transformer in the event of an outage of the parallel transformer.

- **2013 Progress**

Cases in development, ten year plan studies are typically run in November – December timeframe.

3B – Customer Load/Resource Updates

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- **No customers provided load/resource data in September 2012**
- **Should you like to provide information for the future SRP planning cycles, please see critical dates on the next slide**

Planning Calendar for Ten-Year Planning Cycle

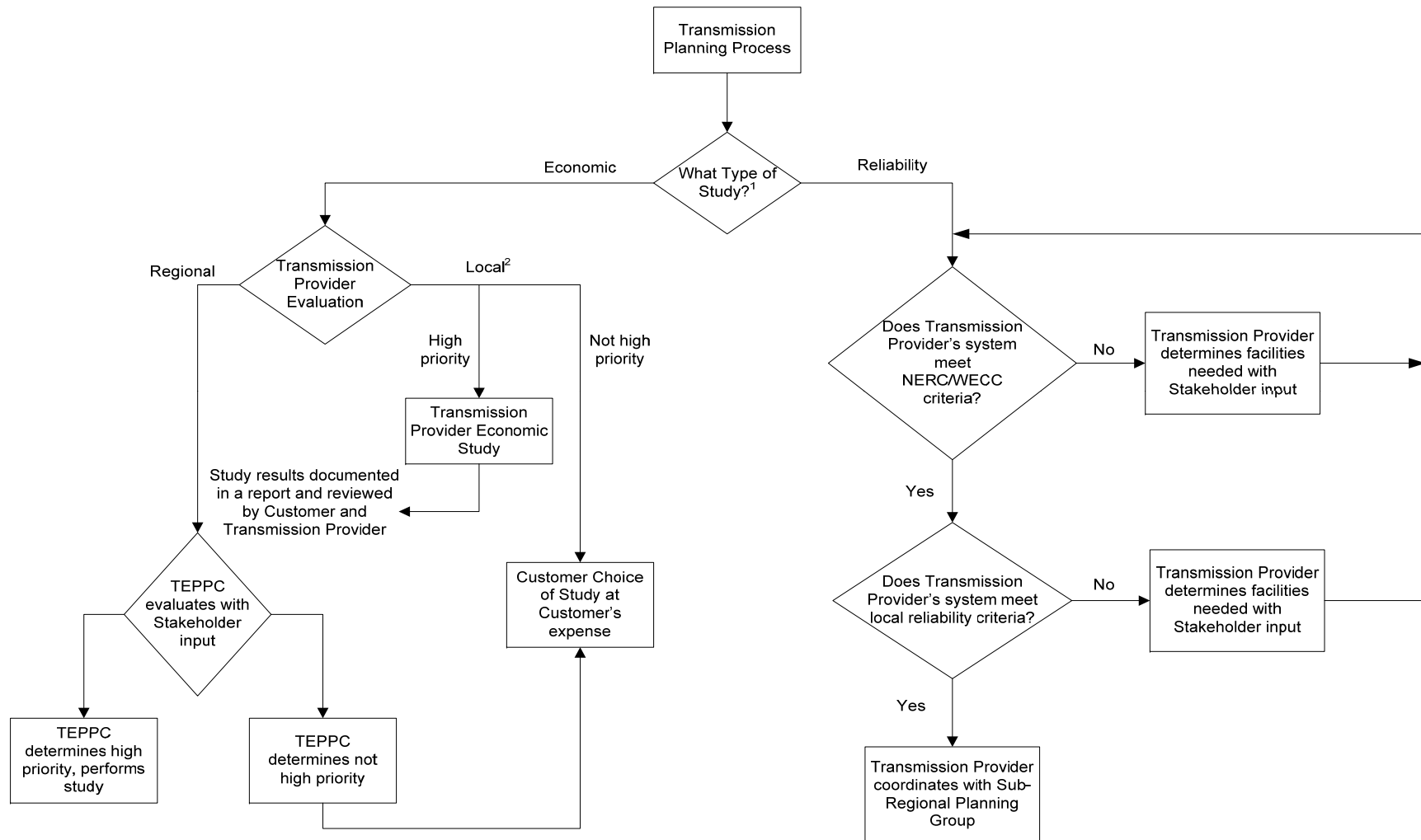
	<u>SRP Transmission Planning – 10 Yr Plan</u>	<u>Stakeholder Input</u>	<u>Other Coordination Activities Throughout the Year</u>
Jan.	10yr Plan – Filed with ACC by Jan. 31 st	10yr Plans filed by others	<ul style="list-style-type: none"> • APS/SRP Coordination Meeting • SRP/WAPA Coordination Meeting • WestConnect Meetings • SWAT Meetings <ul style="list-style-type: none"> o CATS o CRT o New Mexico o SATS o Short-circuit o Eldorado Valley o Transmission Corridor
Feb.			
Mar.	SRP Corporate Load Forecast		
Apr.		Arizona Utilities coordinated seed case development	
May	Develop 10yr base cases from AZ seed cases	2 nd Quarter Stakeholder Meeting – Stakeholder input on studies, request study alternatives, updates on current projects	
Jun.			
Jul.	10yr Plan study effort – Determination of projects, timings, and scope		
Aug.			
Sep.	SRP Corporate Load Forecast – Post Summer	Sep. 1 st – Network Transmission Customers and all other Transmission Customers Load & Resource Forecast	
Oct.		Oct. 31 st – Deadline to submit Economic Study Requests for 4 th Quarter Meeting review	
Nov.	10yr Plan – New load forecast sensitivity	4 th Quarter Stakeholder Meeting – Review draft of current 10yr plan, discuss Economic Study requests, receive stakeholder input	
Dec.			

3C. Feedback on the Plan?

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- **Feedback on the Plan**
 - NERC Reliability
 - Ten Year Plan
- **See next slide to see how SRP would evaluate plan submittals or alternatives.**

Exhibit 1 – SRP Attachment K



1. Generator Interconnection Request studies are performed pursuant to the Large Generator Interconnection Procedure contained in the Transmission Provider's Open Access Transmission Tariff (OATT). Transmission Service Requests are also performed pursuant to OATT procedures.

2. All requests for economic planning studies received by the Transmission Provider are forwarded to TEPPC for inclusion in the TEPPC Master List. TEPPC will evaluate only those requests that have regional impacts.

3D. Review Stakeholder proposals previously submitted

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- SRP received no stakeholder proposals in 2012 or prior to this meeting.

3E. Submittal of additional study plan proposals

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- If you have study ideas for SRP to consider, please send a detailed message to: **SRP.TransmissionPlanning@srpnet.com**
- Please include (at a minimum)
 - Your Name/Company/contact info (e-mail/phone #)
 - What the purpose of the study request is? And how will the results be used?
 - ✦ E.g. Determine how much load the system can accommodate without new generation/transmission? Results will be used to inform developers where there may be opportunities for additional commercial development without transmission/generation investment.
 - What year(s) and season(s) is of interest?
 - What type of study – reliability (power flow only?) economic?

3.F. SRP Ten Year Plan 2013-2022

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- **SRP's Filed Ten Year Plan as of January 31, 2013**

3F. SRP changes since 2012 Plan

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- **Completed Projects**
 - 3rd Kyrene 500/230kV transformer
- **New Projects**
 - None
- **Delayed Projects**
 - Eastern Mining Expansion was 2015, now 2016
 - Abel-Pfister-Ball was 2019-2021, now 2020-2021
- **Advanced Projects**
 - None
- **Name Changes**
 - East Valley Industrial Expansion is now known as Price Road Corridor

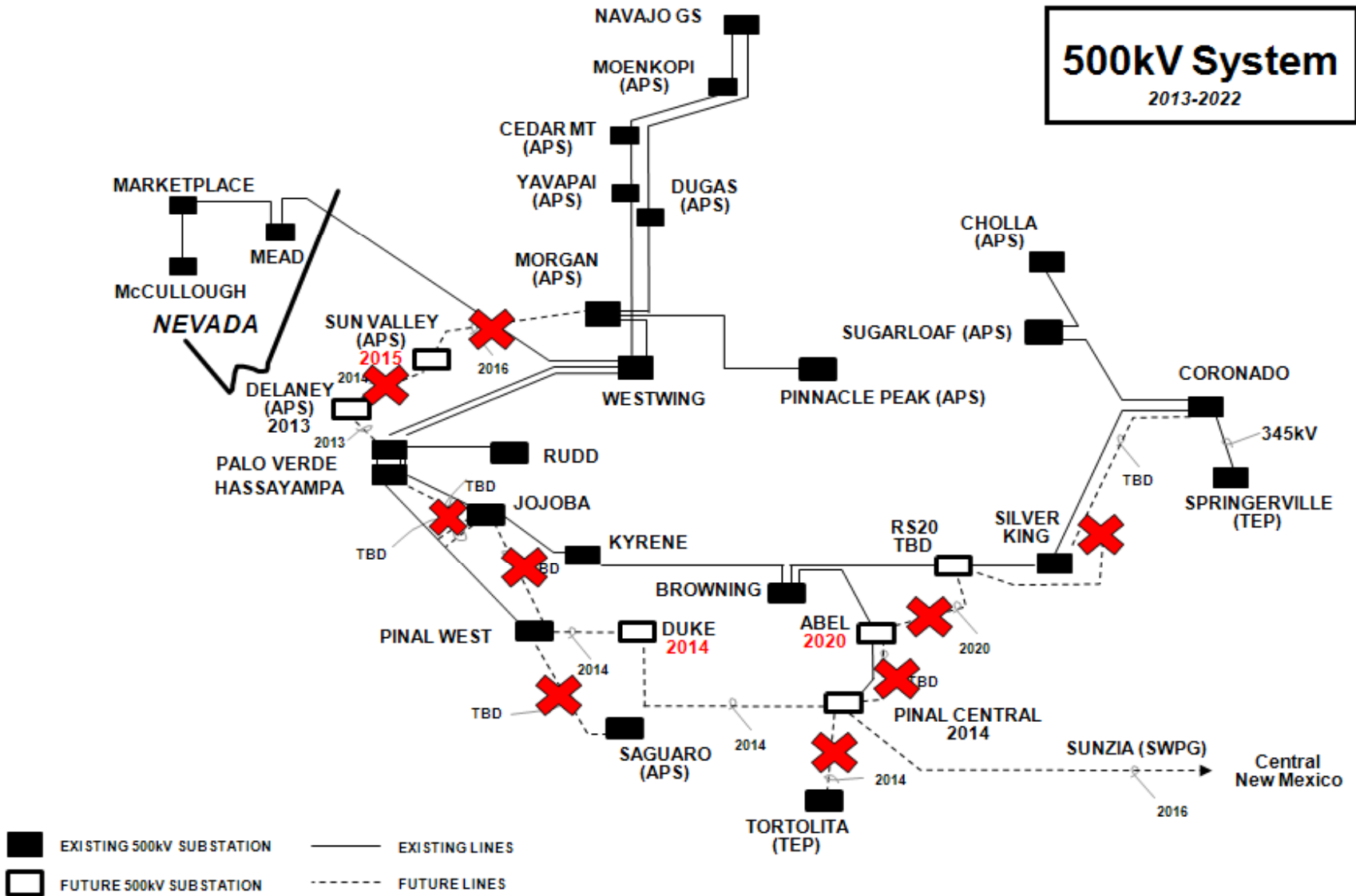
3F. SRP changes since 2012 Plan

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- **Removed projects (no longer participating)**
 - Palo Verde-Delaney-Sun Valley-Morgan
 - Pinal Central - Tortolita
- **Removed projects – administrative removal. Projects have been TBD in previous plans and have not advanced into ten year window**
 - Superior 230kV loop-in
 - Thunderstone Browning
 - Silver King – Knoll – New Hayden 230
 - New Hayden 115kV loop-in
 - RS25
 - RS26
 - Hassayampa-Pinal West #2
 - Pinal Central-Abel-RS20
 - Northeast Arizona – Phoenix 500kV
 - Palo Verde – Saguaro 500kV line
 - Ball (RS17) 230kV Loop-in
 - Silver King-Browning 500kV line
 - Pinnacle Peak-Brandow 230kV
 - Browning-Corbell 230kV

500kV System

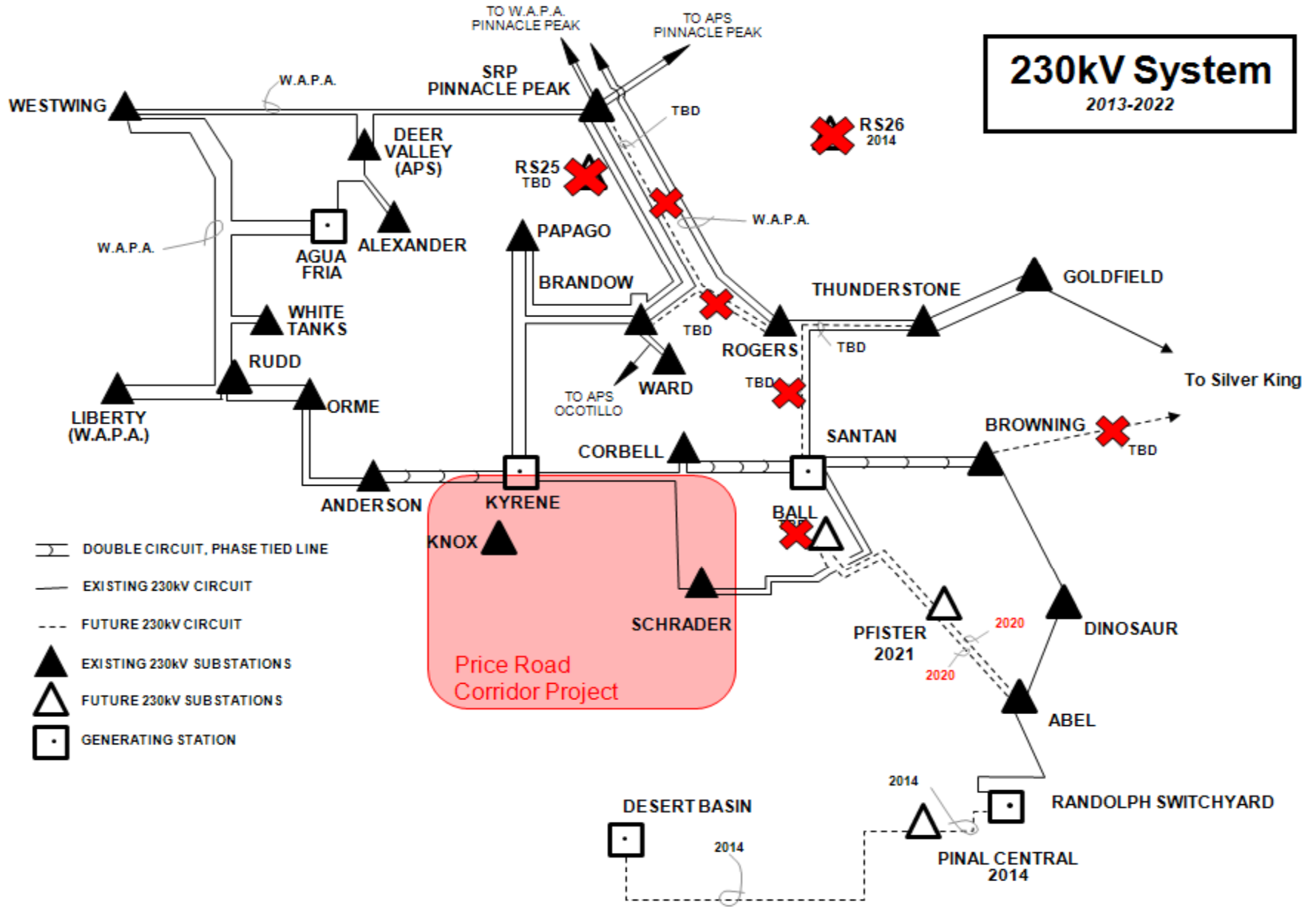
2013-2022



All Changes since January 2012 Ten Year Plan shown in red

230kV System

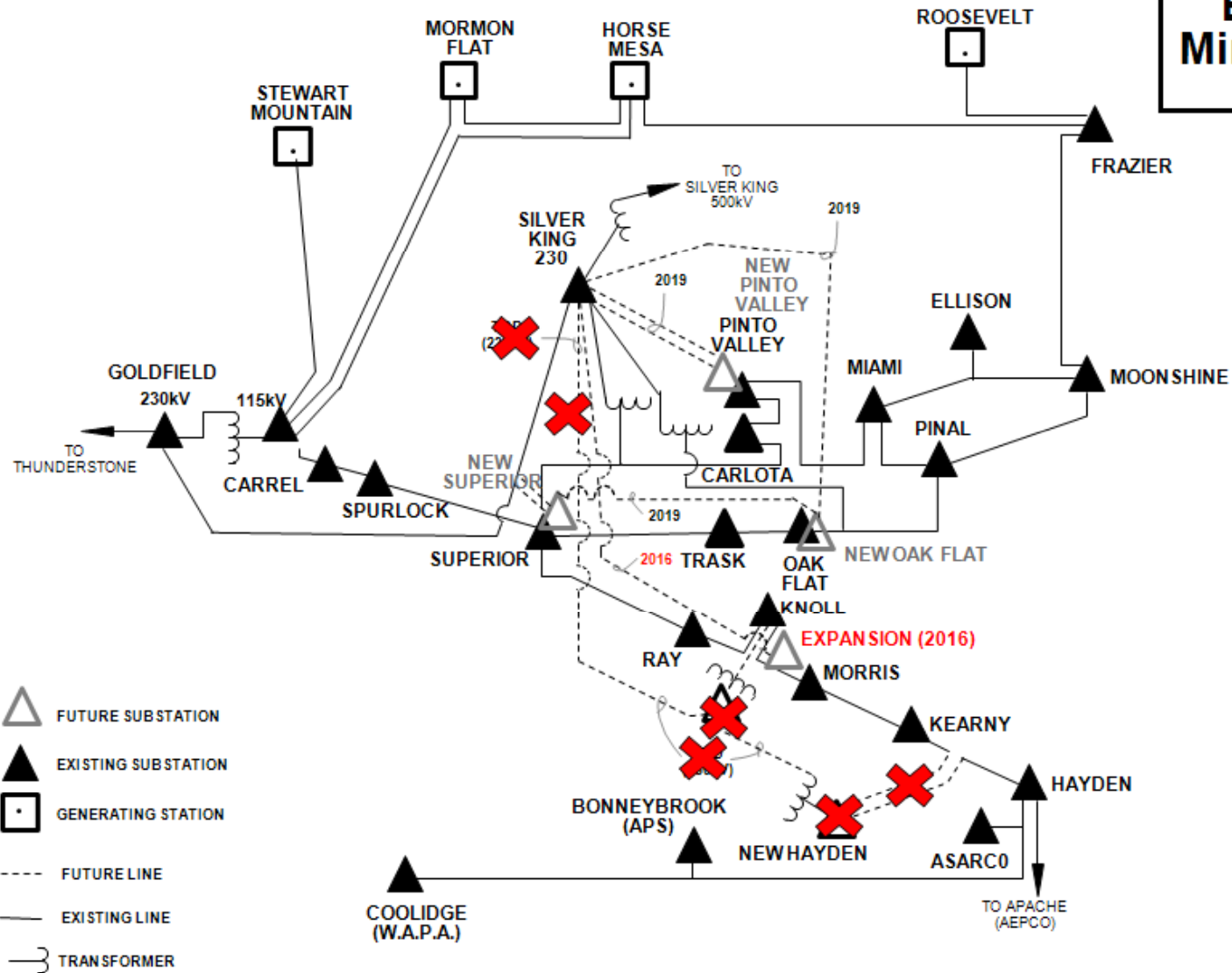
2013-2022



All Changes since January 2012 Ten Year Plan shown in red

Eastern Mining Area

2013-2022



All Changes since January 2012 Ten Year Plan shown in red

3G. SRP Planning - Study Requests

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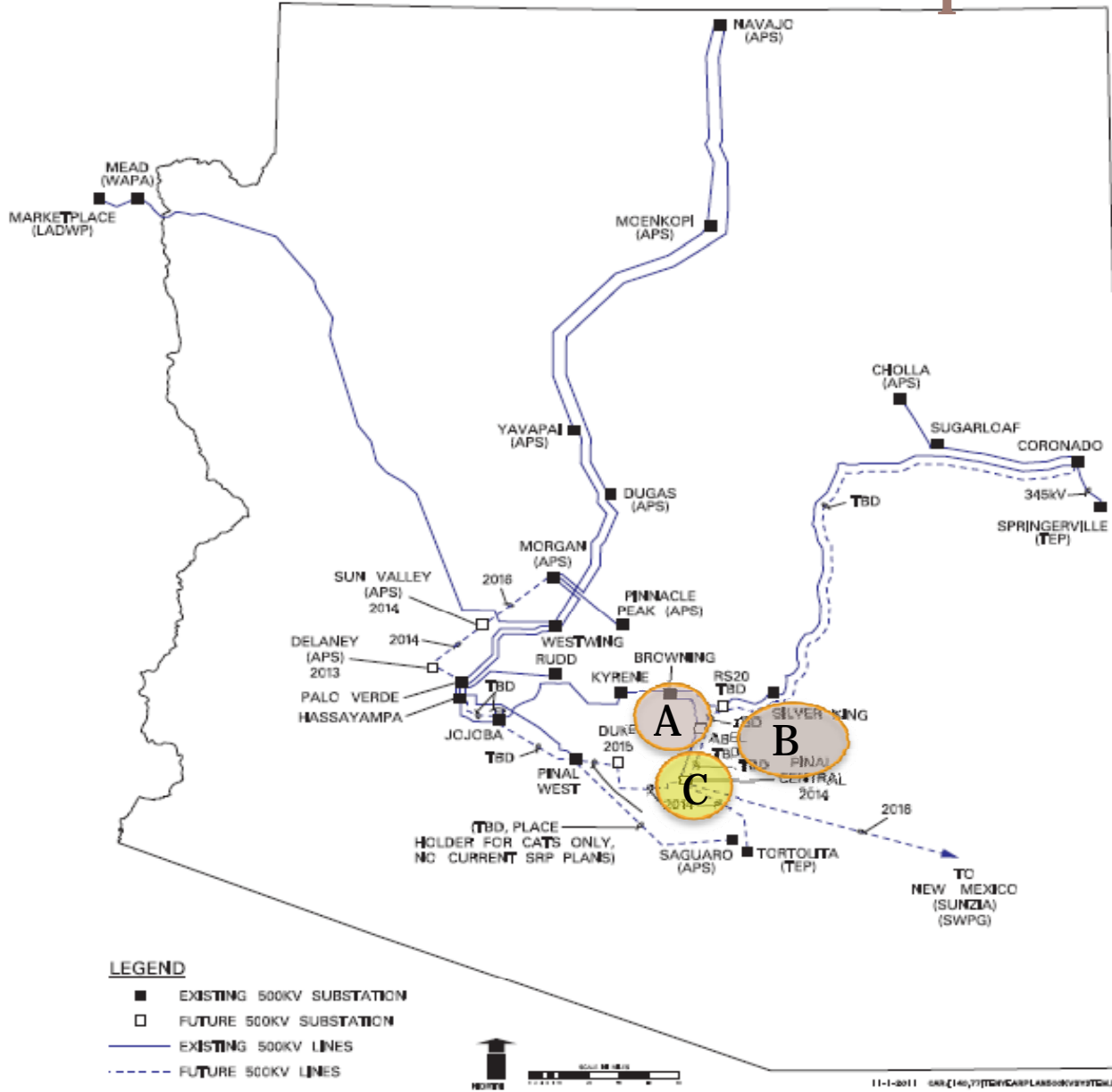
- **Generation Interconnection Requests**
- **Transmission Interconnection Requests**
- **Transmission Service Requests**
- **Economic Study Requests**

3G. SRP Planning –Interconnection Requests (Transmission)

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- **Currently there are no Transmission Interconnection Requests under study**

3G. Interconnection Requests (Generation)



A. EAST VALLEY

2 Natural Gas Projects
819MW

B. EMA 115kV AREA

1 Solar Project
45MW

C. PINAL CENTRAL

1 Natural Gas Project
540MW

Generation Interconnection Requests listed on this slide are for SRP solely owned transmission

3G. SRP - Transmission Service and Economic Study Requests

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- SRP completed one Transmission Service Request (TSR) study in 2012 and is currently waiting on the customer response.
- Currently there are no Economic Study Requests

3H. SRP Planning – Comments & Questions

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- Stakeholder comments/questions on 2012 Study Results or 2013 Study Requests
- Requests can be made at any time to:
 - SRP.TransmissionPlanning@srpnet.com

4. Purpose of Today's meeting

- Per APS's OATT, APS conducts the 2nd quarter public planning meeting to
 - A) review its current transmission study plan
 - B) provide an opportunity for transmission customers to update their loads, resources and other data that were submitted by September 1, 2012
 - C) provide an opportunity for stakeholder input on any aspect of the study plan
 - D) review any stakeholder proposals previously submitted to APS for study plan alternatives
 - E) invite submittal of additional stakeholder study plan proposals for review and discussion
 - F) provide updates on APS's planned transmission projects

4.A. APS's Study Plan

- APS has two distinct, but related, transmission study processes
 - NERC Compliance
 - APS's Annual Planning
- The difference between the two plans:
 - NERC Compliance: 2 seasons, 2 discrete years (near and long term); summer cases examine Category C & D
 - APS's annual planning: 1 season, 10 consecutive years; Category A & B
 - Annual plan is used as starting point for NERC Compliance
- The similarities between the two plans:
 - Similar load forecasts, demand response
 - They are reliability studies

4.A. 2013 NERC Compliance Study Methodology

NERC Compliance Studies Cases

- 2018 & 2023 Summer Peak Cases
- Off-peak Cases are Low Load and High Import (shoulder cases with low generation in the Phoenix Metro Area)
 - One case in the near-term and one case in the long-term
- Following analysis are conducted:
 - Thermal analysis
 - Post-Transient
 - Transient Stability

4.A. 2013 NERC Compliance Studies

Peak Load Assessment – Summer				
NERC STANDARD		STUDIES PERFORMED		
TPL -001(n-0)		Thermal	Transient Stability	Post Transient
2018	SIL	X		
2018	PEAK	X		
2018	MLSC	X		
2023	SIL	X		
2023	PEAK	X		
2023	MLSC	X		
TPL-002 (n-1)				
2018	SIL (Lines, xfmrs, gens)	X		X
2018	PEAK (Lines, xfmrs, gens)	X	X	X
2018	MLSC (Lines, xfmrs, gens)	X		X
2023	SIL (Lines, xfmrs, gens)	X		X
2023	PEAK (Lines, xfmrs, gens)	X	X	X
2023	MLSC (Lines, xfmrs, gens)	X		X
TPL-003 (n-2)				
2018	Stuck Breaker/Breaker Failure	X	X	X
2018	N-1-1	X	X	X
2018	Bus Section	X	X	X
2023	Stuck Breaker/Breaker Failure	X	X	X
2023	N-1-1	X	X	X
2023	Bus Section	X	X	X
TPL-004 (n-xx)				
2018	Major Substations With/Without Generation	X	X	X
2018	Stuck Breaker/Breaker Failure	X	X	X
2018	Common Corridor	X	X	X
2023	Major Substations With/Without Generation	X	X	X
2023	Stuck Breaker/Breaker Failure	X	X	X
2023	Common Corridor	X	X	X

4.A. 2013 NERC Compliance Studies

Low Load Assessment				
NERC STANDARD		STUDIES PERFORMED		
TPL -001(n-0)		Thermal	Transient Stability	Post Transient
Near-Term	TO BE DETERMINED	X		
Long-Term	TO BE DETERMINED	X		
TPL-002 (n-1)				
Near-Term	TRANSMISSION LINE	X	X	X
Near-Term	XFMR	X	X	X
Near-Term	GENERATION	X	X	X
Near-Term	REACTORS	X		X
Long-Term	TRANSMISSION LINE	X	X	X
Long-Term	XFMR	X	X	X
Long-Term	GENERATION	X	X	X
Long-Term	REACTORS	X		X
TPL-003 (n-2)				
Near-Term	Stuck Breaker	X	X	X
Near-Term	N-1-1	X	X	X
Long-Term	Stuck Breaker	X	X	X
Long-Term	N-1-1	X	X	X
TPL-004 (n-xx)				
Near-Term	Loss of All Generation Units at a Station	X	X	X
Near-Term	Common Corridor	X	X	X
Long-Term	Loss of All Generation Units at a Station	X	X	X
Long-Term	Common Corridor	X	X	X

4.A. NERC Compliance Results?

- 2012 Results?
 - APS is fully compliant with NERC Transmission Planning Standards
- 2013 Progress?
 - Case building under way
 - Low Load cases to be selected shortly

4.A. 2014-2023 Ten Year Plan Methodology

- Coordinated Base Cases
 - See SRP NERC Compliance Study Methodology slide #6
- 69kV transmission models incorporated
- Most up-to-date forecasts for peak summer loads
- TPL-001 & TPL-002 Studies Conducted for all ten years

4.A. 2014-2023 Ten Year Plan Status

- AZ Seed cases are complete (2013, 2018, 2023)
- Intermediate cases are in development
- Ten-Year plan studies will be performed in the fall
- Draft results typically available during 4th Quarter Stakeholder meeting
- Ten-Year Plan filed by the end of January

4.B. – Customer Load/Resource Updates

- APS has all load/resource data from Network Customers and incorporated into base cases
- Should you like to provide information for the future APS planning cycles, please see critical dates on the next slide

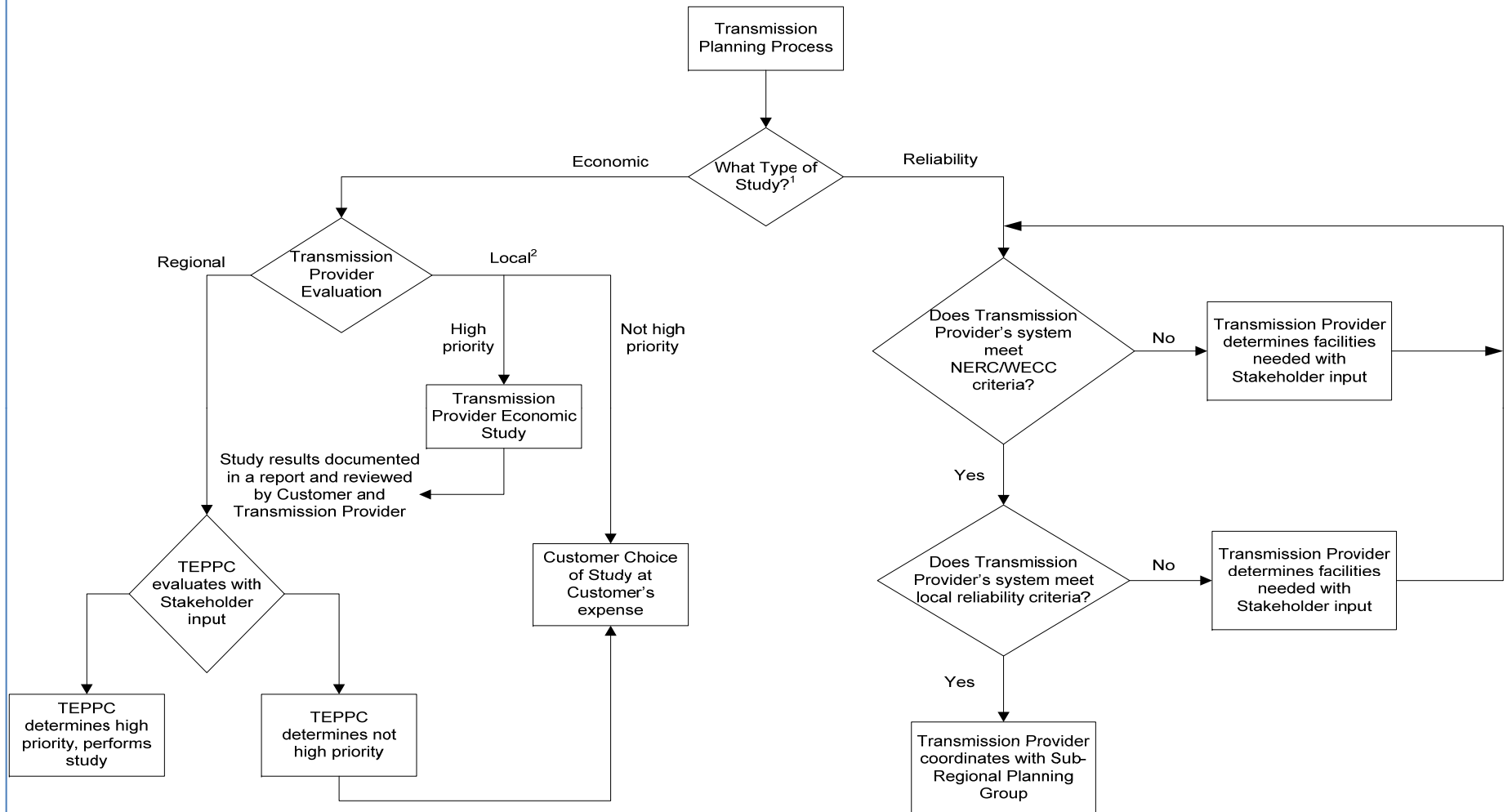
Planning Calendar for Ten-Year Planning Cycle

	<u>APS Transmission Planning – 10 Yr Plan</u>	<u>Stakeholder Input</u>	<u>Other Coordination Activities Throughout the Year</u>
Jan.	10yr Plan – Filed with ACC by Jan. 31	10yr. Plans filed by others	<ul style="list-style-type: none"> • APS/SRP Coordination Meeting • APS/WAPA Coordination Meeting • WestConnect Meetings • SWAT Meetings <ul style="list-style-type: none"> ○ AZTS ○ New Mexico ○ Eldorado Valley ○ Transmission Corridor ○ Short-circuit
Feb.			
Mar.	APS Corporate Load Forecast		
Apr.		Arizona Utilities coordinated seed case development	
May	Develop 10yr base cases from AZ seed cases	2 nd Quarter Stakeholder Meeting – Stakeholder input on studies, request study alternatives, updates on current projects	
Jun.			
Jul.	10yr Plan study effort – Determination of projects, timings, and scope		
Aug.			
Sep.	APS Corporate Load Forecast – Post Summer	Sep. 1 st – Network Transmission Customers and all other Transmission Customers Load & Resource Forecast	
Oct.		Oct. 31 st – Deadline to submit Economic Study Requests for 4 th Quarter Meeting review	
Nov.	10yr Plan – New load forecast sensitivity	4 th Quarter Stakeholder Meeting – Review draft of current 10yr plan, discuss Economic Study requests, receive stakeholder input	
Dec.			

4.C. Feedback on the Plan?

- Feedback on the Plan
 - NERC Reliability
 - Ten Year Plan
- See next slide to see how APS would evaluate plan submittals or alternatives.

Exhibit 1 – APS Attachment E



1. Generator Interconnection Request studies are performed pursuant to the Large Generator Interconnection Procedure contained in the Transmission Provider's Open Access Transmission Tariff (OATT). Transmission Service Requests are also performed pursuant to OATT procedures.

2. All requests for economic planning studies received by the Transmission Provider are forwarded to TEPPC for inclusion in the TEPPC Master List. TEPPC will evaluate only those requests that have regional impacts.

4.D. Review Stakeholder proposals previously submitted

- APS received no stakeholder proposals in 2012 or prior to this meeting.

4.E. Submittal of additional study plan proposals

- If you have study ideas for APS to consider, please send a detailed message to: apstransmission@aps.com
- Please include (at a minimum)
 - Your Name/Company/contact info (e-mail/phone #)
 - What the purpose of the study request is? And how will the results be used?
 - E.g. Determine how much load the system can accommodate without new generation/transmission? Results will be used to inform developers where there may be opportunities for additional commercial development without transmission/generation investment.
 - What year(s) and season(s) is of interest?
 - What type of study – reliability (power flow only?) economic?

4.F. APS Ten Year Plan Projects 2013-2022

Transmission Plan
Filed on Jan. 31, 2013

4.F. APS changes since 2012 Plan

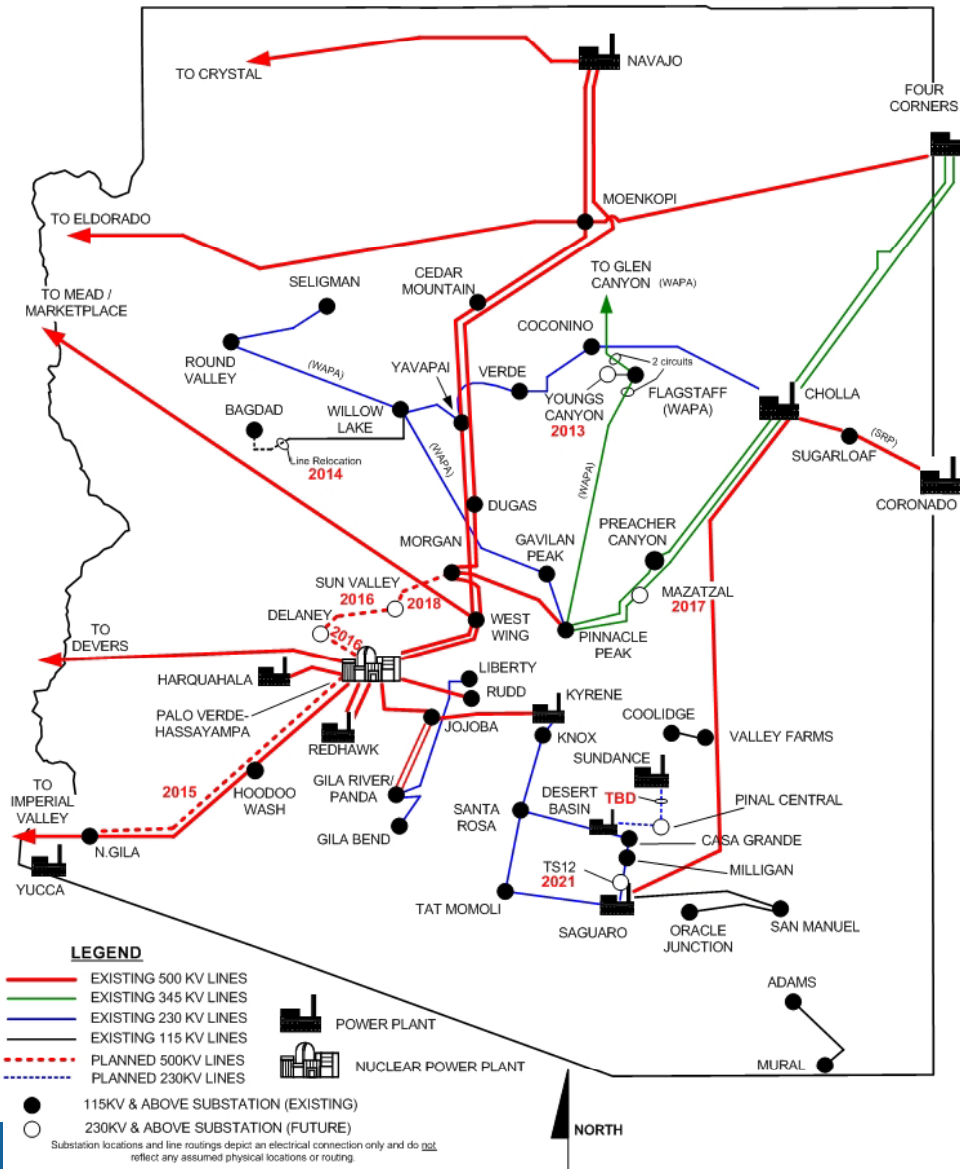
- New Projects
 - None
- Removed Projects (no longer participating)
 - Desert Basin-Pinal Central 230kV project
- Advanced Projects
 - None
- Name Changes
 - APS TS8 230/69kV substation is now Orchard substation

4.F. APS changes since 2012 Plan

- Delayed Projects
 - Pinal Central-Sundance 230kV project now TBD

Project Name	Previous In-Service Date	New In-Service Date
Youngs Canyon 345/69kV project	2012	2013
Delaney-Palo Verde 500kV line	2013	2016
Delaney-Sun Valley 500kV line	2015	2016
Sun Valley-Trilby Wash 230kV line	2015	2016
Mazatzal 345/69kV project	2015	2017
North Gila-TS8 (Orchard) 230kV line	2015	2016
Morgan-Sun Valley 500kV line	2016	2018

APS EHV & OUTER DIVISION 115/230 KV TRANSMISSION PLANS 2013 - 2022



2013:

- Youngs Canyon 345/69kV substation

2014:

- Bagdad 115kV relocation

2015:

- Hassayampa-N.Gila 500kV line

2016:

- Delaney-Palo Verde 500kV line
- Delaney-Sun Valley 500kV line

2017:

- Mazatzal 345/69kV substation

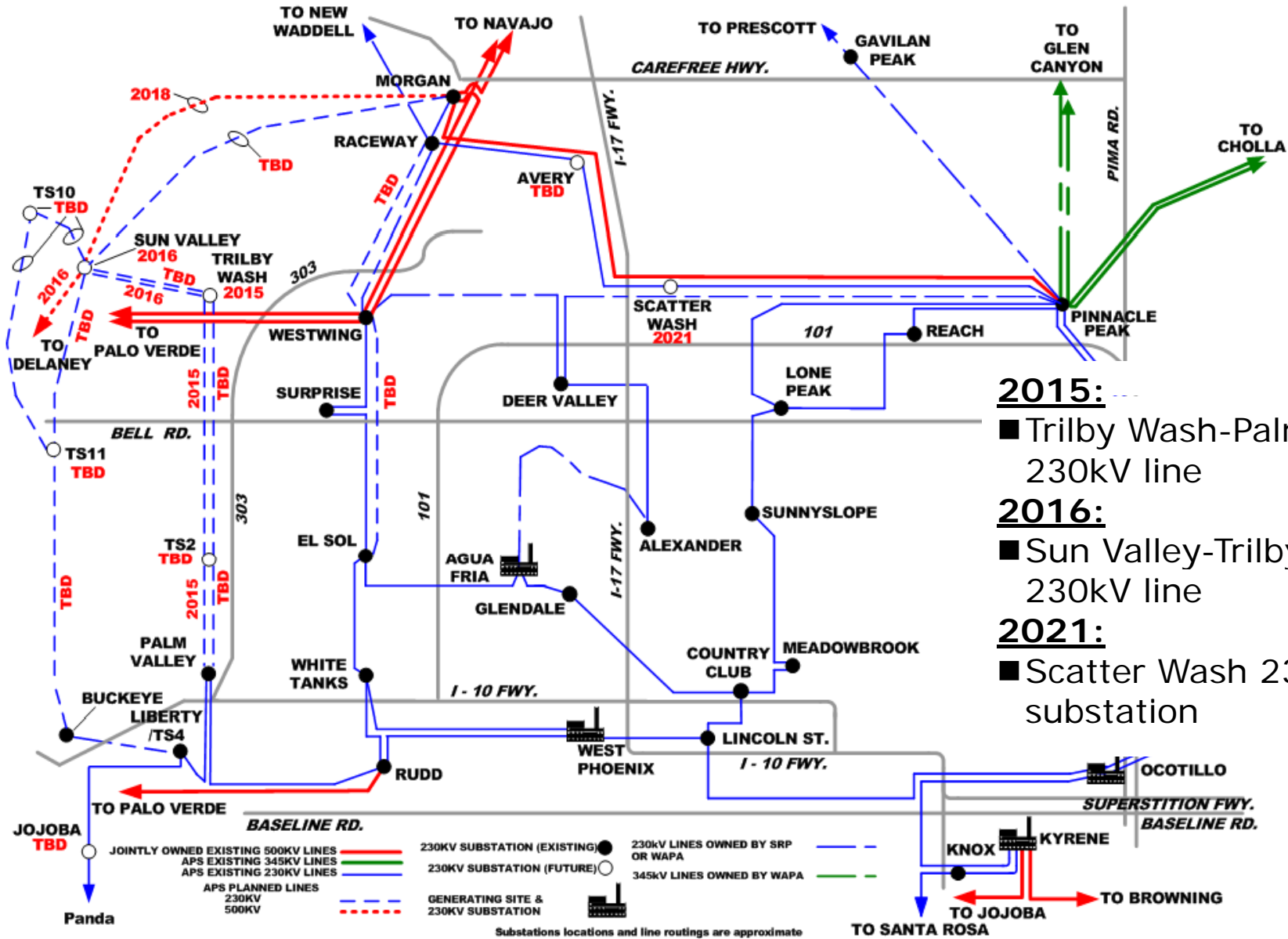
2018:

- Morgan-Sun Valley 500kV line

2021:

- TS12 230/69kV substation

PHOENIX METROPOLITAN AREA TRANSMISSION PLANS 2013-2022



2015:

- Trilby Wash-Palm Valley 230kV line

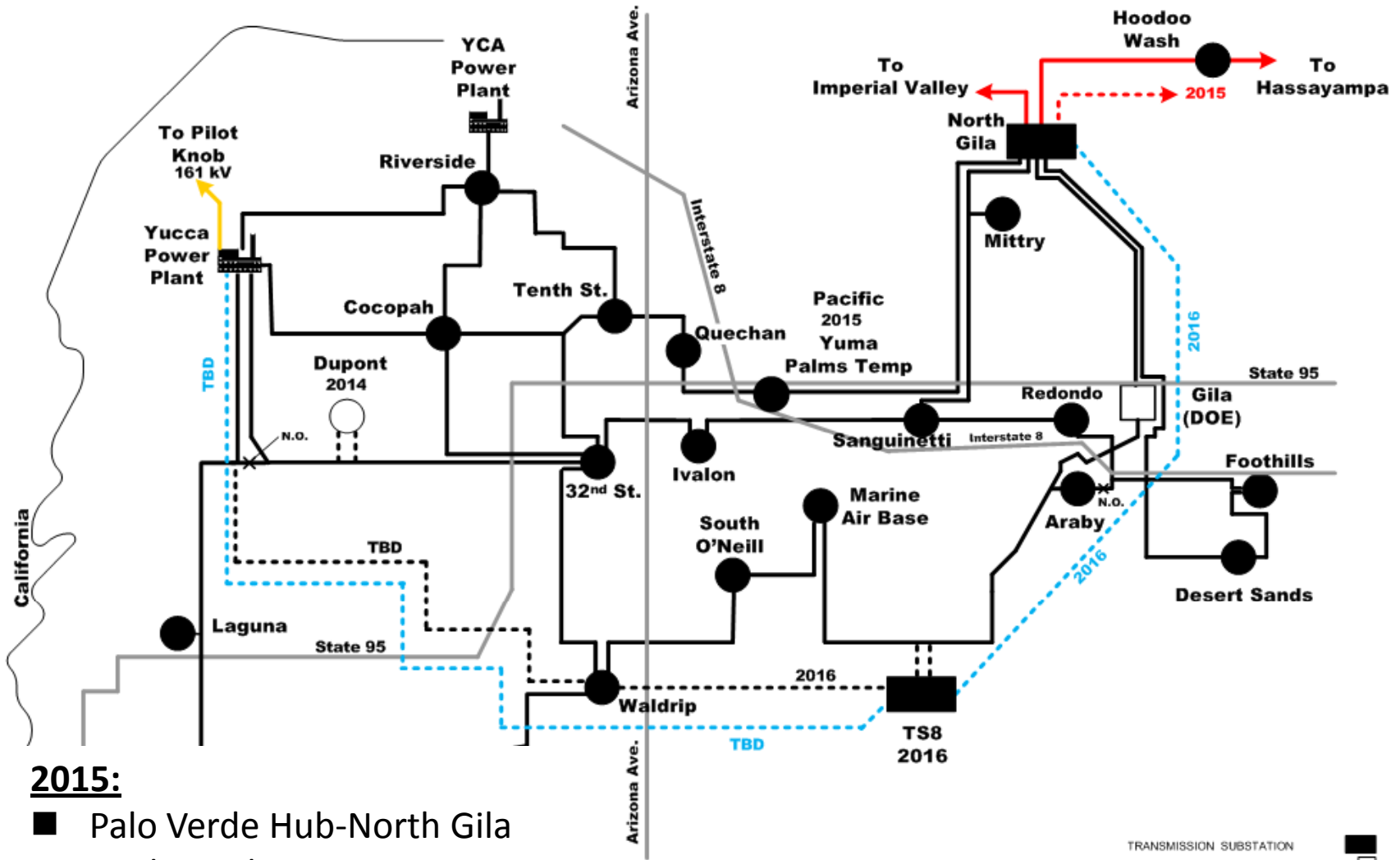
2016:

- Sun Valley-Trilby Wash 230kV line

2021:

- Scatter Wash 230/69kV substation

Yuma Area Transmission Plans 2013-2022



2015:

- Palo Verde Hub-North Gila 500kV #2 line

2016:

- North Gila-TS8 230kV line

indicates an electrical connection only and does not indicate physical locations or routing.

EXISTING 500KV LINES	— (solid black)	TRANSMISSION SUBSTATION	■ (black square)
PLANNED 500KV LINES	— (dashed black)	NON-APS SUBSTATION	□ (white square)
PLANNED 230KV LINES	— (dotted black)	DISTRIBUTION SUBSTATION (EXISTING)	● (black circle)
EXISTING 161KV LINES	— (solid grey)	DISTRIBUTION SUBSTATION (PLANNED)	○ (white circle)
EXISTING 69KV LINES	— (solid black)	GENERATING SITE & 69KV SUBSTATION	⊞ (square with vertical line)
PLANNED 69KV LINES	— (dotted black)	Street, Highway	— (solid line)

Bulk Transformer Additions/Replacements

<u>Description</u>	<u>Year</u>
Black Peak 161/69kV Transformer Replacement	2013
Buckeye 230/69kV Transformer #2 Replacement	2016
Raceway 230/69kV Transformer #2	2018
Palm Valley 230/69kV Transformer #2	2019
Yavapai 230/69kV Transformer #2	2021

4.G. APS Planning - Study Requests

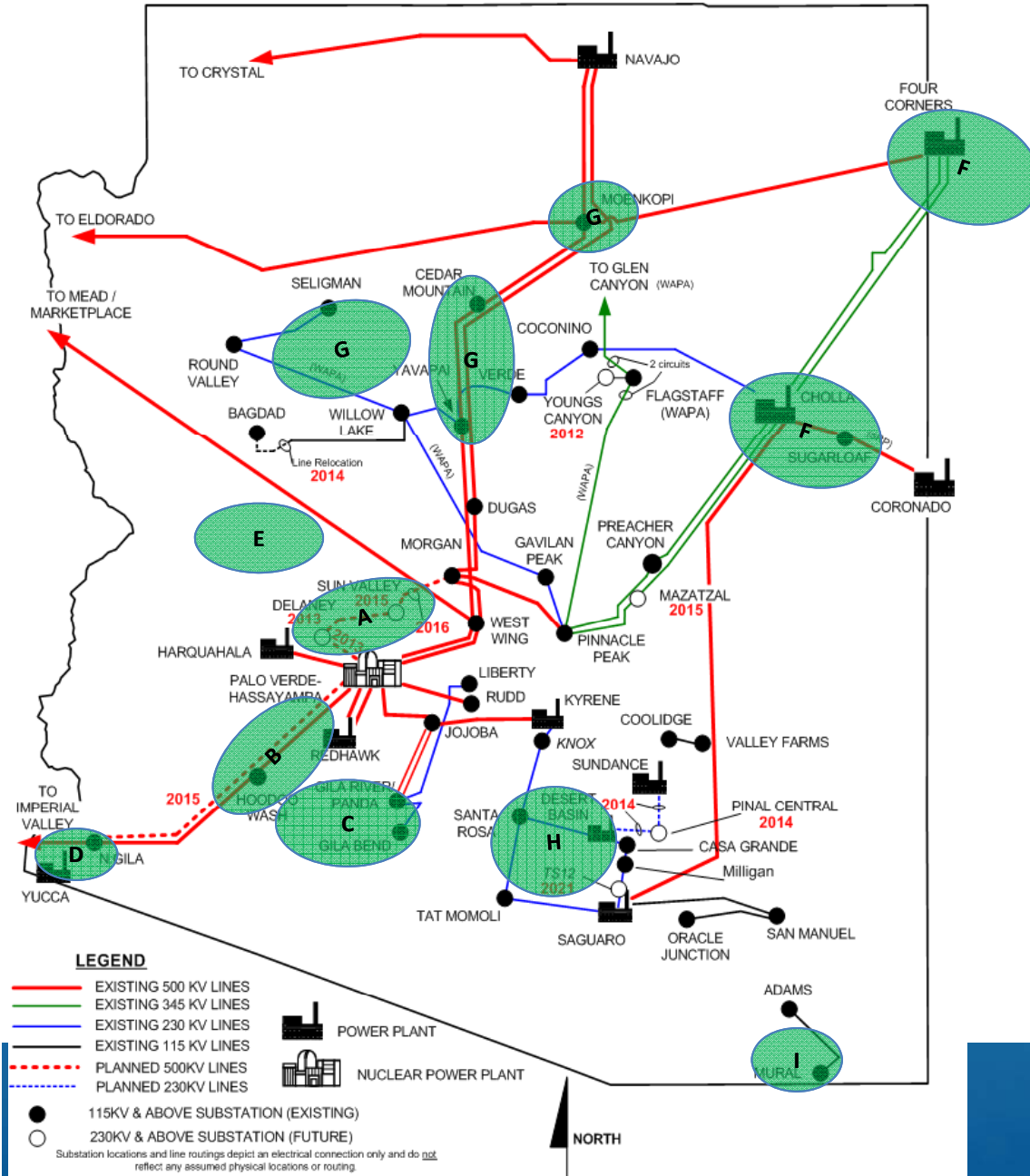
- Generation Interconnection Requests
- Transmission Interconnection Requests
- Transmission Service Requests
- Economic Study Requests

4.G. APS Planning - Study Requests

- Generation Interconnection requests
 - APS OASIS contains Generation Interconnection Queue
 - <http://www.oatioasis.com/azps/index.html>
 - 33 Solar projects - 1668 MW
 - 2 Wind projects - 1500 MW
 - 2 Wind/Solar projects – 552.8 MW wind/110 MW solar
 - 1 Natural Gas project – 1200 MW

Note: Generator Queue information as of 6/4/13

APS EHV & OUTER DIVISION 115/230 KV TRANSMISSION PLANS 2012 - 2021



A - Delaney/Sun Valley

- 1 projects
- 300 MW

B - HAA-NG 500kV line

- 5 projects
- 688 MW

C - Gila Bend/Buckeye

- 14 projects
- 383 MW

D - Yuma

- 4 projects
- 86 MW

E - La Paz

- 1 projects
- 20 MW

F - FC/Cholla/Showlow

- 3 projects
- 1280 MW

G - Northern AZ

- 8 projects
- 2238 MW

H - Pinal County

- 1 projects
- 16 MW

I - Cochise County

- 1 projects
- 20 MW

Note 1: Generator Queue information as of 6/4/13

Note 2: Figures displayed may not represent complete queue

4.G. Transmission Interconnection and Study Requests

- 2 Wires to Wires Interconnection Requests
- 35 Transmission Service Requests
 - All requests based on Four Corners transaction
- Currently no Economic Study Requests

4.G. APS Planning – Comments & Questions

- Stakeholder comments/questions on 2012 Study Results or 2013 Study Requests
- Requests can be made at any time to:
 - apstransmission@aps.com

5. Stakeholder Questions & Comments

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- **Open discussion**
- **Reference Material**
- **WestConnect –**
 - <http://www.westconnect.com/documents.php>
- **APS OASIS –**
 - <http://www.oatioasis.com/azps/index.html>
- **SRP OASIS –**
 - <http://www.oatioasis.com/srp/index.html>

6. Action Items

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- **Review any action items, assignments, and due dates**