

# Webex Etiquette Guidelines

- Participants will be muted upon entering the Webex meeting
- If you have a question you can press \*6 on your telephone and you will be unmuted
- After your question has been addressed press \*6 again to re-mute your line
- It is encouraged to wait for a “Question” slide to ask questions, but if a question or need for clarification is urgent then they may be asked at any time
- Thank you for helping us provide an accessible presentation for all attendees





Western  
Area Power  
Administration

# Intertie & Parker-Davis Project

Draft 10-Year Plan

July 29, 2020



Desert Southwest Region  
Phoenix, AZ

# Agenda

- Welcome
- Delayed Execution
- Draft 10-Year Plan
- Seed Project Update
- Analysis of Alternatives Studies
- Rate Impact
- Capital O&M Update
- Next Steps



# Delayed Execution

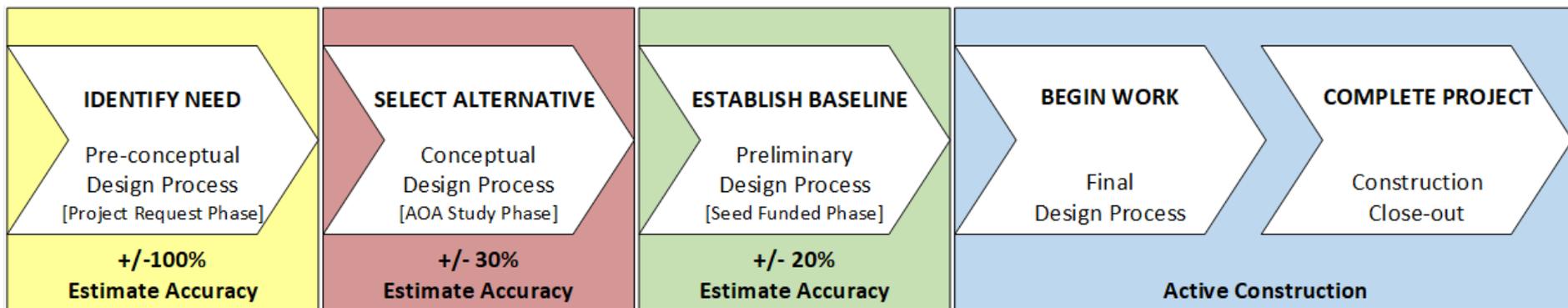
- DSW is currently addressing the impacts of COVID-19 regarding active construction and capital planning
- As a risk mitigation measure, DSW is exploring options for optimizing fiscal year execution by re-evaluating project priorities
- This may include shifting future projects from 3+ years out into the budget formulation window
- The overall objective is to match funding forecasts outlined in previous year's budget formulations
- As the full impacts and expected timeline of COVID-19 becomes clearer, these strategies will be refined and updated
- The 10-Year Plan is retaining its original sequence of project priorities as much as feasible for project continuity



# Draft 10-Year Plan



# Estimate Accuracy Explanation



**As a reminder, the 10-Year Plan is color coded for the following criteria**

- Yellow – Project Request Phase – Pre-Conceptual Design
- Red – AOA Study Phase – Conceptual Design
- Green – Seed Funded Phase – Preliminary Design
- Blue – Active Construction Phase – Final Design, Construction and Closeout



# Final 10-Year Plan October 2019

## PARKER-DAVIS PROJECT FINAL 10-YEAR PLAN

PROJECT NAME	PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
Gila-Wellton Mohawk I-8 Crossing Rebuild	\$ 7,623	\$ 40									
Gila Substation 161-kV Rebuild	\$ 23,873	\$ 3,100	\$ 25								
Dome Tap-Gila 161-kV Rebuild	\$ 5,630	\$ 2,966	\$ 50								
Coolidge-Valley Farms 115-kV Rebuild	\$ 2,543	\$ 932	\$ 25								
Crossman Peak Microwave Facility	\$ 4,525	\$ 170	\$ 2,534	\$ 333							
Kofa-Dome Tap 161-kV Rebuild	\$ 5,138	\$ 4,634	\$ 130	\$ 50							
Bouse-Kofa 161-kV Rebuild	\$ 26,520	\$ 614	\$21,095	\$ 2,556	\$ 1,800	\$ 40					
Bouse Upgrade Project	\$ 45,916	\$ 1,208	\$ 704	\$ 9,658	\$11,493	\$12,925	\$ 7,950	\$ 537			
Parker-Blythe 161-kV #2 Rebuild Phase-1	\$ 18,542		\$ 250	\$ 237	\$17,086	\$ 805	\$ 164				
Parker-Blythe 161-kV #2 Rebuild Phase-2	\$ 18,542			\$ 237		\$17,336	\$ 805	\$ 164			
Parker-Blythe 161-kV #2 Rebuild Phase-3	\$ 18,542			\$ 237			\$17,336	\$ 805	\$ 164		
Parker Substation 161-kV Replacements	\$ 16,850						\$ 300	\$ 100	\$ 100	\$ 8,000	\$ 7,700
Blythe-Headgate Rock #1 161-kV Rebuild	\$ 23,900						\$ 1,195	\$ 100	\$ 100	\$ 9,560	\$11,711
Parker Substation 230-kV Replacements	\$ 12,100							\$ 600	\$ 100	\$ 100	\$ 2,000
Gila Substation 69-kV Rebuild	\$ 10,500								\$ 800	\$ 100	\$ 100
Gila-Knob 161-kV Remaining Rebuild	\$ 23,000									\$ 800	\$ 100
Gila Substation 34.5-kV & 14-kV Rebuild	\$ 15,250										\$ 500
<b>Final 10-Year Plan (2019) FY Totals</b>	<b>\$ 278,995</b>	<b>\$13,664</b>	<b>\$24,813</b>	<b>\$13,308</b>	<b>\$30,379</b>	<b>\$31,106</b>	<b>\$27,750</b>	<b>\$ 2,306</b>	<b>\$ 1,264</b>	<b>\$18,560</b>	<b>\$22,111</b>

## INTERTIE PROJECT FINAL 10-YEAR PLAN

PROJECT	PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
Liberty Series Capacitor Bank Replacement	\$ 9,835	\$ 1,598	\$ 25								
<b>Final 10-Year Plan (2019) FY Totals</b>		<b>\$ 1,598</b>	<b>\$ 25</b>								



# Project Manager: Roger Wright

## Projects

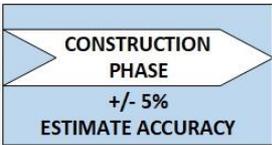
Coolidge Valley Farms  
Liberty Capacitor Bank

## Contact Info

Wright@WAPA.gov  
(602) 605-2498



# Coolidge-Valley Farms 115-kV Rebuild



## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY20	FY21
\$ 2,543	\$ 932	\$ 25



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY20	FY21
\$ 2,543	\$ 932	\$ 25

### Previous Status

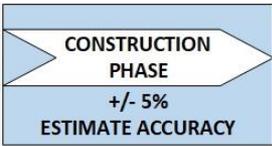
- Structure and conductor replacement had begun with an expected energization date of 2020

### Current Status

- The line was energized 4/13/2020
- No changes to project budget



# Liberty Series Capacitor Bank Replacement



## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY20	FY21
\$ 9,835	\$1,598	\$ 25



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY20	FY21
\$ 9,835	\$1,598	\$ 25

### Previous Status

- Remaining punch-list items were forecast to be completed by March 2020

### Current Status

- The punch-list has been completed and the project is in financial close-out
- No changes to project budget



# Project Manager: Tony Gagajewski

## Projects

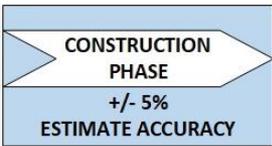
Gila-Wellton I-8 Crossing  
Gila Substation 161-kV  
Bouse-Kof 161-kV Rebuild  
Dome Tap-Gila 161-kV Rebuild  
Kofa-Dome Tap 161-kV Rebuild  
Seed: Bouse Upgrade

## Contact Info

Gagajewski@WAPA.gov  
(602) 605-2629



# Gila-Wellton Mohawk I-8 Crossing Rebuild



## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY20
\$ 7,623	\$ 40



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY20
\$ 7,623	\$ 40

### Previous Status

- Project is in financial closeout

### Current Status

- Project will closeout successfully in FY20 and will be removed from the 10-Year Plan in October 2020
- No changes to project budget



# Gila Substation 161-kV Rebuild

CONSTRUCTION  
PHASE  
+/- 5%  
ESTIMATE ACCURACY

## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY20	FY21
\$ 23,873	\$3,100	\$ 25



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22
\$ 25,070	\$2,565	\$ 1,655	\$ 102

### Previous Status

- Prepayment funding reallocation to complete project voted on successfully in December 2019
- Remaining construction was slated to continue through July 2020

### Current Status

- Due to delays caused by COVID-19, the project has been extended by one year
- Project budget has increased by \$1.19M due to required demobilization and holding through the summer of 2020



# Bouse-Kofa 161-kV Rebuild

CONSTRUCTION  
PHASE  
+/- 5%  
ESTIMATE ACCURACY

## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24
\$ 26,520	\$ 614	\$21,095	\$ 2,556	\$ 1,800	\$ 40



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25
\$ 26,520	\$ 614	\$ 113	\$21,502	\$ 1,919	\$ 1,937	\$ 20

### Previous Status

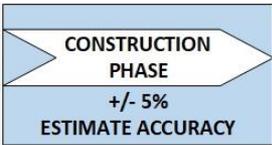
- Design was approaching 50% completion
- Lands and environmental work was beginning

### Current Status

- Design has reached 50% and is working toward 75%
- Due to delays caused by COVID-19, this project has been extended by one year
- No changes to total project budget



# Dome Tap-Gila 161-kV Rebuild



## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY20	FY21
\$ 5,630	\$2,966	\$ 50



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22
\$ 5,630	\$1,074	\$ 1,840	\$ 102

### Previous Status

- Construction began in October 2019 with a projected energization date of 2020

### Current Status

- Due to delays caused by COVID-19, this project has been adjusted to include an additional fiscal year
- No changes to total project budget



# Kofa-Dome Tap 161-kV Rebuild

CONSTRUCTION PHASE  
+/- 5% ESTIMATE ACCURACY

## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22
\$ 5,138	\$4,634	\$ 130	\$ 50



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24
\$ 5,138	\$1,850	\$ 1,200	\$ 1,064	\$ 650	\$ 50

### Previous Status

- The construction contract for this project was awarded February 2020 and all government furnished equipment was anticipated to be received October 2020

### Current Status

- Due to delays caused by COVID-19, this project has been adjusted to include an additional two years
- No changes to total project budget



# Questions?

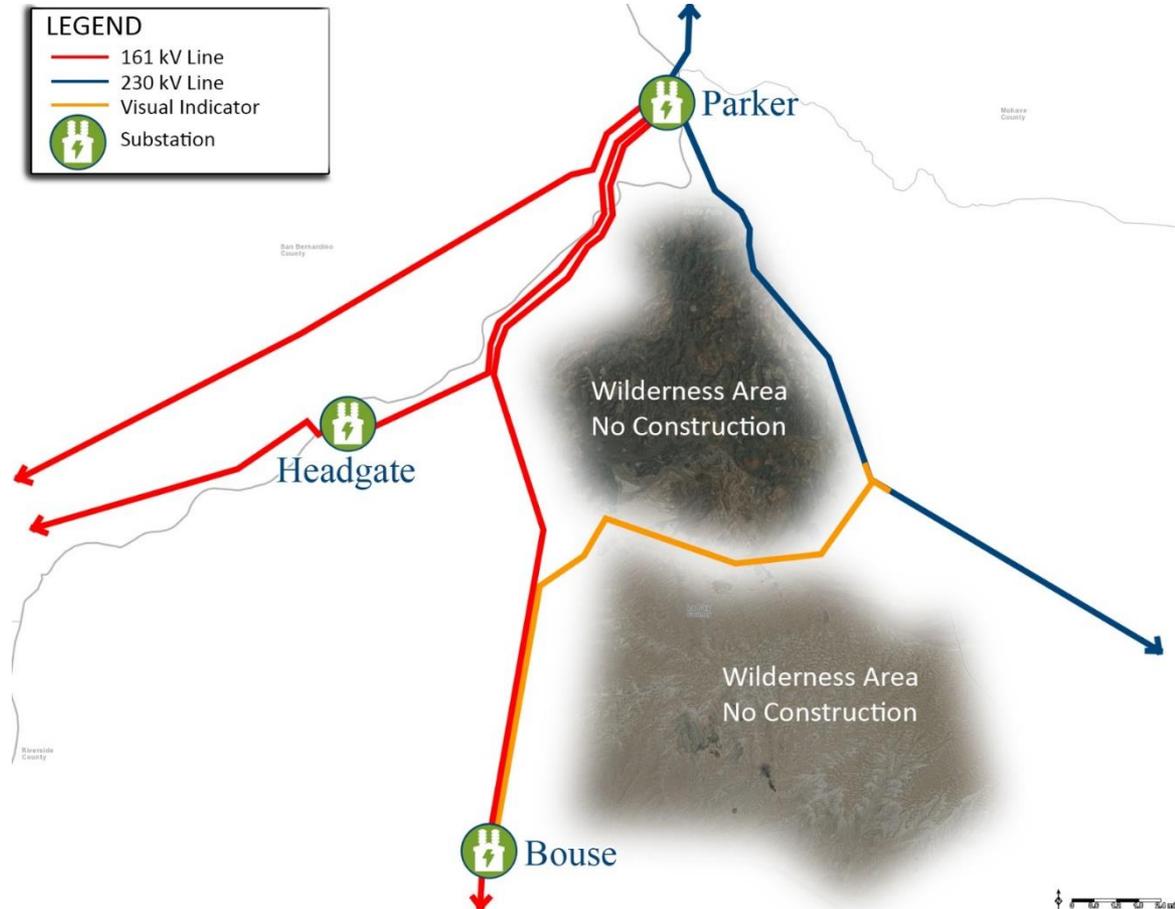


# Seed Project Update



# Bouse Upgrade Alternative History

- Parker-Bouse and Parker-Headgate transmission lines require replacement
- The original replacement project was placed on hold and a new alternative path was studied and shared with stakeholders
- The alternative path entered a seed funding phase, in which appropriations are used for preliminary design work
- The work on the seed funded design continues, to ensure there are no show stoppers to the full construction of the project prior to request for a vote



# Bouse Upgrade Alternative Update

- Preliminary environmental and lands activities are being performed in any locations deemed acceptable for work
- Conversations with regional stakeholders were taking place
- Due to COVID-19, meetings have been canceled and communication with regional stakeholders has slowed
- Due to these events, the vote for the Bouse Upgrade alternative will be postponed for a year



# Bouse Upgrade Project Budget

SEED FUNDING PHASE  
+/- 20% ESTIMATE ACCURACY

## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26
\$ 45,916	\$1,208	\$ 704	\$ 9,658	\$ 11,493	\$12,925	\$ 7,950	\$ 537



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26
\$ 45,967	\$ 100	\$ 1,087	\$10,300	\$ 12,219	\$13,002	\$ 6,945	\$ 856



# Questions?



# Analysis of Alternatives Studies

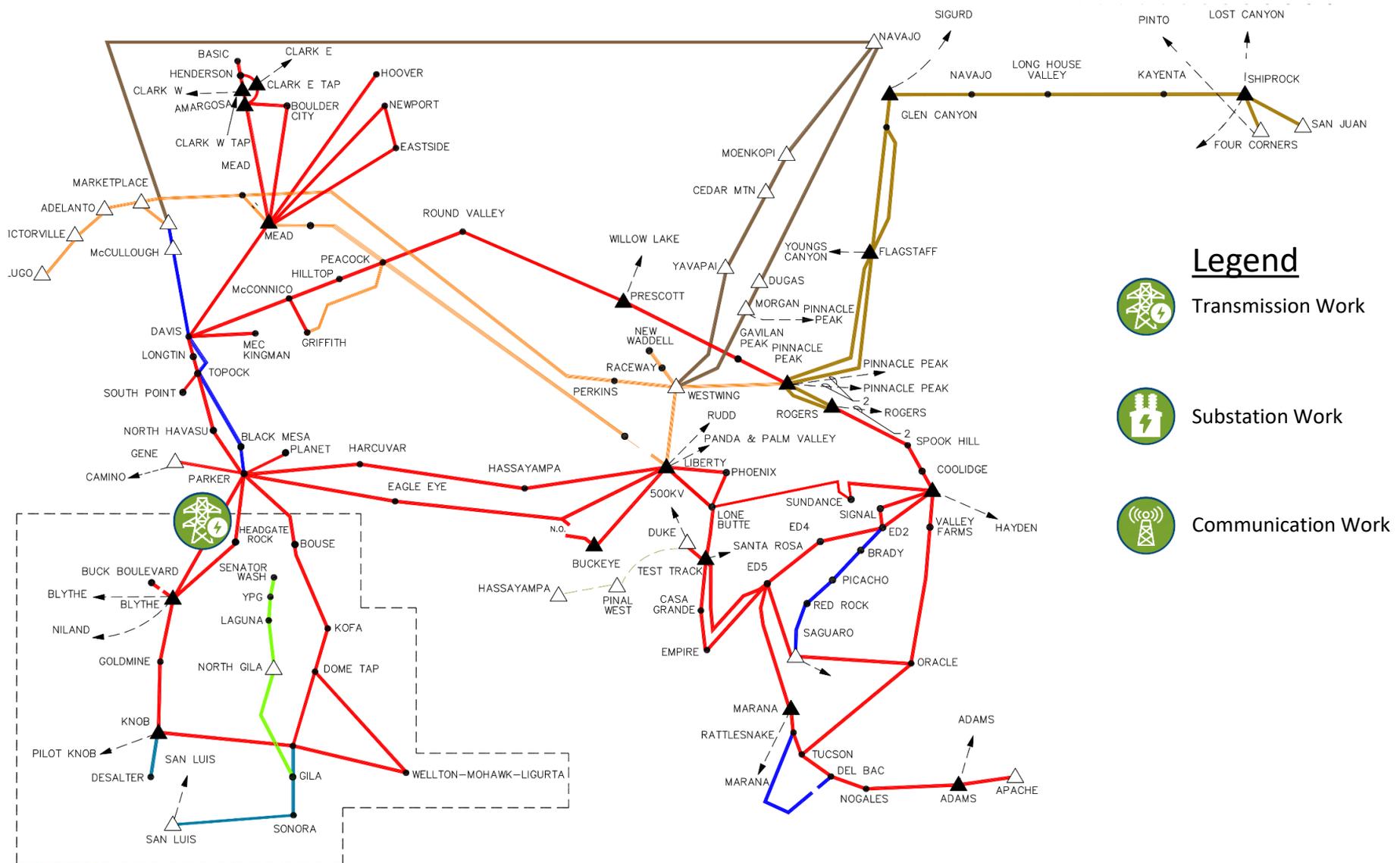


# Analysis of Alternative Studies

- DSW's internally identified alternatives for active studies were presented in the Q1 meeting
- DSW solicited comments on the existing alternatives presented, as well as new proposed alternatives from customers in the Q1 meeting
- No customer comments were received
- Cost estimates for these studies will be shared in October during the Q3 customer meeting



# Parker-Blythe 161-kV Rebuild



## Legend



Transmission Work



Substation Work



Communication Work



# Parker-Blythe 161-kV Rebuild

- Degraded wood poles require replacement along 64-mile transmission line
  - ~880 out of 920 poles require repair or replacement
  - ~400 of those 880 have serious defects
- Phase-to-ground clearance violations require an engineering solution
- Repair and reclaim right-of-way access
- ~20% of the structures (100+) require dozer tow-in for access
- New fiber optic communication capabilities

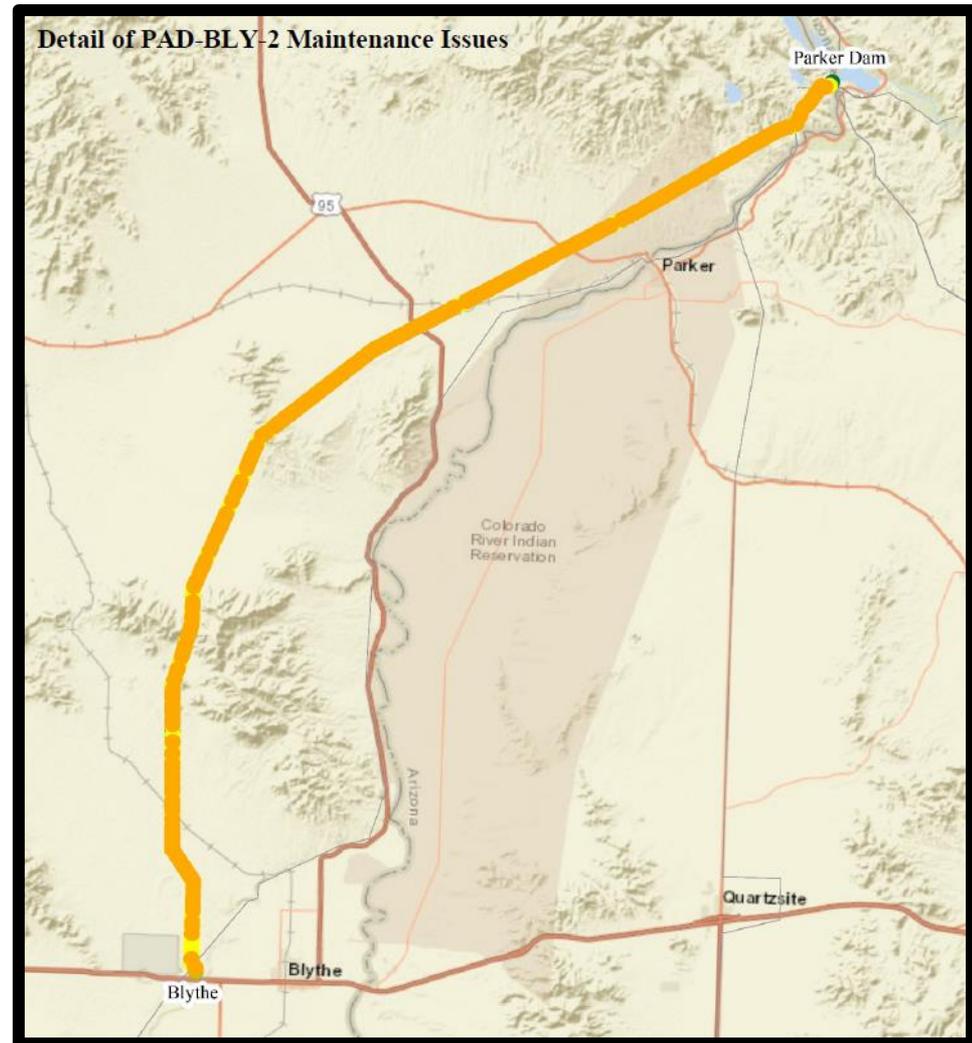


# Parker-Blythe Current Status

- The Parker-Blythe rebuild project was originally intended to be a full rebuild of the transmission line with an upgrade from wood poles to light duty steel
- Based on stakeholder feedback obtained during a working session held in August 2019 it was decided that a more cost-effective solution for the degraded poles would be pursued
- The vote was delayed for a year while a secondary study effort is performed

## Maintenance Priority Codes

<b>A</b>	Good or like new. No action required.
<b>B</b>	Minor defect. Monitor degradation.
<b>C</b>	Moderate defect. Rehabilitation or replacement recommended as scheduled maintenance.
<b>D</b>	Serious defect. Repair, reinforce, or replace as soon as possible.
<b>E</b>	Risk to public safety or system reliability.



# Parker-Blythe Alternative 1

## **Alternative 1: Rebuild with light duty steel to 230-kV standards, operate at 161-kV**

- This alternative is no longer recommended but it is being included to have basis for a comparison to the new alternatives
- The Scope includes
  - New conductor, insulators, and hardware
  - Upgrade all wood poles structures to light duty steel H-frame structures
  - Install steel dead-end structures as required by design
  - Add optical overhead ground wire (OPGW)
  - Repair/reclaim right-of-way access
  - Design using 230-kV standards/specifications operated at 161-kV to help standardize maintenance and improve availability of replacement/equipment



# Parker-Blythe Alternative 2

## Alternative 2: Like-for-Like replacement of failing structures

- The analysis is investigating both the use of a construction contract or internal WAPA maintenance forces to perform the work
- Due to staffing constraints if WAPA forces are used it will be a combination of both DSW internal forces as well as assistance from other regions
- The final cost for this alternative will include 4 options:
  - Replace all failing Structures using external forces, restring the line but do not add OPGW
  - Replace all failing Structures using internal forces, restring the line but do not add OPGW
  - Replace all failing Structures using external forces, restring the line and add OPGW
  - Replace all failing Structures using internal forces, restring the line and add OPGW



# Parker-Blythe Alternative 3

## Alternative 3: Like for Like replacement of all structures

- The analysis is investigating both the use of a construction contract or internal WAPA maintenance forces to perform the work
- Due to staffing constraints if WAPA forces are used it will be a combination of both DSW internal forces as well as assistance from other regions
- The final cost for this alternative will include 4 options:
  - Replace all Structures using external forces, restring the line but do not add OPGW
  - Replace all Structures using internal forces, restring the line but do not add OPGW
  - Replace all Structures using external forces, restring the line and add OPGW
  - Replace all Structures using internal forces, restring the line and add OPGW



# Parker-Blythe Budget

AOA STUDY  
PHASE  
+/- 30%  
ESTIMATE ACCURACY

## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY21	FY22	FY23	FY24	FY25	FY26	FY27
\$ 18,542	\$ 250	\$ 237	\$17,086	\$ 805	\$ 164		
\$ 18,542		\$ 237		\$ 17,336	\$ 805	\$ 164	
\$ 18,542		\$ 237			\$17,336	\$ 805	\$ 164



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
\$ 30,000		\$ 7,500		\$ 4,500	\$ 4,500	\$ 4,500	\$4,500	\$4,500

### Previous Status

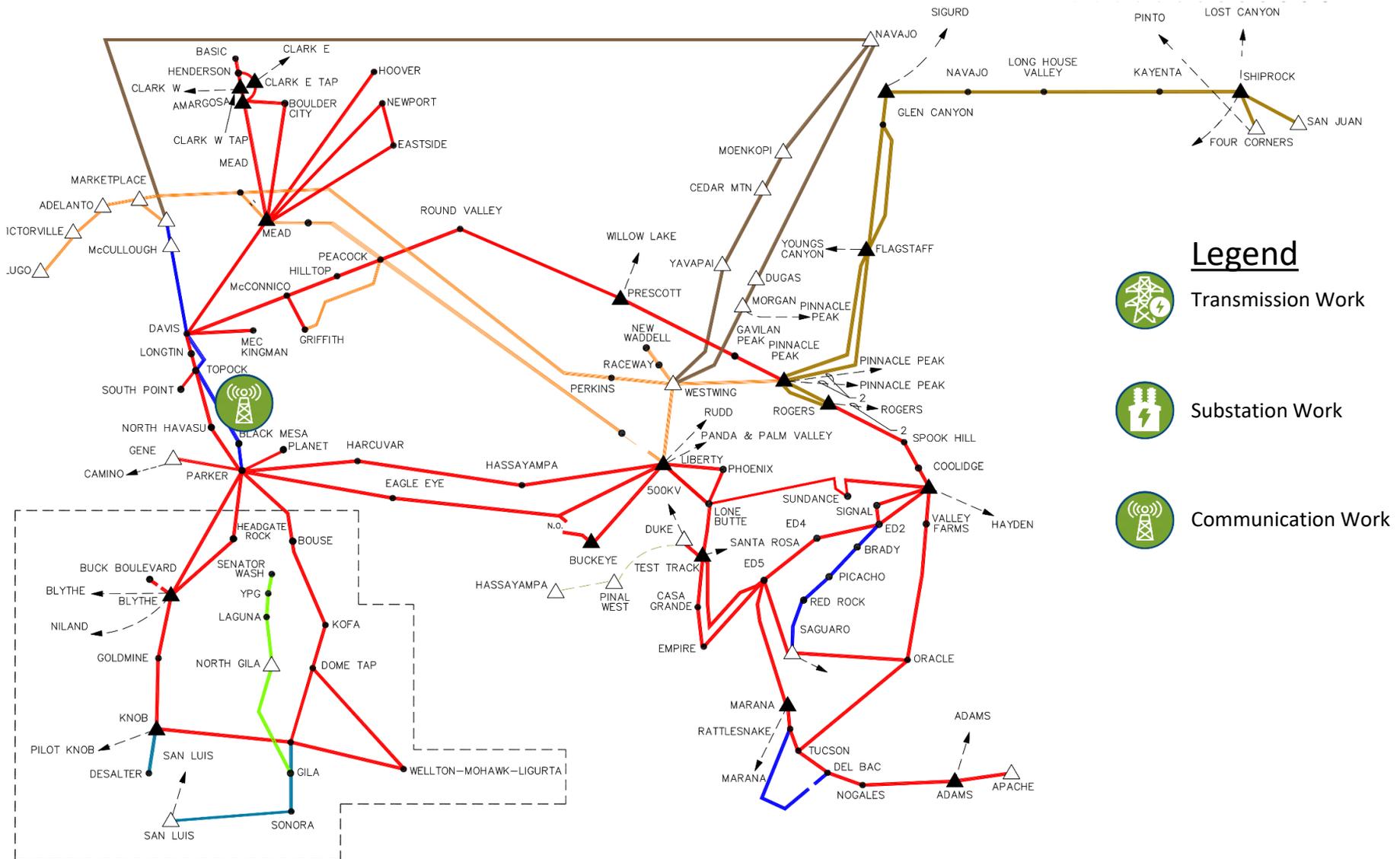
- It was determined that a new preferred alternative should be sought on the Parker-Blythe Rebuild Project

### Current Status

- The study effort is currently ongoing
- For the Draft 10-Year Plan, the project was consolidated into a single line item and budget has been modeled after the wood pole program that uses WAPA maintenance forces



# Crossman Peak Microwave Facility



# Crossman Peak Microwave Facility

- WAPA's microwave system operates within a specific frequency band regulated by the Federal Communications Commission
- Legislation was passed in 2010 that reallocates this frequency band to a higher bandwidth range
- Analysis has determined that when the microwave path between Christmas Tree Pass and Metal Mountain is upgraded to the higher frequency band an interruption in the signal will occur from the mountainous terrain in the area, severing the microwave path between these two communication sites
- The original analysis did not identify any potential alternative locations aside from Crossman Peak, however a review is being performed as part of the current restudy effort



# Crossman Peak Current Status

The current re-study effort will identify the most cost-effective path forward to address this integral segment of the communication system in the region

1. The potential for financial collaboration with regional stakeholders is being actively explored by DSW, while an addendum to the original study is performed as a parallel effort
2. An addendum to the initial AOA study was requested to explore various power supply options aside from the original transmission line
3. Alternative sites on government owned land without environmental sensitives are also being investigated as part of the reassessment



# Alternative 1 & 2

## **Alternative 1: Renewable energy with battery storage**

## **Alternative 2: Propane generator**

- The investigation of alternate power solutions is currently ongoing
- Findings to date indicate that although utilizing alternative power will likely provide a cheaper up front cost than the transmission line rebuild, site accessibility remains an issue
- Regular trips to service and refuel/maintain alternative energy solutions is costly and introduces risk due to required routine trips to the top of Crossman Peak
- A cost benefit analysis will be performed as estimates for the alternatives become available through the remainder of the study effort



# Alternative 3 & 4

## **Alternative 3: Distribution line (funded by DSW)**

## **Alternative 4: Distribution line (funded through partnerships)**

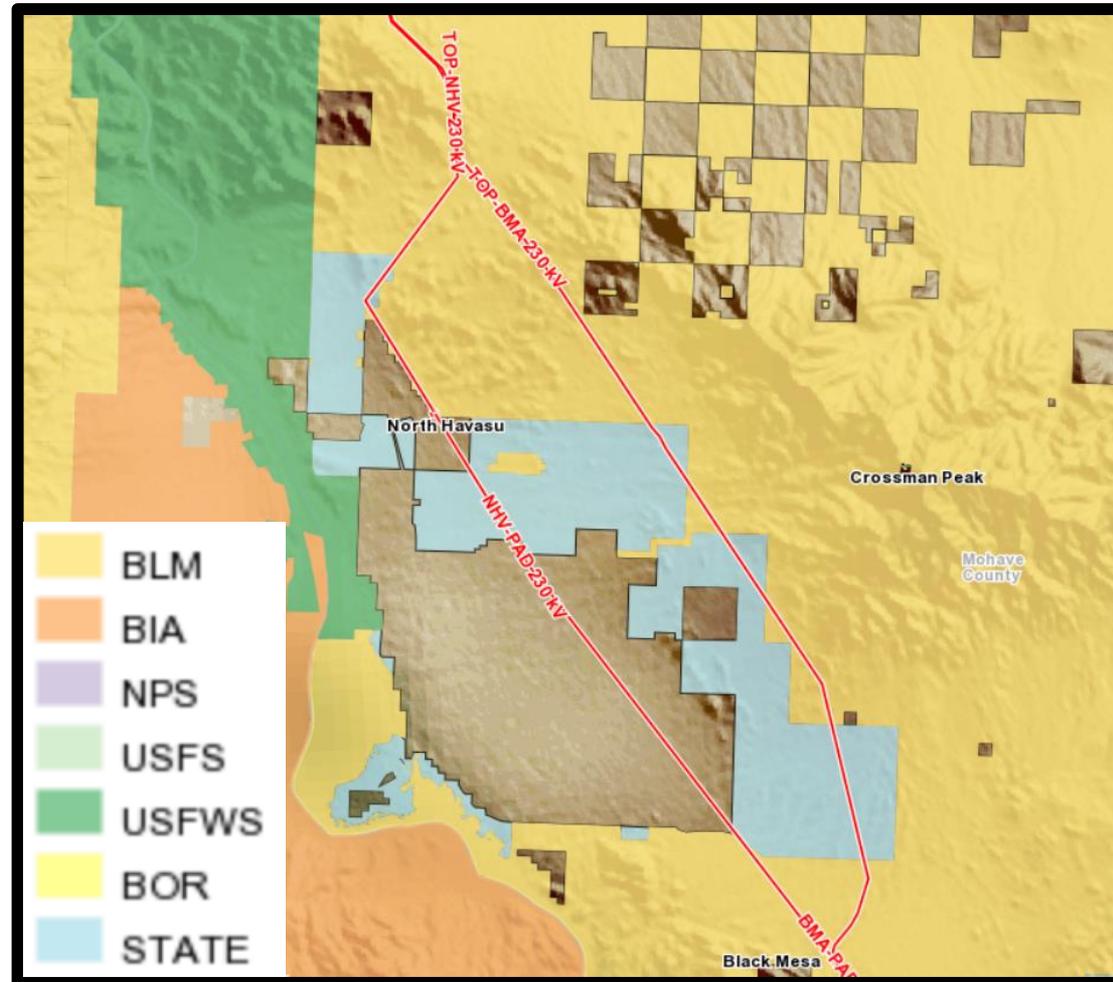
- The original construction project required a new distribution line to Crossman Peak to supply power to the new communication facilities
- Due to land acquisition and environmental issues, the price of the transmission line increased dramatically from original estimates
- This increased cost and risk prompted a re-study of this project scope
- The potential for building a transmission line still exists and will remain under investigation, particularly if an avenue for financial collaboration is identified with regional parties



# Alternative 5

## Alternative 5: New locations

- Alternative 5 is investigating alternative technology and the surrounding landscape to determine if any other physical location is viable
- Due to regional infrastructure changes, previously investigated siting locations may have become viable
- Communication experts WAPA-wide are engaged to investigate alternate sites



# Crossman Peak Budget

CONSTRUCTION PHASE +/- 5% ESTIMATE ACCURACY
AOA STUDY PHASE +/- 30% ESTIMATE ACCURACY

## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22
\$ 4,525	\$170	\$2,534	\$333



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY20	FY21	FY22	FY23
\$ 4,525	\$ 25	\$ 2,534	\$ 333	\$ 145

### Previous Status

- Crossman Peak was previously in active construction, however the project was put on hold to allow further investigation due to cost escalation of the project

### Current Status

- Since being placed on hold, a study effort has begun to explore alternative options to ensure continued communication, while discussions with regional stakeholders occur





# Blythe-Headgate Rock 161-kV Rebuild

- Approximately 50% of the wood H-Frame structures on the transmission line have been replaced with light duty steel H-Frame structures designed for 230-kV to support 1272 kcmil ACSR conductor
- Pole replacement projects in 1998 and 2007 installed 172 light duty steel H-Frame structures between Blythe Substation and structure 39-5
- There are 207 wood structures that have not been replaced in the transmission line
- The rebuild of the line was previously put on hold during the Black Mesa reroute project

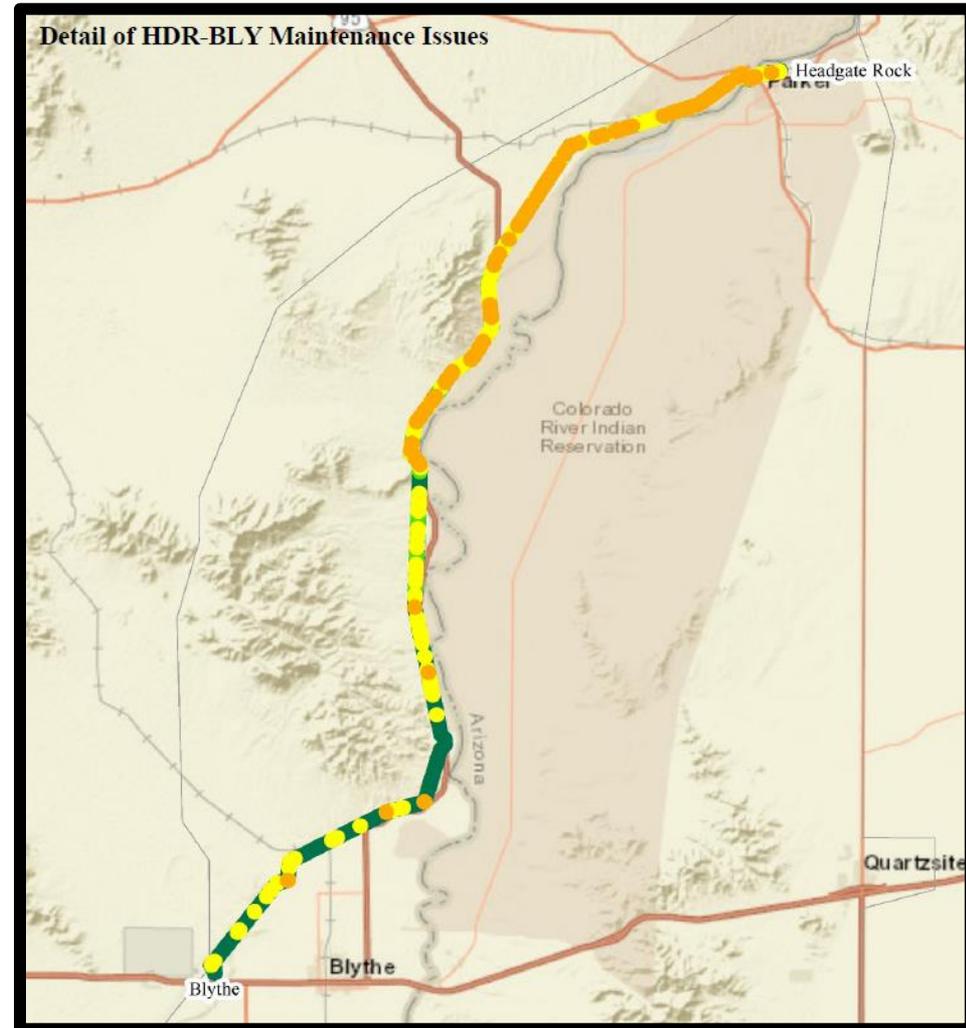


# Blythe-Headgate Rock Current Status

- The study of alternatives for the Blythe-Headgate Rock project have proceeded since the Q1 meeting
- The alternatives are developing estimates in preparation for a comparison in the Q3 meeting

## Maintenance Priority Codes

<b>A</b>	Good or like new. No action required.
<b>B</b>	Minor defect. Monitor degradation.
<b>C</b>	Moderate defect. Rehabilitation or replacement recommended as scheduled maintenance.
<b>D</b>	Serious defect. Repair, reinforce, or replace as soon as possible.
<b>E</b>	Risk to public safety or system reliability.



# Blythe-Headgate Rock Alternative 1

## Alternative 1: Status Quo

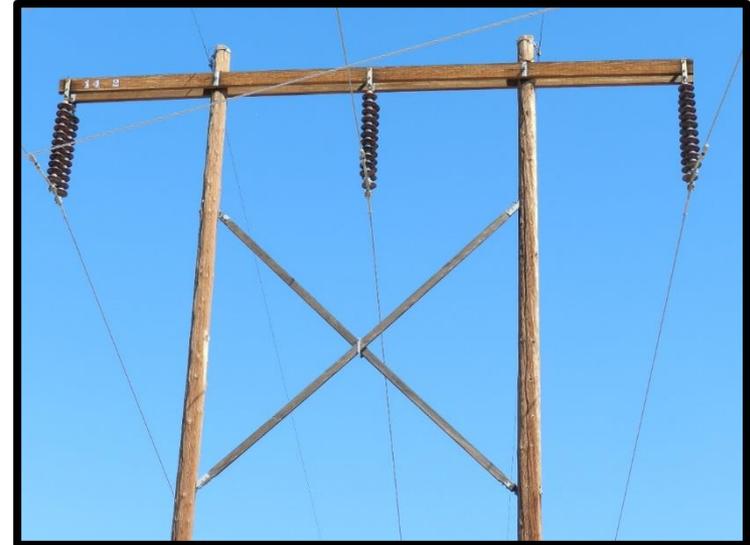
- This alternative would propose that the second half of the Blythe-Headgate rebuild is not completed and instead only required maintenance is performed to keep the system operational
- This option would not address the existing NERC violations or the line, or replace the aging conductor that currently runs between Blythe and Headgate substations



# Blythe-Headgate Rock Alternative 2

## Alternative 2: Rebuild at 230-kV Standards, operate at 161-kV

- The second alternative would be to complete the Blythe-Headgate rebuild using the same specs that were utilized for the first half of the rebuild
- This would include the replacement of the remaining wooden H-Frame structures with light duty steel
- The line would be built to 230-kV standards but operated at 161-kV
- New OPGW would be installed when the line is restrung



# Blythe-Headgate Budget

PROJECT REQUEST  
PHASE  
+/-100%  
ESTIMATE ACCURACY

## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY25	FY26	FY27	FY28	FY29
\$ 23,900	\$1,195	\$ 100	\$ 100	\$ 9,560	\$11,711



## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY25	FY26	FY27	FY28	FY29
\$ 23,900	\$1,195	\$ 100	\$ 100	\$ 9,560	\$11,711

### Previous Status

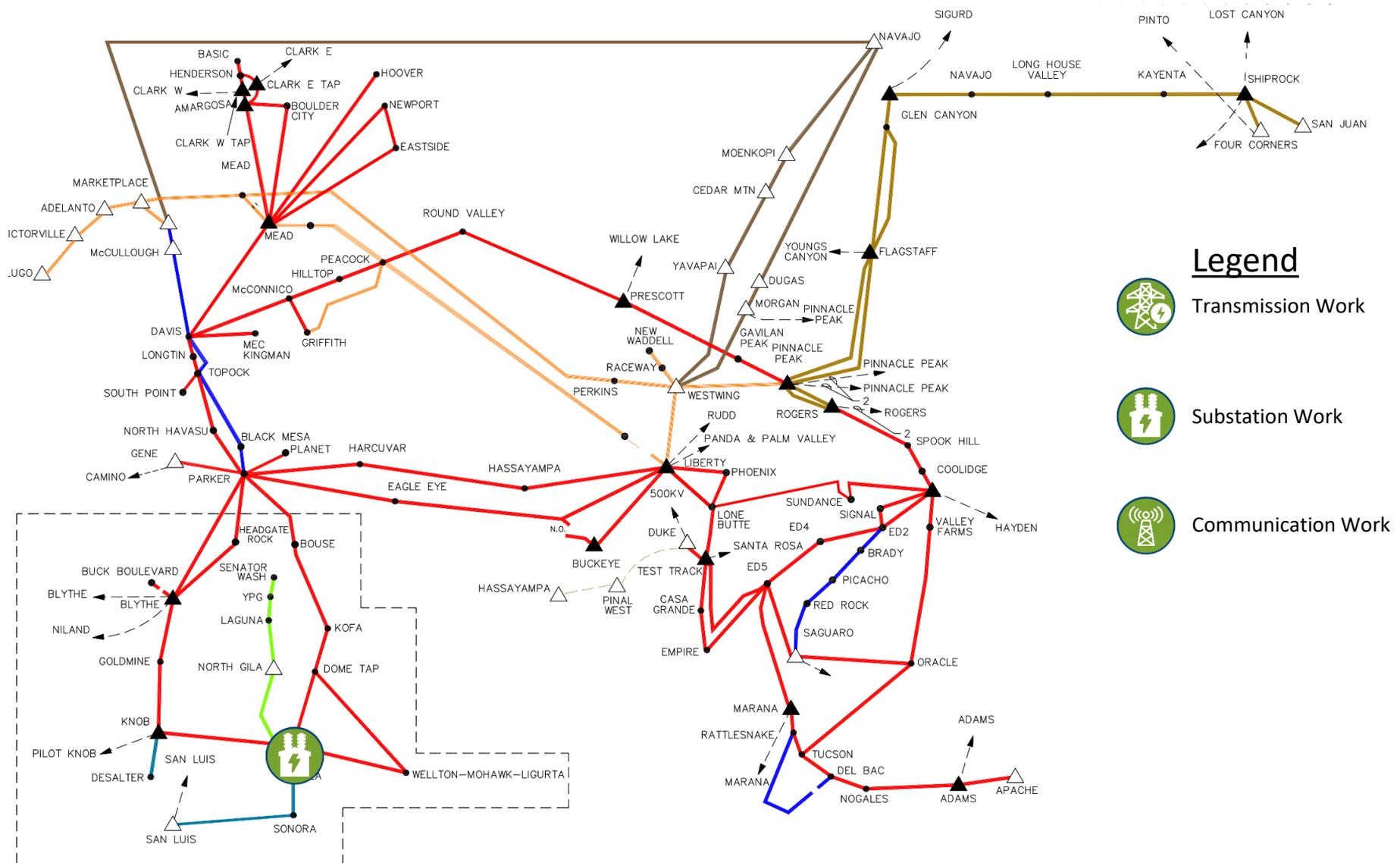
- Blythe-Headgate was presented as a new study in the 10-Year Plan Active Construction Meeting, held on March 25, 2020

### Current Status

- A potential schedule conflict due to other work in the Parker region may lead to this project remaining in the out years and the study may be put on hold
- The project will be kept in the Project Request Phase for the Q2 draft 10-Year Plan



# Gila 69-kV Substation Rebuild



## Legend



Transmission Work



Substation Work



Communication Work



# Gila 69-kV Substation Rebuild

- Majority of the equipment is operating beyond its engineered service life and appears on WAPA's Asset Management Risk Registry
- Advanced age of assets has resulted in an increased frequency of failures that are affecting system reliability
- Reliability is impacted due to extended outage times caused by old and worn equipment, for which spare parts are not readily available or require custom manufacturing
- Many of the oil-bearing devices are leaking and supports are rusted



# Gila 69-kV Substation Current Status

- The 69-kV yard feeds the 34.5-kV yard through two paralleled 7.5 MVA, 69/34.5-kV transformers
- These transformers were manufactured in 1956 and are in very poor condition
- The transformers leak oil in numerous locations and the control wires inside the transformers are extremely brittle
- From an asset management perspective, the 34.5-kV yard is in worse condition than the 69-kV yard, but due to the congestion and difficult access to the 34.5-kV yard the 69-kV yard must be addressed first



# Gila 69-kV Substation Alternative 1

## Alternative 1: Status Quo

- Continuation of maintenance on components as they fail
- Age of hardware makes finding replacement parts difficult or impossible
- Most of the equipment is showing age related deterioration and would require piecemeal replacement over time



# Gila 69-kV Substation Alternative 2

## Alternative 2: Replace failing equipment in place

- This alternative would rebuild the yard in its current position
- Would likely be the most cost effective rebuild solution
- Does not address access to 34.5-kV yard or take advantage of the new space generated by the Gila 161-kV rebuild project



# Gila 69-kV Substation Alternative 3

## **Alternative 3: Build 69-kV main and transfer in 161-kV footprint**

- Rebuild in previous 161-kV footprint using main and transfer configuration
- Provides a location for future 34.5-kV rebuild in the current 69-kV yard location
- Alleviates maintenance access issues
- Main and transfer configuration may have an impact on outage availability



# Gila 69-kV Substation Alternative 4

## **Alternative 4: Build 69-kV breaker and a half in 161-kV footprint**

- Rebuild in previous 161-kV footprint using breaker and a half configuration
- Provides a location for future 34.5-kV rebuild in the current 69-kV yard location
- Alleviates maintenance access issues
- Provides greatest flexibility for maintenance and operations activities
- Will be the most expensive option
- Final cost benefit analysis will be provided during the Q3 meeting



# Gila 69-kV Rebuild Budget

PROJECT REQUEST PHASE  
+/-100% ESTIMATE ACCURACY

AOA STUDY PHASE  
+/- 30% ESTIMATE ACCURACY

## 2019 Final 10-Year Plan

PROJECTED TOTAL	FY27	FY28	FY29
\$ 10,500	\$ 800	\$ 100	\$ 100

## 2020 Draft 10-Year Plan

PROJECTED TOTAL	FY23	FY24	FY25	FY26	FY27	FY28
\$ 10,500	\$ 800	\$ 100	\$ 100	\$ 7,875	\$ 1,125	\$ 500

### Previous Status

- The Gila 69-kV Substation rebuild was previously slated to occur in the out years of the 10-Year plan

### Current Status

- Based on internal ranking of potential projects the Gila 69-kV rebuild has been pulled forward to the current budget formulation year
- The project was shared as a new Analysis of Alternatives study in the 10-Year Plan Active Construction Meeting held March 25, 2020
- The final comparison of alternatives and updated estimates will be presented in the 10-Year Plan Formal Meeting held October 2020



# Transmission Lines & Substations Maintenance Manager: Michael Simonton

## Projects

Yuma Area Maintenance Building

## Contact Info

Simonton@WAPA.gov

(602) 605-2675





# Yuma Area Maintenance Building

## Repositioning Staff

- To better serve Yuma area customers, in 2016 DSW decided to reposition a line crew at Gila Substation (~6 linemen and associated equipment)

## Short Term Solution

- Since 2016, DSW has been renting a mobile office trailer, which are less desirable conditions

## Existing Facilities Shortcomings

- Gila lacks sufficient space to accommodate all area employees
- Septic system undersized for DSW needs
- Equipment is exposed to elements – premature failures
- No wash bay to service vehicles
- Limited storage for materials, tools, and equipment
- Warehouse and shop in poor condition – sand penetration



# Yuma Area Maintenance Building

- An additional maintenance building at Gila Substation was initially planned to be a line item in future work at Gila Substation
- Regional analysis identified the potential to lease or lease-to-own a facility in the Yuma area
- Project inclusion can be used to mitigate some of the budget shortfalls experienced due to COVID-19 in FY21
- Three potential solutions for the acquisition of the building have been identified internally

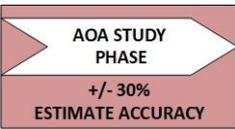


# Yuma Area Maintenance Building Alternatives

- Alternative 1 – Build a new maintenance building inside Gila Substation
- Alternative 2 – Lease an existing facility in the Yuma area
- Alternative 3 – Purchase an existing facility in the Yuma area



# Yuma Area Maintenance Building Budget



## 2020 Draft 10-Year Plan Spend Plan

PROJECTED TOTAL	FY21
\$ 6,000	\$6,000

### Previous Status

- The Yuma Area Maintenance Building was not included on the 2019 Final 10-Year Plan

### Current Status

- The maintenance building has been introduced to the 10-Year Plan to backfill spending in FY21 that has been shifted to future years due to COVID-19
- The current estimate on the 10-Year Plan is a rough estimate for the cost of purchasing the building
- Updated estimates will be presented for all alternatives in the Q3 meeting



# Future Analysis of Alternatives Studies



# Future Analysis Of Alternatives Studies

PROJECT NAME	BUDGET FY20-30	PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Cochise Substation Remediation	\$ 3,600	\$ 3,600					\$500	\$100	\$100	\$2,400	\$ 500		
Wellton New Control Building	\$ 3,800	\$ 3,800						\$500	\$100	\$ 100	\$2,600	\$ 500	
Oracle-Tucson 115kV Rebuild	\$ 9,060	\$ 9,060							\$800	\$ 100	\$ 100	\$7,560	\$500
Bouse-Headgate Rock 161-kV Rebuild	\$ 8,995	\$ 8,995							\$800	\$ 100	\$ 100	\$7,495	\$500

- Several new projects have been added to the out years of the 10-Year Plan
- These projects were identified via project request submissions and have been rated internally by subject matter experts for the order of completion
- Analysis of Alternative studies will occur on a project the year before it enters budget formulation and shared with all stakeholders via the quarterly customer meetings at that time



# Questions?



# Draft 10-Year Plan July 2020

## PARKER-DAVIS PROJECT DRAFT 10-YEAR PLAN

PROJECT NAME	PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Gila-Wellton Mohawk I-8 Crossing Rebuild	\$ 7,623	\$ 40										
Gila Substation 161-kV Rebuild	\$ 25,070	\$ 2,565	\$ 1,655	\$ 102								
Dome Tap-Gila 161-kV Rebuild	\$ 5,630	\$ 1,074	\$ 1,840	\$ 102								
Coolidge-Valley Farms 115-kV Rebuild	\$ 2,543	\$ 932	\$ 25									
Kofa-Dome Tap 161-kV Rebuild	\$ 5,138	\$ 1,850	\$ 1,200	\$ 1,064	\$ 650	\$ 50						
Bouse-Kofa 161-kV Rebuild	\$ 26,520	\$ 614	\$ 113	\$21,502	\$ 1,919	\$ 1,937	\$ 20					
Bouse Upgrade Project	\$ 45,967	\$ 100	\$ 1,087	\$10,300	\$12,219	\$13,002	\$ 6,945	\$ 856				
Crossman Peak Microwave Facility	\$ 4,525	\$ 25	\$ 2,534	\$ 333	\$ 145							
Parker-Blythe 161-kV #2 Rebuild Phase-1	\$ 30,000		\$ 7,500		\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500			
Gila Substation 69-kV Rebuild	\$ 10,500				\$ 800	\$ 100	\$ 100	\$ 7,875	\$ 1,125	\$ 500		
Yuma Area Maintenance Building	\$ 6,000		\$ 6,000									
Gila-Knob Remaining Rebuild	\$ 23,000					\$ 800	\$ 100	\$ 100	\$19,000	\$ 2,500	\$ 500	
Cochise Substation Remediation	\$ 3,600					\$ 500	\$ 100	\$ 100	\$ 2,400	\$ 500		
Blythe-Headgate Rock #1 161-kV Rebuild	\$ 23,900						\$ 1,195	\$ 100	\$ 100	\$ 9,560	\$11,711	\$ 1,234
Gila Substation 34.5 / 14KV	\$ 15,250						\$ 800	\$ 100	\$ 100	\$12,300	\$ 1,450	\$ 500
Parker Substation 161-kV Replacements	\$ 16,850						\$ 800	\$ 100	\$ 100	\$13,550	\$ 1,800	\$ 500
Wellton New Control Building	\$ 3,800						\$ 500	\$ 100	\$ 100	\$ 2,600	\$ 500	
Parker Substation 230-kV Replacements	\$ 12,100							\$ 800	\$ 100	\$ 100	\$ 9,800	\$ 1,300
Oracle-Tucson 115kV Rebuild	\$ 9,060							\$ 800	\$ 100	\$ 100	\$ 7,560	\$ 500
Bouse-Headgate Rock 161-kV Rebuild	\$ 8,995							\$ 800	\$ 100	\$ 100	\$ 7,495	\$ 500
<b>New Draft 10-Year Plan (2020) FY Totals</b>	<b>\$ 286,071</b>	<b>\$ 7,200</b>	<b>\$21,954</b>	<b>\$33,403</b>	<b>\$20,233</b>	<b>\$20,889</b>	<b>\$15,060</b>	<b>\$16,231</b>	<b>\$27,725</b>	<b>\$41,810</b>	<b>\$40,816</b>	<b>\$ 4,534</b>
<b>Final 10-Year Plan (2019) FY Totals</b>	<b>\$ 278,995</b>	<b>\$13,664</b>	<b>\$24,813</b>	<b>\$13,308</b>	<b>\$30,379</b>	<b>\$31,106</b>	<b>\$27,750</b>	<b>\$ 2,306</b>	<b>\$ 1,264</b>	<b>\$18,560</b>	<b>\$22,111</b>	

## INTERTIE PROJECT DRAFT 10-YEAR PLAN

PROJECT	PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Liberty Series Capacitor Bank Replacement	\$ 9,835	\$ 1,598	\$ 25									
<b>New Draft 10-Year Plan (2020) FY Totals</b>		<b>\$ 1,598</b>	<b>\$ 25</b>									
<b>Final 10-Year Plan (2019) FY Totals</b>		<b>\$ 1,598</b>	<b>\$ 25</b>									



# Rate Impacts



# Rate Impacts

- Due to the delays and impacts of COVID-19 and changes in projects, an estimated rate impact will not be performed until project delays and costs can be better estimated
- An estimated rate impact of the fiscal year 2021-2030 plan will be made available in the Q3 meeting



# Questions?



# Capital O&M Update



## Projects

Capital O&M Program Overview

## Contact Info

NRuiz@WAPA.gov

(602) 605-2837



# Capitalized O&M Review

- Moveable property, software, and capitalized maintenance-related work, typically smaller than construction projects and normally, but not always, designed, built, and commissioned by WAPA's internal workforce
- These type of projects are multi-year projects where the design, procurement of equipment/materials are completed in year one. Then installation and commissioning is performed in year two
- Some projects are single-year projects



# Capitalized O&M Review

- FY20 thru FY22 are work plans that are approved; therefore, no funding level changes can be made
- FY23 Work Plan will be worked on later this year; it is not an approved work plan until it is vetted through DSW management for approval
- A revalidation of projects is completed in the year of execution to ensure program needs are met, this does not mean an increase in our budgeted program dollars but a reprogramming of planned projects. Projects are also reviewed based on urgency and priority.



# Capitalized O&M Review

- The existing 10-Year Plan is managed and programmed as follows:
  - Current year, plus two years out are locked budgets
  - On the year four budget and out, there are reoccurring programs in the current year and the rest of the out-years of the 10-Year Program



# Capitalized O&M Review

## Examples of Reoccurring Programs

- Wood Pole Replacements
- Meter Replacements
- Relay Line Replacements
- Microwave Sites
- Remote Terminal Units
- Test Equipment
- Facility Upgrades
- HQ IT Software and Hardware Upgrades
- Heavy Equipment Purchases
- Power System Replacements 48VDC Charger and Battery for Communication Sites
- Critical Infrastructure Protection for Cyber Security Assets
- Radio Replacements Joint Use System
- Digital Monitoring Equipment /Digital Fault Equipment



# Supervisory Information Technology Specialist: Michael Paris

## Projects

SCADA/EMS

## Contact Info

Paris@WAPA.gov

(602) 605-2458



# SCADA/EMS

## **WAPA has four regions with six SCADA/EMS installation locations**

- Three systems are active at any one-time
- All three active systems provide full functionality to operators from a primary and alternate location at the same time
  - This provides continuity of operations if a location becomes uninhabitable or is destroyed
- The systems evolved independently and utilize different hardware, software and maintenance arrangements
- The support staff from each region have limited familiarity with the other systems in use, resulting in minimal synergy
- System operators and transmission planners do not use common, WAPA-wide tools

## **The three system installations include:**

- Two different Commercial Off the Shelf (COTS) software products from GE
- One in-house developed SCADA/EMS product (UGP PCS) that is paired with a COTS advanced application system (Siemens ODMS)



# SCADA/EMS Current Status

## **Each region has upgrade projects to complete this year**

- The UGP region employs internal development personnel to maintain/upgrade the PCS SCADA software in conjunction with SWPA
- Currently SWPA and UGP PCS are on two different code paths and UGP's upgrade project involves merging code, QA testing, user and support staff education and eventual implementation in production

## **This allows for the continued decrease in the total number of pieces of software supported across WAPA**

- FERC Order 693-A established reliability standards that require compliance with various standards
- Examples of the standards where this project will provide efficiencies based on Western's tool usage:
  - TOP 001
  - TOP 005
  - BAL 005



# SCADA/EMS Selection Methodology

A WAPA-wide team formulated over 470 unique, detailed technical requirements covering 20 points of focus and 48 open-ended vendor questions covering the following eight areas before the vendor presentations and final selection:

- Vendor Information/Experience
- Cyber-Security
- System Architecture
- Product Development Planning
- Implementation Services
- SCADA/EMS Training
- Model Support
- Certification/Auditing/Standards

Year	Budget	Description	Region
FY20	\$ 3,900,000	Licensing	All
FY20-21	\$ 2,840,000	Installation and Deployment	SNR
FY21-22	\$ 2,840,000	Installation and Deployment	UGP
FY23-24	\$ 2,840,000	Installation and Deployment	DSW/RMR



# Supervisory Transmission Lines & Substations Maintenance Manager: Michael Simonton

## Projects

DSW Wood Pole Program

## Contact Info

Simonton@WAPA.gov

(602) 605-2675



# Wood Pole Replacement Program

## Program Overview

- Remediation of wood pole infrastructure with a focus on areas of advanced deterioration
- Segments identified by assessment of inspection reporting data and anticipated long term planning
- Blythe-Knob (86mi) remediation initiated in FY18



# Wood Pole Replacement Program

BLY-KNB

May 2017 Status

Row Labels	B	C	D	E	Grand Total
Anchor	1	3			4
Brace	15	221	5		241
Crossarm	111	201	25		337
Foundation	1				1
Guy	4	7			11
Insulator	13	20	1	1	35
Phase/Conductor	2	5			7
Pole	116	188	230	1	535
Pole Hardware	3	8			11
Signs			3		3
Static Wire	9	49	2	9	69
Structure					0
Grand Total	275	702	266	11	1254

BLY-KNB

April 2019 Status

Row Labels	B	C	D	E	Grand Total
Anchor					0
Brace	2	80	4		86
Crossarm	19	49	13		81
Foundation					0
Guy	1	14			15
Insulator	1	4			5
Phase/Conductor	1	1			2
Pole	43	92	76		211
Pole Hardware		1	1		2
Signs			3		3
Static Wire		3	3		6
Structure					0
Grand Total	67	244	100	0	411

BLY-KNB

April 2020 Status

Row Labels	B	C	D	E	Grand Total
Brace	1	68	4		73
Crossarm	13	49	12		74
Guy	1	14			15
Insulator	1	4			5
Phase/Conductor	1	1			2
Pole	36	74	52		162
Pole Hardware		1	1		2
Signs			3		3
Static Wire		2	3		5
Grand Total	53	213	75	0	341

Maintenance Priority Codes

<b>A</b>	Good or like new. No action required.
<b>B</b>	Minor defect. Monitor degradation.
<b>C</b>	Moderate defect. Rehabilitation or replacement recommended as scheduled maintenance.
<b>D</b>	Serious defect. Repair, reinforce, or replace as soon as possible.
<b>E</b>	Risk to public safety or system reliability.

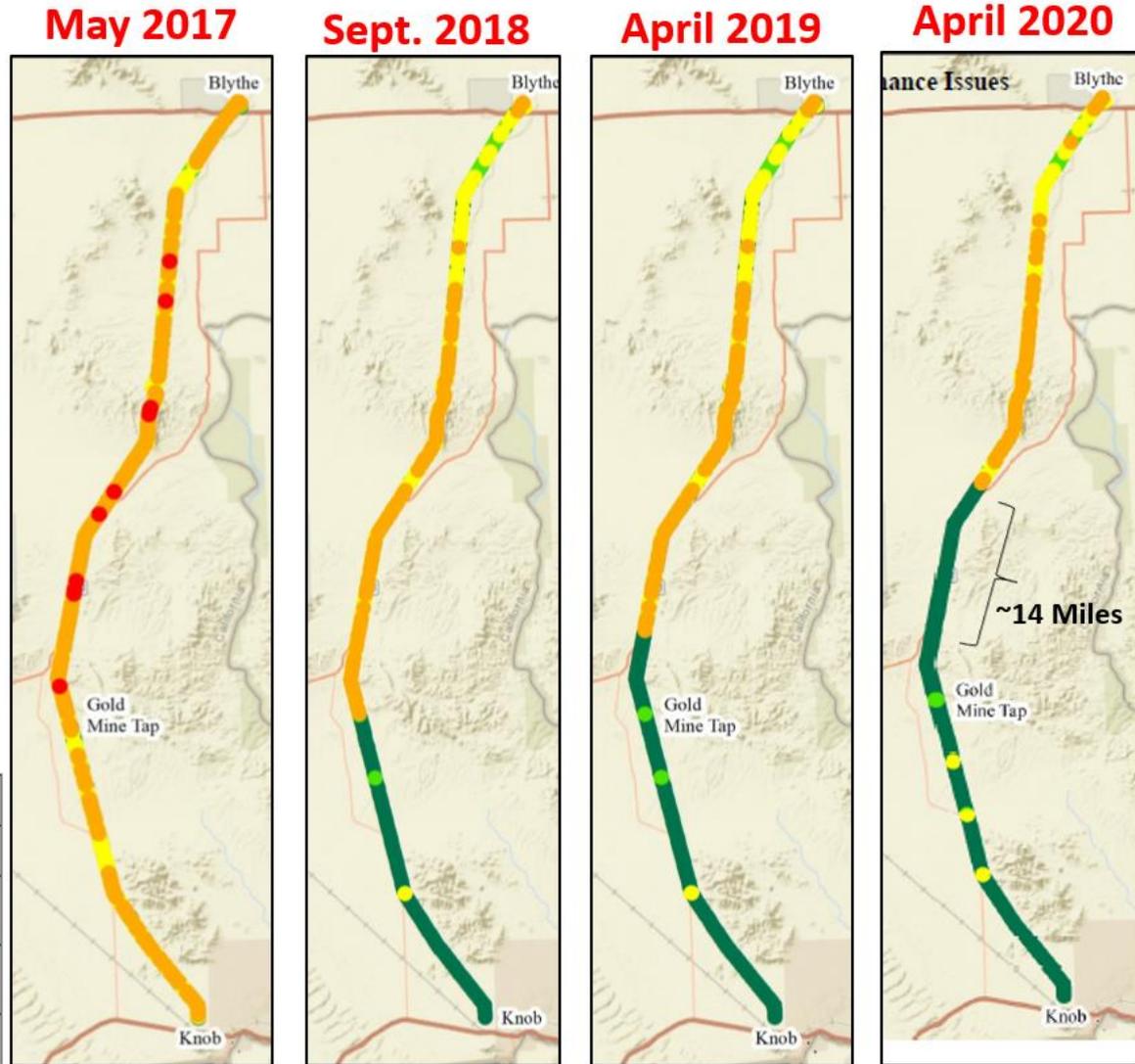


# Wood Pole Replacement Program

- Replacing all wood structures and insulators in-kind, re-using conductor
- Sustain ~\$3M/year (50/50 labor & materials)
- Most materials have been purchased for entire length
- Anticipated completion in FY23 with an approximate total cost of \$16M

Maintenance Priority Codes

A	Good or like new. No action required.
B	Minor defect. Monitor degradation.
C	Moderate defect. Rehabilitation or replacement recommended as scheduled maintenance.
D	Serious defect. Repair, reinforce, or replace as soon as possible.
E	Risk to public safety or system reliability.



# New Truck Purchase

- Last year DSW shared its intent to purchase a new truck to replace an existing 125' Altec bare hand bucket truck in FY21
- A 200' bare hand bucket truck was budgeted for at a cost of \$2.3M
- At the time, there was still internal consideration for a 150' truck as an alternate option for a lower total cost (~\$ 1.4M)
- The line item is currently shown as “Mobile and Heavy Equipment Replacement” on the FY21-30 Capitalized O&M spreadsheet included as a supplemental material, but that dollar value may be subject to change based on the final purchase

CURRENT 125' Altec



SAMPLE 200' Bronto



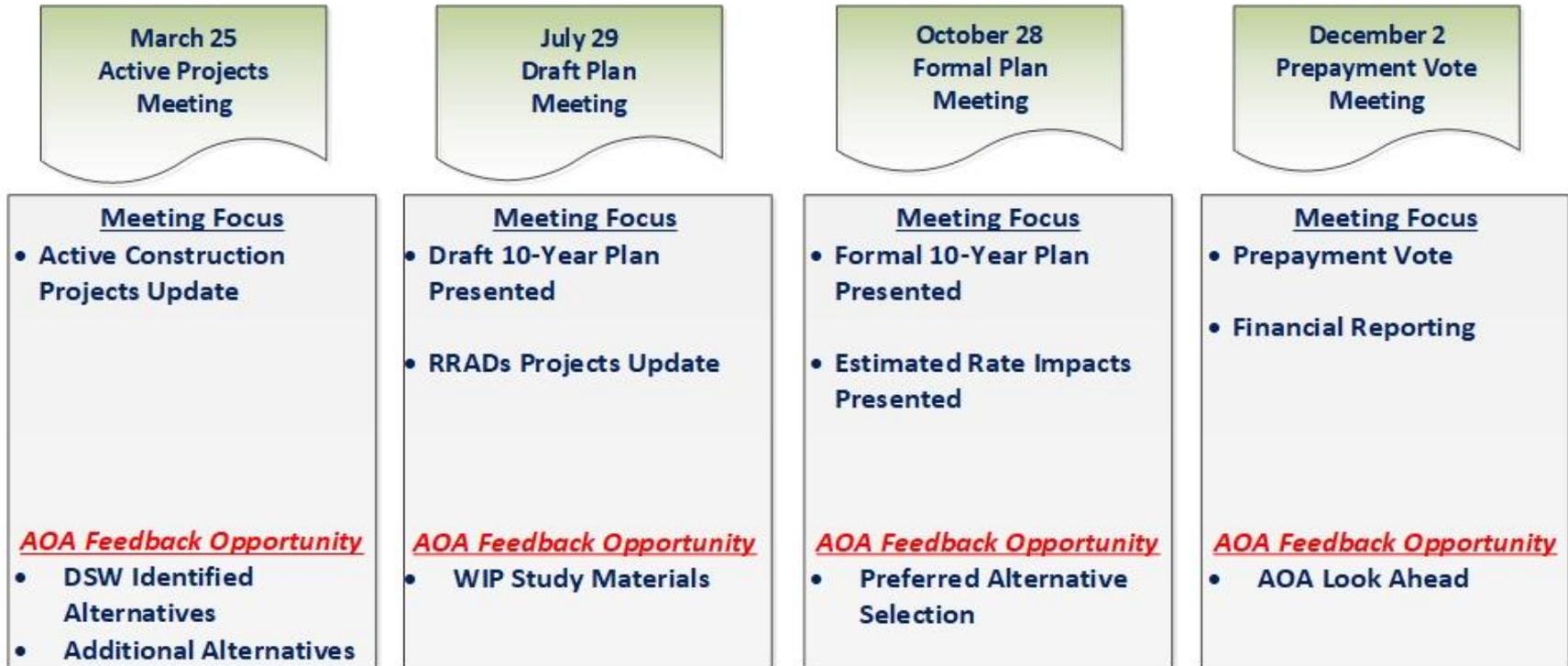
# Questions?



# Next Steps



# Next Steps



We are here today



\*Revision 7/23/2020 – Updated Formal plan meeting from October 14 to October 28

# The Future



# Questions?

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Teresita Amaro, Engineering & Construction Manager

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# Next Presentation

**A presentation on Arc Flash studies to follow shortly**

**Thank you for attending**

