WESTERN AREA POWER ADMINISTRATION

DESERT SOUTHWEST REGION

10-YEAR PLAN PRESENTATION

INTERTIE & PARKER DAVIS PROJECT

FISCAL YEAR 2020-2029

Figure 1 Dome Tap-Gila 161-kV Transmission Line Crossing SR95

QUARTERLY CUSTOMER MEETING: OCTOBER 30, 2019

DESERT SOUTHWEST REGIONAL OFFICE

615 S 43RD AVENUE

PHOENIX, AZ 85005

Western Area Power Administration

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1. MEETING AGENDA

Desert Southwest Regional Office
Wednesday, October 30, 2019 | 10 a.m. Mountain Standard Time (Arizona)

WEBEX VIDEO CONFERENCING AND CALL-IN NUMBER:

- To access the WebEx please click the below link and follow the on-screen prompts
  CLICK HERE
  Meeting number: 904 959 769
  Meeting password: 2Y34ZjMk
- To join the conference call, please dial (415)-527-5035. When prompted, enter conference code number 904 959 769 and then enter #.

JOINT PLANNING AGREEMENT (JPA) OBJECTIVES:

- Provide customers with the final 10-Year Plan (FY2020-FY2029) that includes the planned use of Prepayments for construction projects and rate analysis
- Propose estimated Prepayments for construction projects for the Prepayment Funding Meeting held during the 4th quarter
- Provide customers with an update on the development of refined scopes, schedules, and cost estimates of partially funded construction projects, referred to as seed funded projects
- Provide customers with in-progress Analysis of Alternative (AOA) studies and proposed alternatives

AGENDA:

1. Welcome and Introduction
2. Draft FY2019-FY2029 Plan walkthrough
    a. Crossman Peak New Microwave Facility
    b. Gila Substation 161-kV Rebuild
    c. Liberty Series Capacitor Bank Replacement
    d. Gila-Wellton Mohawk I-8 Crossing Rebuild
    e. Coolidge-Valley Farms 115-kV Rebuild
    f. Dome Tap-Gila 161-kV Rebuild
    g. Kofa-Dome Tap 161-kV Rebuild
    h. Bouse Upgrade (seed funded)
    i. Bouse-Kofa 161-kV Rebuild
3. Analysis of Alternatives (AOA) Studies
    a. Parker-Blythe #2 161-kV Rebuild
4. Final FY2020-FY2029 Plan
5. Rates Analysis
6. 2019 Prepayment Vote
    a. December 10, 2019 Q4 Prepayment Vote Meeting

2. TABLE OF ACRONYMS

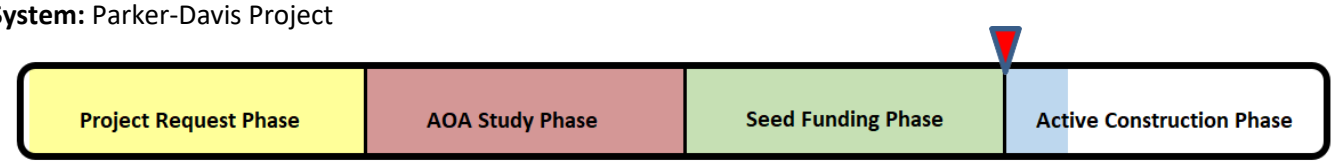
ACSR.....*ALUMINUM CONDUCTOR STEEL REINFORCED*
ACSS.....*ALUMINUM CONDUCTOR STEEL SUPPORTED*
AOA.....*ANALYSIS OF ALTERNATIVES STUDY*
BLM.....*BUREAU OF LAND MANAGEMENT*
CPC.....*CAPITAL PLANNING COMMITTEE*
DSW.....*DESERT SOUTHWEST REGION*
EVM.....*EARNED VALUE MANAGEMENT*
FCC.....FEDERAL COMMUNICATIONS COMMISSION
GFE.....*GOVERNMENT FURNISHED EQUIPMENT*
IDC.....*INTEREST DURING CONSTRUCTION*
JPA.....*JOINT PLANNING AGREEMENT*
KCMIL.....*THOUSANDS CIRCULAR MILS*
MDCC.....*MAINTENANCE DESIGN CONSTRUCTION COMMITTEE*
MVA.....*MEGA VOLT AMP*
NERC.....*NORTH AMERICAN ELECTRIC RELIABILTY CORPORATION*
NESC.....*NATIONAL ELECTRIC SAFETY CODE*
OGW.....*OVERHEAD GROUND WIRE*
O&M.....*OPERATIONS AND MAINTENANCE*
OPGW.....*OPTICAL OVERHEAD GROUND WIRE*
OGW.....*OVERHEAD GROUND WIRE*
P-DP.....*PARKER-DAVIS PROJECT*
ROW.....*RIGHT-OF-WAY*
TYP.....*10-YEAR PLAN*
WAPA.....*WESTERN AREA POWER ADMINISTRATION*

3. TABLE OF FIGURES

4. ACTIVE PROJECT HIGHLIGHTS

4.1 Crossman Peak New Microwave Facility

Power System: Parker-Davis Project



Project Location =

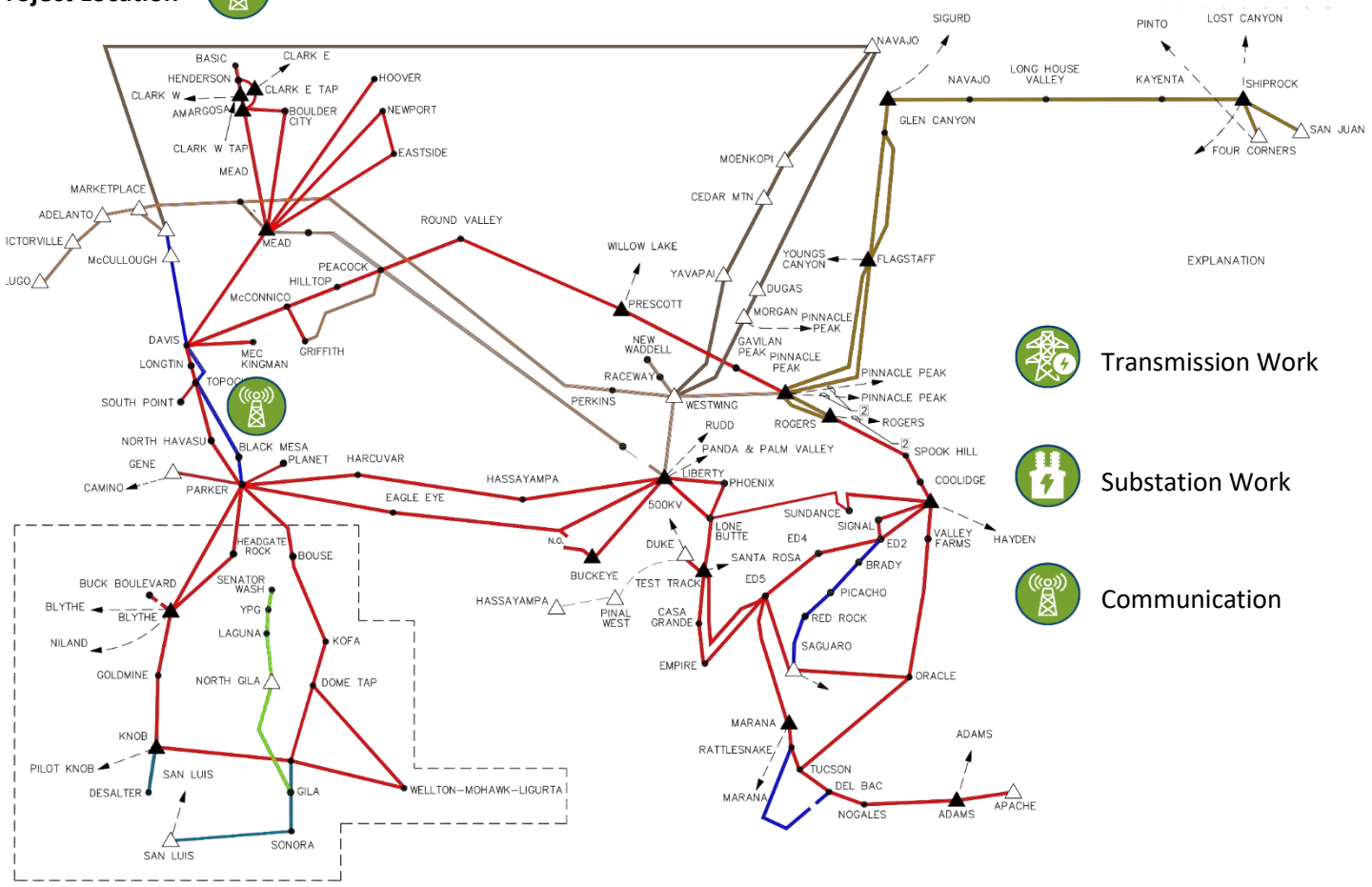


Figure 2- WAPA DSW Transmission Line Map

Project Background

WAPA's microwave system operates within a specific frequency band (2GHz) regulated by the Federal Communications Commission (FCC). Legislation was presented in 2010 that reallocates this frequency band to a higher bandwidth range (7GHz). As a result, radios along WAPA's microwave system require replacement to models that operate within the higher frequency range in order to accommodate the FCC mandate.

In migrating to the higher frequency, WAPA analyzed its microwave system and identified a 70 mile stretch between the Metal Mountain microwave site and the Topock Substation, as non-complying to reliability standards. This communication path no longer meets the required reliability standards due to obstructions

interfering with the path coupled with moving to the new frequency bandwidth (7GHz). This compelled WAPA to look for a new site that would provide the required reliability. A new path to bypass the source of interruption in the higher frequency band was chosen from Christmas Tree Pass, to Crossman Peak, to Metal Mountain (see Figure 3 below).

Figure 3- Location of New Crossman Peak Microwave Site (Yellow Dot)

Extensive effort went into finding an existing site that would be suitable and provide the reliability needed. The current interim sites do not meet the required WAPA and NERC standards for reliable and secure communication. No site other than Crossman Peak was successfully identified during the communication siting study that was performed by WAPA.

Additionally, the microwave system is the primary means of communication for all of the transmission lines between WAPA's Mead Substation and Phoenix, encompassing five generation sites and 22 substations. This new site will ensure WAPA's ability to meet all relevant operational and security standards, as well as meet WAPA's growing communication needs.

The scope of this project includes the construction of a WAPA owned microwave communication site on Crossman Peak, adjacent to an existing non-WAPA communication site. Crossman Peak is located east of Lake Havasu City. The new site will support the primary microwave communications between WAPA's existing Christmas Tree Pass and Metal Mountain communication sites.

Project Scope Highlights

- Construct a new microwave tower and 12'x24' communication building
- Requires land acquisition, access easement, and a new distribution line for primary power to the site
- Install backup generator with fuel tanks and an equipment shelter
- Provides primary microwave communications between Phoenix and Hoover via WAPA's existing Christmas Tree Pass and Metal Mountain communication sites

Figure 4- Access to New Crossman Peak Microwave Facility

Project Updates

Since the last customer presentation, multiple options have been considered to move the project forward with no feasible results. The project was initially placed on hold in December of 2018 due to growing projected cost to construct a distribution line to provide primary power to the site. The project will remain on hold while a new AOA study is performed to identify new solutions to address getting primary power to the site and potentially the siting of an alternate location for the microwave equipment.

Project Financial Summary

FUNDING TYPE	ORIGINAL BUDGET	BUDGET ADJUSTMENTS	CURRENT BUDGET	COST TO DATE	REMAINING FUNDS	ADDITIONAL FUNDS REQUIRED
Prepayment	$ 4,525,000	$ -	$ 4,525,000	$ 1,487,794	$ 3,037,206	
Appropriations	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL	**$ 4,525,000**	**$ -**	**$ 4,525,000**	**$ 1,487,794**	**$ 3,037,206**	**$ -**
**Cost = All Executions, Obligations, & Commitments Through 9/30/19*						

Project Milestones

PROJECT MILESTONE	STATUS	DATE
Seed Funded	N/A	N/A
Approved for Funding	Completed	Q4 2016
Design Completed	Projected	TBD
Construction Mobilization	Projected	TBD
In-Service / Energization	Projected	TBD
Financial Closeout	Projected	TBD

4.2 Gila Substation 161-kV Rebuild

Power System: Parker-Davis Project

Project Request Phase	AOA Study Phase	Seed Funding Phase	Active Construction Phase

Project Location =

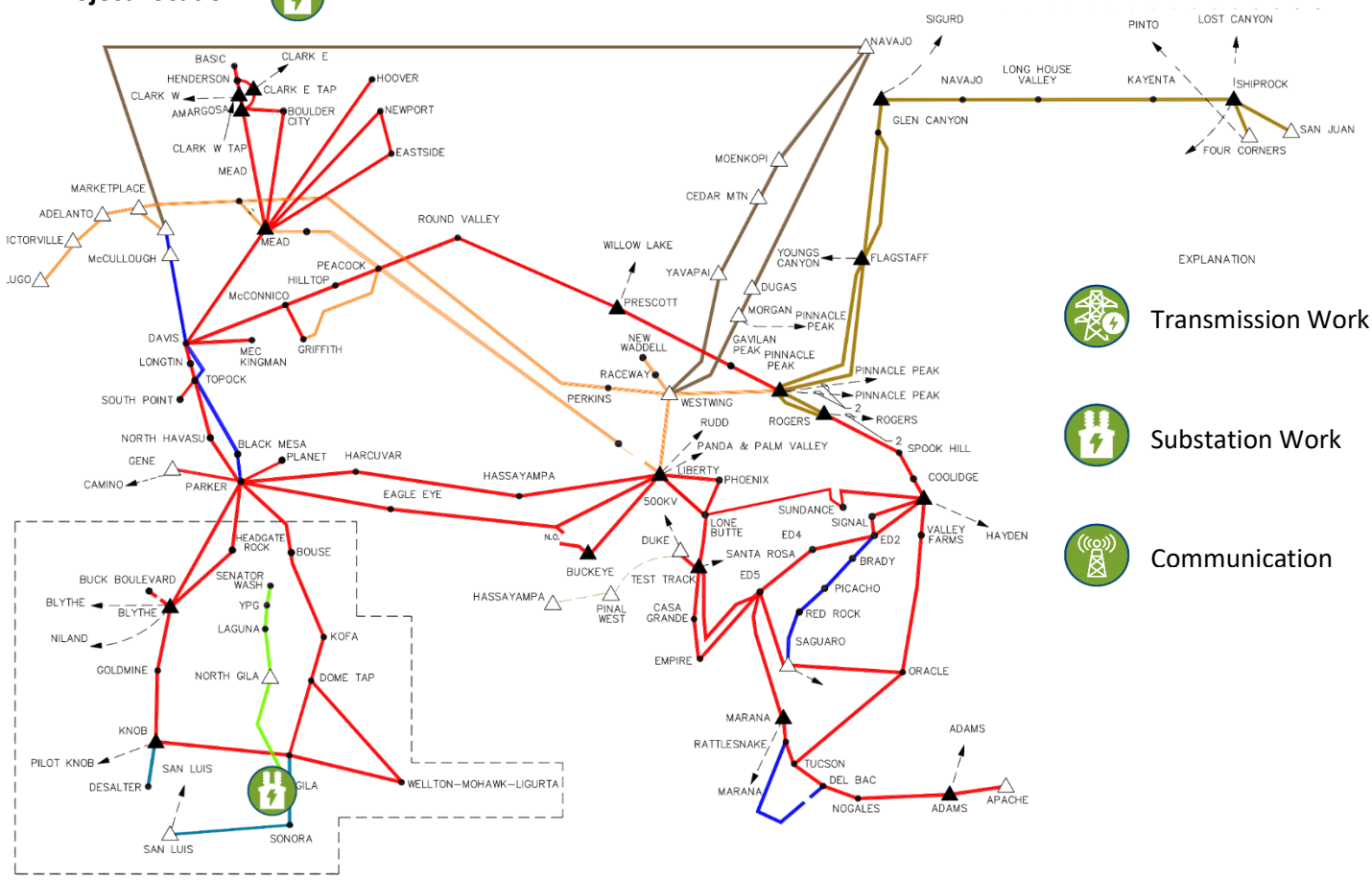


Figure 5- WAPA DSW Transmission Line Map

Project Background

The Gila Substation (comprised of 161-kV, 69-kV, 34.5-KV and 4.16-kV yards) was originally constructed in 1949. Due to the original layout of the yard, there are safety risks to equipment and personnel. This is due to the lack of proper spacing and clearance distances which forces WAPA to take outages in order to conduct routine maintenance work. The rebuild and reconfiguration of the 161-kV yard to current safety clearance standards will increase worker safety, lessen the possibility of equipment flashover, equipment failure, and eliminate the requirement for outages to conduct routine maintenance work.

The Gila Substation 161-kV Rebuild Project was initiated in 2013 and since inception, numerous vital design changes were found to be necessary to ensure reliability and meet the customer's needs. The new yard will be built to 230-kV standards, operated at 161-kV. The rebuild of the 161-kV substation will increase reliability by

replacing aged components that have advanced deterioration and are far past their engineered life span, making maintenance and repairs difficult and a detriment to the WAPA System.

In addition, a new control building will be constructed to accommodate all needs for the substation. In a separate project, the existing 161-kV yard will be demolished as part of a future project after the new 161-kV system is operational; this will create space for the future reconfiguration and rebuild of the 69-kV and 34.5-kV yards.

Project Scope Highlights

- Built to 230-kV standards, operated at 161-kV
- New control building will be constructed
- Existing 161-kV yard will be demolished as a separate project once the new 161-kV system is operational to create space for the future reconstruction of the 69-kV and 34.5-kV yards

Figure 6- Aerial view of Gila 161-kV Substation along canal

Figure 7- Earthwork along the access road to Gila Substation

Project Updates

The earthwork has been completed and most of the foundations have been finished. The majority of the breakers and switches have been mounted but are not yet wired. The control building was completed in September of this year, with the remainder of construction continuing until June 2020.

There have been several circumstances that now require additional prepayment funds to complete the project. The construction contract was awarded at just under $10 million, $2 million above the independent government estimate. Additional planning and earthwork was also necessary to prevent runoff from flowing into the canal adjacent to the Gila Substation (see figure 6 above).

Lastly, there has been an increase in the cost of steel, which impacted all equipment costs. In total, an additional $ 4,878,500 will be required to complete the project. WAPA proposes to transfer approximately $3.5 million in prepayments from other active projects that are under budget. WAPA anticipates that in addition to the funds transferred, an additional ~$1.34 million in prepayments will be required to complete the project. The transfer of funds and the additional prepayments will be voted on in the upcoming 4th quarter prepayment vote meeting scheduled for December 2019.

Project Financial Summary

FUNDING TYPE	ORIGINAL BUDGET	BUDGET ADJUSTMENTS	CURRENT BUDGET	COST TO DATE	REMAINING FUNDS	ADDITIONAL FUNDS REQUIRED	NEW BUDGET
Prepayment	$ 12,000,000	$ 3,313,487	$ 15,313,487	$ 17,066,845	$ (1,753,358)	$ 4,878,500	$ 20,191,987
Appropriations	$ -	$ 3,681,013	$ 3,681,013	$ 3,681,013	$ -	$ -	$ 3,681,013
TOTAL	**$ 12,000,000**	**$ 6,994,500**	**$ 18,994,500**	**$ 20,747,858**	**$ (1,753,358)**	**$ 4,878,500**	**$ 23,873,000**
**Cost = All Executions, Obligations, & Commitments Through 9/30/19*							

Project Financial Summary Continued

PROJECT	FUNDS AVAILABLE FOR TRANSFER
Liberty Series Capacitor Bank Replacement	$ 537,000
Coolidge-Valley Farms 115-kV Rebuild	$ 807,000
Gila-Dome Tap 161-kV Rebuild	$ 2,000,000
Kofa-Dome Tap 161-kV Rebuild	$ 192,000
TOTAL FUNDS AVAILABLE FOR TRANSFER	**$ 3,536,000**

ADDITIONAL FUNDS REQUIRED	$ 4,878,500
TOTAL FUNDS AVAILABLE FOR TRANSFER	$ 3,536,000
NET INCREASE IN PREPAYMENTS	**$ 1,342,500**

Project Milestones

PROJECT MILESTONE	STATUS	DATE
Seed Funded	N/A	N/A
Approved for Funding	Completed	Q4 2014
Design Completed	Completed	Q2 2018
Construction Mobilization	Completed	Q4 2018
In-Service / Energization	Projected	Q2 2020
Financial Closeout	Projected	Q2 2021

4.3 Liberty Series Capacitor Bank Replacement

Power System: Intertie Project

Project Request Phase	AOA Study Phase	Seed Funding Phase	Active Construction Phase

Project Location =

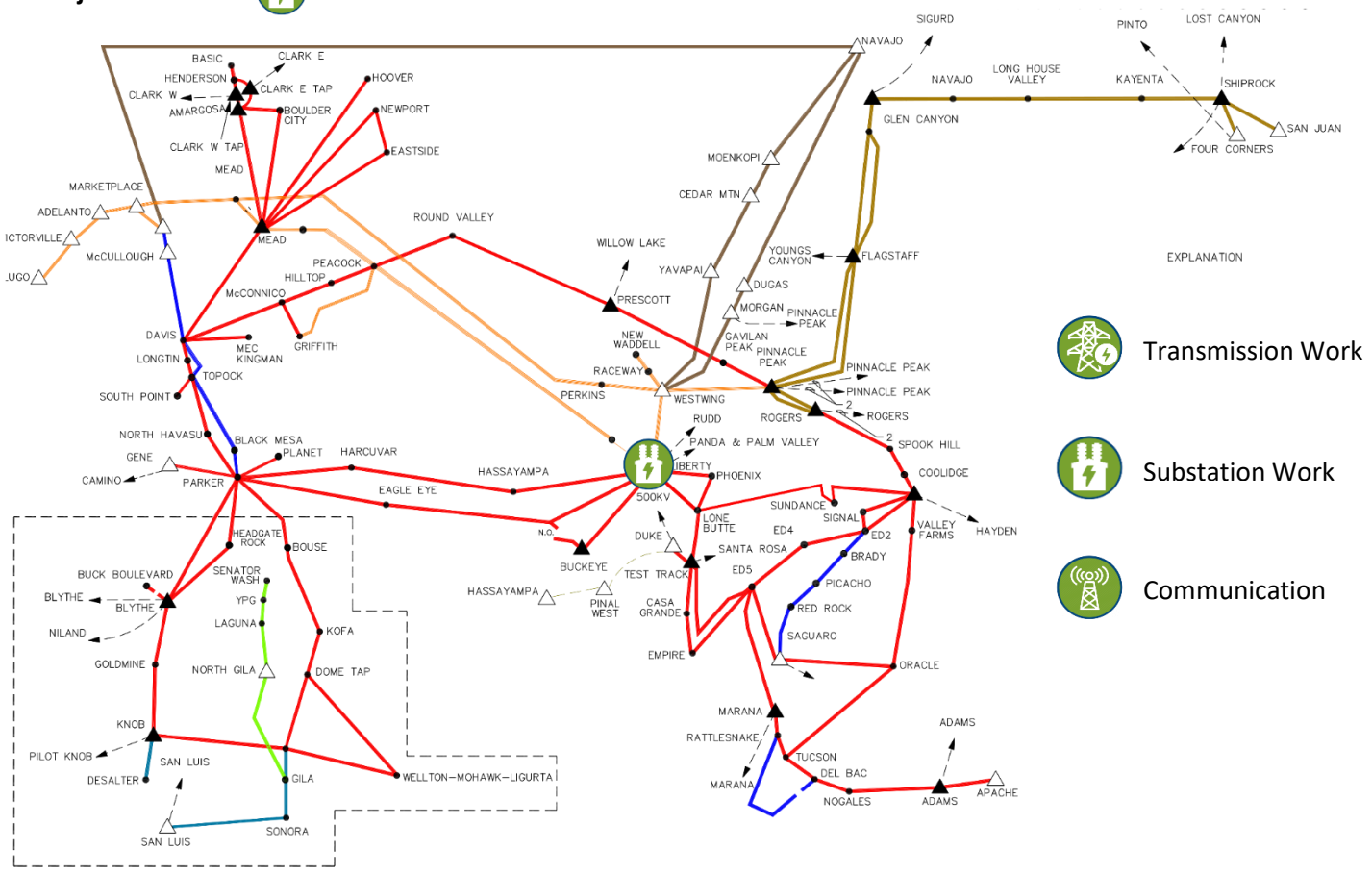


Figure 8- WAPA DSW Transmission Line Map

Project Background

The Liberty 345-kV Series Capacitor Bank Replacement project was initiated in late 2016. This project will construct and install a new 345-kV series capacitor bank to replace the existing, in-service, Westinghouse capacitor bank (PU1A). This unit is rated at 345-kV, 110-MVar, and 850 Amps (508 MVA). The capacitor bank was originally commissioned in 1969 and has degraded significantly. The series capacitor bank is made up of capacitor cans, a control system, air compressor, air dryer, air piping system, inserting circuit breaker, relaying, surge arrestors and reactors. The capacitor bank equipment contract was awarded in August 2017 and required a one year lead time for delivery. Appropriated funds were allocated to DSW for this project which were utilized to purchase the approximately $3.7 million capacitor bank equipment.

Project Scope Highlights

- Replace the existing, in service, PU1A 345-kV series capacitor bank
- The new series capacitor bank will be installed adjacent to the existing unit
- The old capacitor bank unit will be removed and the foundations will be left in place
- Testing of the new capacitor bank was successfully completed in 2018

Figure 9- Aerial view of Liberty Substation

Project Updates

On June 20, 2018 WAPA awarded a Construction Contract for $2,356,696. A protest was filed at the Government Accountability Office (GAO) on the award. That protest was upheld and the construction contract was awarded on September 25, 2018 for $2,231,997. As a result, the project schedule was delayed by approximately eight months due to availability of outage windows.

In funding the construction contract, ~$1.7 million in appropriations was made available and allocated to the project. Due to maintenance issues caused by birds nesting and fouling the existing capacitor bank, WAPA has decided to remove the existing capacitor bank from the substation to deter the birds from nesting in the area of the substation. This will not include removal of the existing foundations or excavation of the foundations in order to reduce ground disturbance. Within the scope of the project, small foundations will be added for the new capacitor bank to support four bird irritant dispensers to mitigate future issues with fouling of the new equipment.

The contractor started work in the fall of 2018 and shut down during the summer of 2019. The contractor re-mobilized in September 2019 to continue work under a three month planned outage to complete the field work. Currently the project is on schedule and under budget. WAPA is forecasting that the project will come in under budget as a result of the construction contract being awarded below the independent government estimate (IGE). As a result, WAPA proposes the release of ~$537,000 in prepayments funds. These funds will be transferred to the active Gila Substation 161-kV Rebuild project.

Project Financial Summary

FUNDING TYPE	ORIGINAL BUDGET	BUDGET ADJUSTMENTS	CURRENT BUDGET	COST TO DATE	REMAINING FUNDS	ADDITIONAL FUNDS REQUIRED
Prepayment	$ 10,372,000	$ (6,233,826)	$ 4,138,174	$ 2,514,953	$ 1,623,221	$ -
Appropriations	$ -	$ 5,696,826	$ 5,696,826	$ 5,696,826	$ -	$ -
TOTAL	**$ 10,372,000**	**$ (537,000)**	**$ 9,835,000**	**$ 8,211,779**	**$ 1,623,221**	**$ -**
**Cost = All Executions, Obligations, & Commitments Through 9/30/19*						

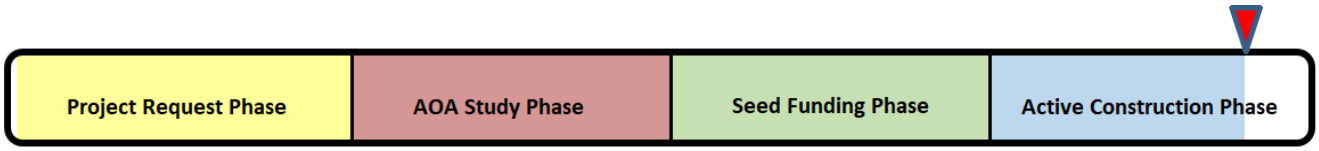
Project Milestones*

PROJECT MILESTONE	STATUS	DATE
Seed Funded	N/A	N/A
Approved for Funding	Completed	Q4 2016
Design Completed	Completed	Q1 2018
Construction Mobilization	Completed	Q4 2018
In-Service / Energization	Projected	Q4 2019
Financial Closeout	Projected	Q2 2020

**REVISED 10/28/2019*

4.4 Gila-Wellton Mohawk Interstate-8 Crossing Rebuild

Power System: Parker-Davis Project



Project Location =

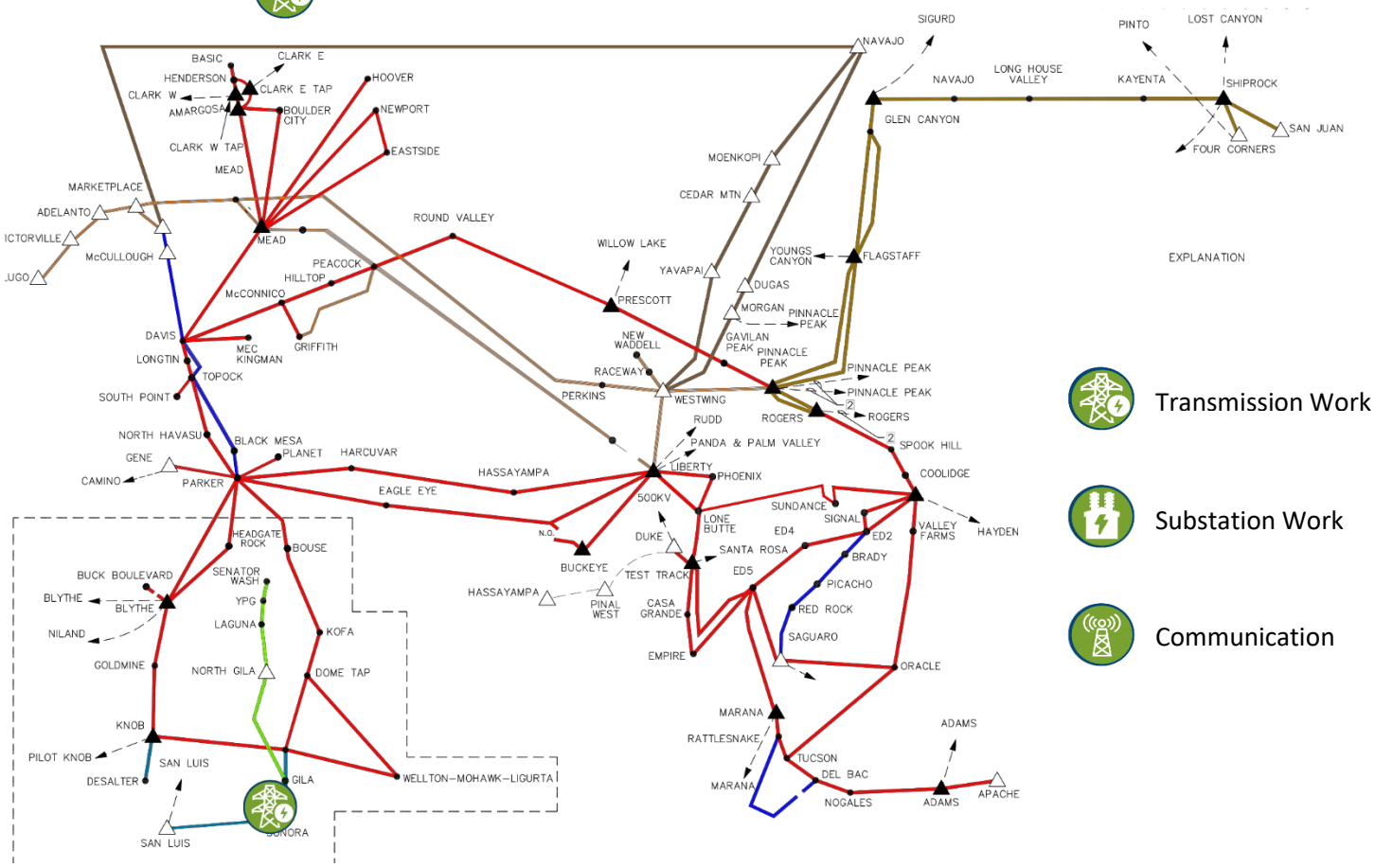


Figure 10- WAPA DSW Transmission Line Map

Project Background

The Gila-Wellton Mohawk (GLA-WML) 161-kV transmission line rebuild project was initiated in late 2016 as part of DSW's new seed funding pilot program. DSW kicked off the project and began design work to rebuild 2.8 miles of the original wood structures along the GLA-WML transmission line. The line was erected in 1956 and the structures are well beyond the recommended lifespan and rehabilitation efforts are no longer viable. Many of the poles display visual symptoms of advanced external shell rot, along with weathering and large cracks.

During 2017, a majority of the GLA-WML structures were replaced by WAPA maintenance personnel; however, the stretch of transmission line that traverses rugged and mountainous terrain was not replaced. This was due in part because many of the structures have no existing access roads and those that do, require significant roadwork for vehicular travel.

In conjunction with the rebuild effort, WAPA established access roads where economically feasible to reduce the potential for helicopter only access. In addition, overhead optical ground wire was installed on the GLA-WML transmission line.

Figure 11- Gila-Wellton Mohawk 161-kV Rebuild under construction

Project Scope Highlights

- Rebuild 2.8 miles of single circuit 161-kV transmission line through Telegraph Pass (mountainous terrain)
- Replace original wood structures with steel mono-poles
- Install OPGW for communication
- Replace all insulators and hardware

Project Updates

Although WAPA is new to the use of micro-pile foundations, the application of this technique was executed efficiently thanks to a well-written specification and design package. Drilling the direct-embed foundations proved to be challenging, but the project progressed as planned and became substantially complete slightly ahead of schedule.

The only setback late in the project was an event in which the overhead optical ground wire (aka fiber optics) was damaged by lightning, resulting in a need for the contractor to return to the site and repair the line. This repair work has been completed successfully and the project will is now entering financial closeout, which should complete in FY20.

Project Financial Summary

FUNDING TYPE	ORIGINAL BUDGET	BUDGET ADJUSTMENTS	CURRENT BUDGET	COST TO DATE	REMAINING FUNDS	ADDITIONAL FUNDS REQUIRED	NEW BUDGET
Prepayment	$ 7,247,137	$ (27,656)	$ 7,219,481	$ 7,281,791	$ (62,310)	$ 102,346	$ 7,321,827
Appropriations	$ 273,517	$ 27,656	$ 301,173	$ 301,173	$ -	$ -	$ 301,173
TOTAL	**$ 7,520,654**	**$ -**	**$ 7,520,654**	**$ 7,582,964**	**$ (62,310)**	**$ 102,346**	**$ 7,623,000**
**Cost = All Executions, Obligations, & Commitments Through 9/30/19*							

Project Milestones

PROJECT MILESTONE	STATUS	DATE
Seed Funded	Completed	Q4 2016
Approved for Funding	Completed	Q4 2017
Design Completed	Completed	Q1 2018
Construction Mobilization	Completed	Q3 2018
In-Service / Energization	Completed	Q2 2019
Financial Closeout	Projected	Q4 2019

4.5 Coolidge-Valley Farms 115-kV Rebuild

Power System: Parker-Davis Project

Project Request Phase	AOA Study Phase	Seed Funding Phase	Active Construction Phase

Project Location =

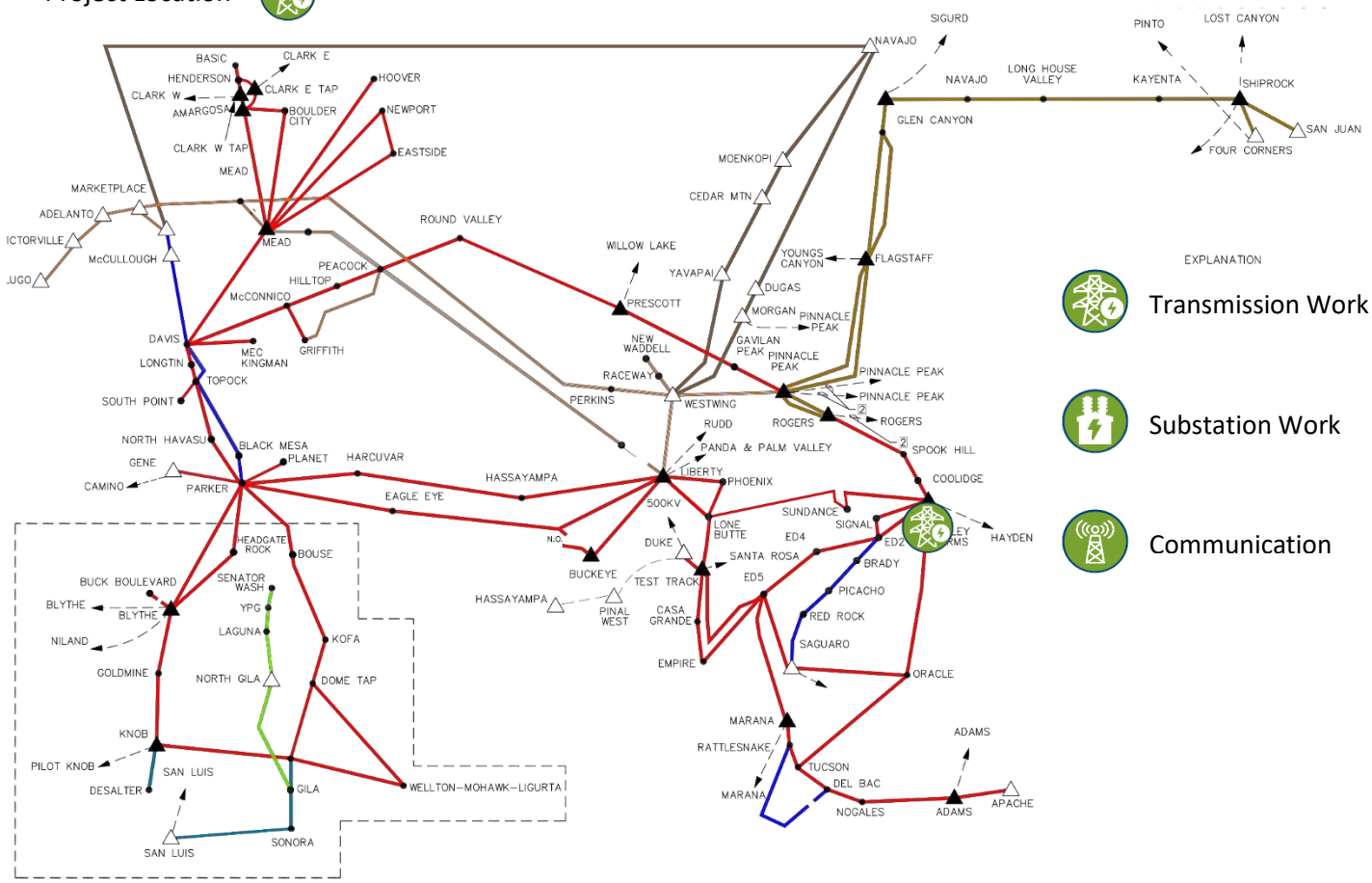


Figure 12- WAPA DSW Transmission Line Map

Project Background

Coolidge to Valley Farms (COL-VAF) is a single circuit, 6.1-mile, 115-kV transmission line segment of the Coolidge to Oracle (COL-ORA) 45-mile transmission line. The existing structures are mainly wood H-frame structures with a 4/0 copper conductor and two overhead ground wires (OGW). The rebuild effort will include the replacement in-kind of existing deteriorated wood pole structures. Replacement of the new wood poles will be located in the same location as the existing poles to avoid environmental, cultural, and biological impact concerns.

The existing copper conductor rated at 88-MVA will be upgraded to Cardinal 954-KCMIL aluminum conductor steal reinforced (ACSR) conductor rated at approximately 180-MVA with the addition of one new overhead optical ground wire (OPGW) and one standard OGW.

Figure 13- Aerial view of Coolidge-Valley Farms 115-kV transmission line

The scope also includes minor substation work including jumper replacements at the terminal ends of the line in order to achieve the required increased capacity. Work at each substation also includes communication upgrades in the control rooms to land and integrate the new OPGW.

Project Scope Highlights

- Replacement of 6.1 miles of 4/0 copper conductor with 954-KCMIL ACSR conductor
- Replacement of all insulators and hardware
- Replacement of one steel OGW in-kind
- The upgrade of one steel OGW to OPGW to improve communications
- Replacement of wood structures in-kind where required
- The upgrade of deteriorated cross arms assemblies with glue-laminated (glulam) cross-arms
- The installation of new steel angle, 4” x 3 ½” x 5/16” x 14’-6” long (pole-to-pole ties) between H-frame structures to support new OPGW and OGW
- Clearing of ROW access roads and pads as required for construction and maintenance
- Correction of all NESC/NERC clearance violations

Project Updates

Since the last customer presentation, the construction contract was awarded in July 2019. The outage and construction is scheduled to start the first of December 2019 and currently the project is on schedule. WAPA is forecasting that the project will come in under budget as a result of the construction contract being awarded below the independent government estimate (IGE). WAPA proposes the release of ~$807,000 in prepayment funds. These funds will be transferred to the active Gila Substation 161-kV Rebuild Project.

Project Financial Summary

FUNDING TYPE	ORIGINAL BUDGET	BUDGET ADJUSTMENTS	CURRENT BUDGET	COST TO DATE	REMAINING FUNDS	ADDITIONAL FUNDS REQUIRED
Prepayment	$ 2,305,000	$ (840,948)	$ 1,464,052	$ 507,452	$ 956,600	$ -
Appropriations	$ 1,045,000	$ 33,948	$ 1,078,948	$ 1,078,948	$ -	$ -
TOTAL	**$ 3,350,000**	**$ (807,000)**	**$ 2,543,000**	**$ 1,586,400**	**$ 956,600**	**$ -**
**Cost = All Executions, Obligations, & Commitments Through 9/30/19*						

Project Milestones*

PROJECT MILESTONE	STATUS	DATE
Seed Funded	Completed	Q1 2018
Approved for Funding	Completed	Q4 2018
Design Completed	Completed	Q3 2019
Construction Mobilization	Projected	Q4 2019
In-Service / Energization	Projected	Q2 2020
Financial Closeout	Projected	Q4 2020

**REVISED 10/28/2019*

4.6 Dome Tap- Gila 161-kV Rebuild

Power System: Parker-Davis Project

Project Request Phase	AOA Study Phase	Seed Funding Phase	Active Construction Phase

Project Location =

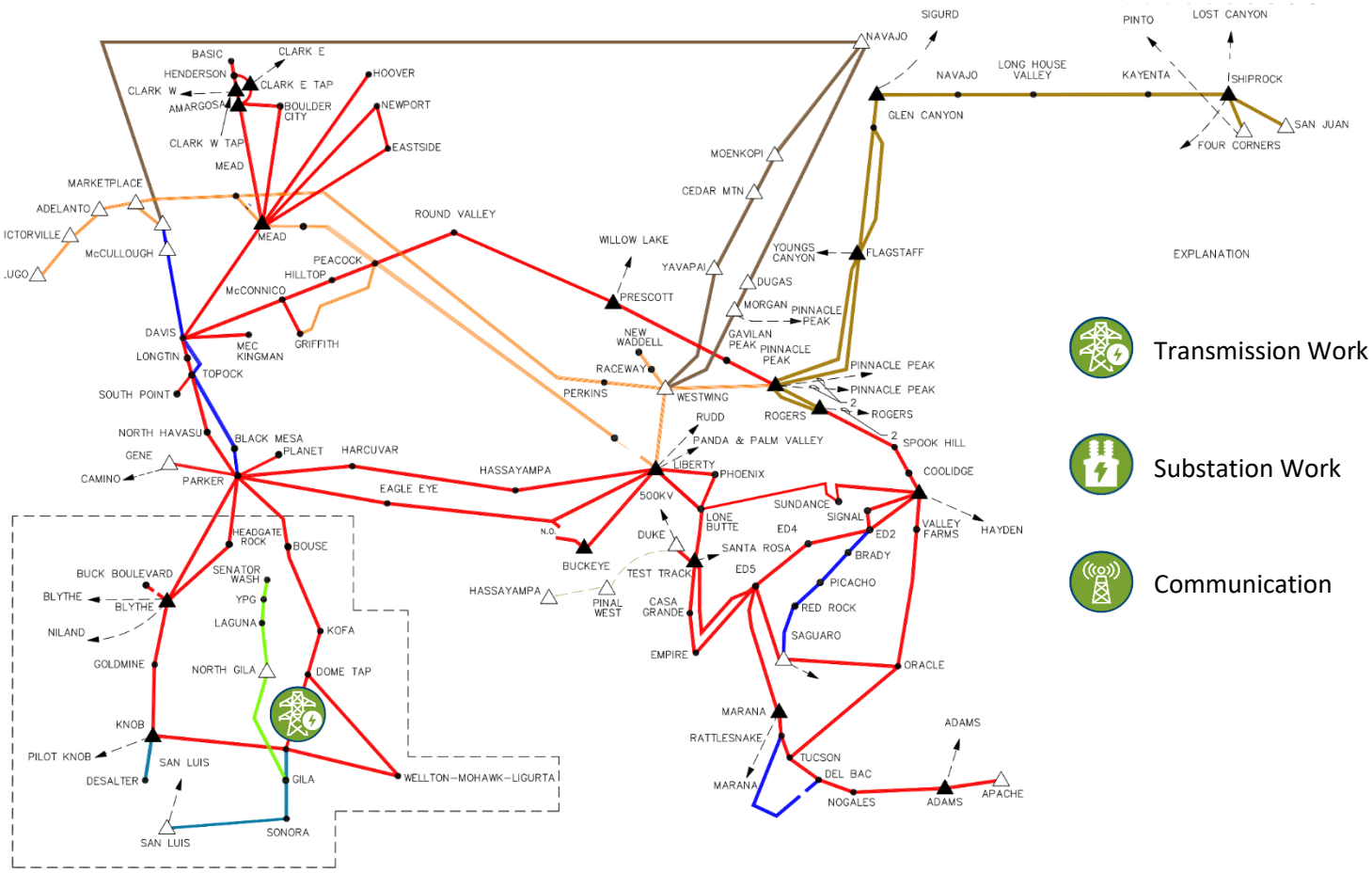


Figure 14- WAPA DSW Transmission Line Map

Project Background

Dome Tap to Gila (DME-GLA) is a single circuit, 7.6 mile, 161-kV transmission line segment of the overall Parker-Gila 161-kV line built in 1943. The line runs through agricultural, residential, and commercial property as well as hills and flat low desert terrain. The northern line section crosses Highway 95, the Union Pacific Railroad, and the Wellton Mohawk Canal. Originally constructed with wood H-frame structures, maintenance activities have replaced all but 16 of the structures with light-duty steel. A total of ten NESC/NERC phase-to-ground clearance violations have been identified along the 300-KCMIL hollow core copper conductor.

Figure 15 - Aerial view of terrain along the Dome Tap-Gila 161-kV corridor

Figure 16 - Aerial view of Dome Tap-Gila 161-kV line through agricultural lands

Project Scope Highlights

- Replacement of 7.6 miles of 300-KCMIL hollow core copper conductors with 336.4-KCMIL ACSS conductors
- Installation of light-duty steel H-frame structures, replacing the remaining 16 wood structures on the line
- Three Light-duty steel structures will be replaced with new taller structures to correct NESC/NERC phase-to-ground clearance issues
- Replacement of one steel OGW in-kind
- The upgrade of one steel OGW to OPGW to improve communications
- Replacement of all insulators and hardware
- Clearing of ROW access roads and pads
- Replacement of two take-off structures inside Dome Tap

Project Updates

Since the last customer presentation, the construction contract was awarded at approximately $2 million dollars less than the independent government estimate (IGE). As a result $2 million of available prepayment funds will be transferred to the Gila Substation 161-kV Rebuild project. Field work on the Dome Tap-Gila 161-kV project is projected to start on schedule in October 2019.

Project Financial Summary

FUNDING TYPE	ORIGINAL BUDGET	BUDGET ADJUSTMENTS	CURRENT BUDGET	COST TO DATE	REMAINING FUNDS	ADDITIONAL FUNDS REQUIRED
Prepayment	$ 7,130,000	$ (2,000,000)	$ 5,130,000	$ 2,253,549	$ 2,876,451	$ -
Appropriations	$ 500,000	$ -	$ 500,000	$ 360,497	$ 139,503	$ -
TOTAL	**$ 7,630,000**	**$ (2,000,000)**	**$ 5,630,000**	**$ 2,614,046**	**$ 3,015,954**	**$ -**
**Cost = All Executions, Obligations, & Commitments Through 9/30/19*						

Project Milestones

PROJECT MILESTONE	STATUS	DATE
Seed Funded	Completed	Q4 2017
Approved for Funding	Completed	Q4 2018
Design Completed	Completed	Q1 2019
Construction Mobilization	Projected	Q4 2019
In-Service / Energization	Projected	Q2 2020
Financial Closeout	Projected	Q4 2020

4.7 Kofa-Dome Tap 161-kV Rebuild

Power System: Parker-Davis Project

Project Request Phase	AOA Study Phase	Seed Funding Phase	Active Construction Phase

Project Location =

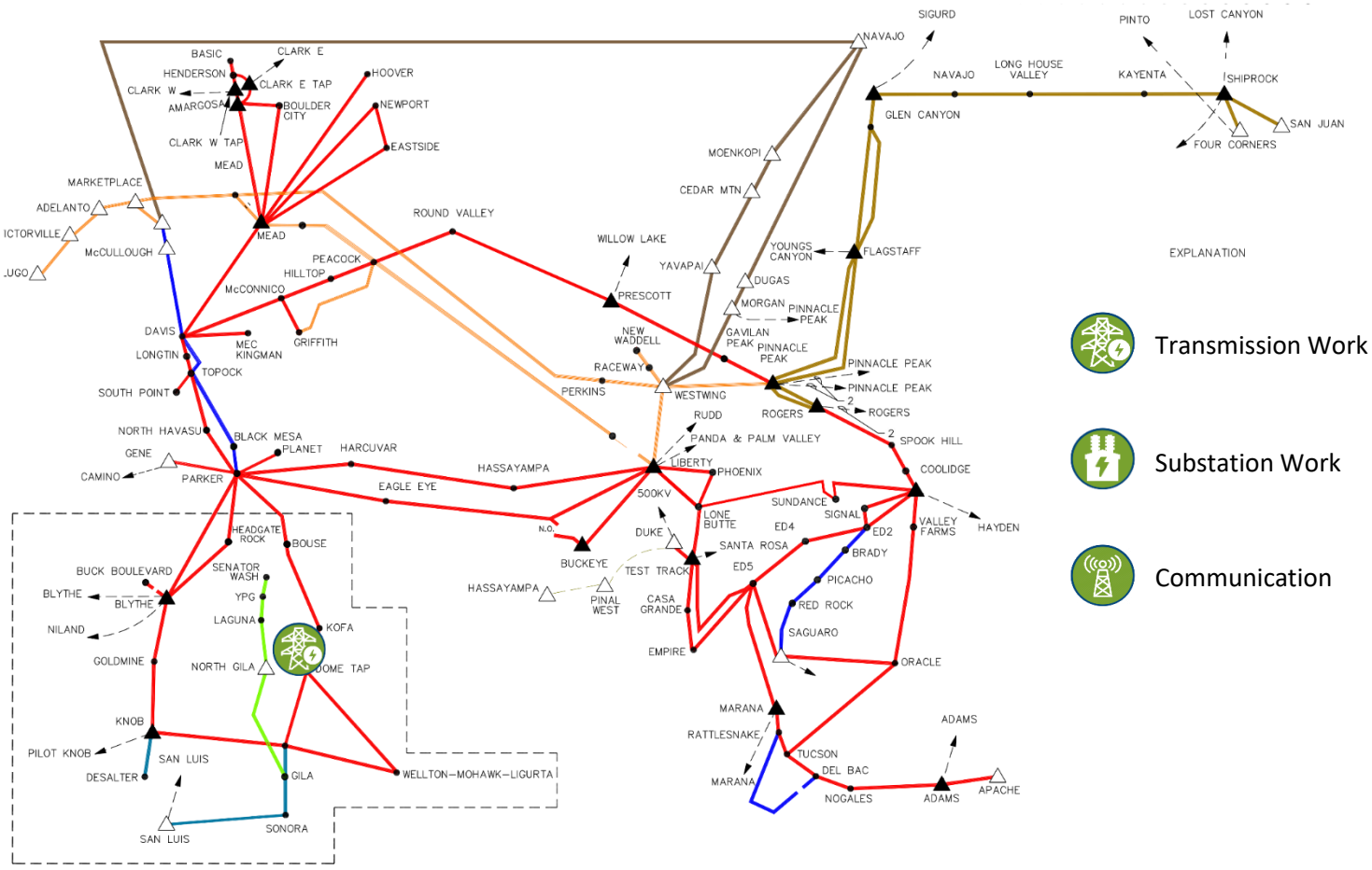


Figure 17- WAPA DSW Transmission Line Map

Project Background

Kofa to Dome Tap (KOF-DME) is a single-circuit, 7.3-mile, 161-kV transmission line segment along the Parker-Gila 161-kV line built in 1943. The KOF-DME Transmission Line is located in western Arizona running south from the Kofa Substation to Dome Tap. The transmission line was originally constructed with 300-KCMIL hollow-core-copper conductor. Most of the wood H-Frame structures have been replaced with light-duty steel H-Frame structures, and only seven wood structures remain in service.

WAPA will replace existing copper conductor with 336.4-KCMIL ACSS conductor, replace one steel overhead ground wire (OGW) with an optical overhead ground wire (OPGW), and install light-duty steel H-frame structures to replace the seven wood structures remaining in the line segment.

WAPA will also install new light-duty steel H-frame steel structures as needed to correct NESC/NERC phase-to-ground clearance issues not corrected by stringing the new ACSS conductor which results is less sag. Lastly, WAPA will repair and improve access roads as needed.

Figure 18 - Existing Kofa-Dome Tap 161-kV transmission line

Project Scope Highlights

- Replacement of 7.3 miles of 300-KCMIL copper conductor with 336.4-KCMIL ACSS conductor
- Replacement of remaining wood pole structures with light-duty steel structures
- Replacement of one steel OGW in-kind
- The upgrade of one steel OGW to OPGW to improve communications
- Replacement of all insulators and hardware
- The correction of all NESC/NERC phase-to-ground clearance issues
- Clearing of ROW access roads and pads as required for construction and maintenance

Project Updates

WAPA completed the design of the transmission line in March 2019. The construction contract and equipment contracts will be solicited in late 2019. WAPA proposes the release of ~$192,000 in prepayments funds. These funds will be transferred to the active Gila Substation 161-kV Rebuild Project.

Project Financial Summary

FUNDING TYPE	ORIGINAL BUDGET	BUDGET ADJUSTMENTS	CURRENT BUDGET	COST TO DATE	REMAINING FUNDS	ADDITIONAL FUNDS REQUIRED
Prepayment	$ 4,830,000	$ (192,000)	$ 4,638,000	$ 17,103	$ 4,620,897	$ -
Appropriations	$ 500,000	$ -	$ 500,000	$ 307,145	$ 192,855	$ -
TOTAL	**$ 5,330,000**	**$ (192,000)**	**$ 5,138,000**	**$ 324,248**	**$ 4,813,752**	**$ -**
**Cost = All Executions, Obligations, & Commitments Through 9/30/19*						

Project Milestones

PROJECT MILESTONE	STATUS	DATE
Seed Funded	Completed	Q4 2017
Approved for Funding	Completed	Q4 2018
Design Completed	Completed	Q4 2019
Construction Mobilization	Projected	Q4 2020
In-Service / Energization	Projected	Q4 2021
Financial Closeout	Projected	Q2 2022

4.8 Bouse Upgrade (Seed Funded)

Power System: Parker-Davis Project

Project Request Phase	AOA Study Phase	Seed Funding Phase	Active Construction Phase

Project Location =

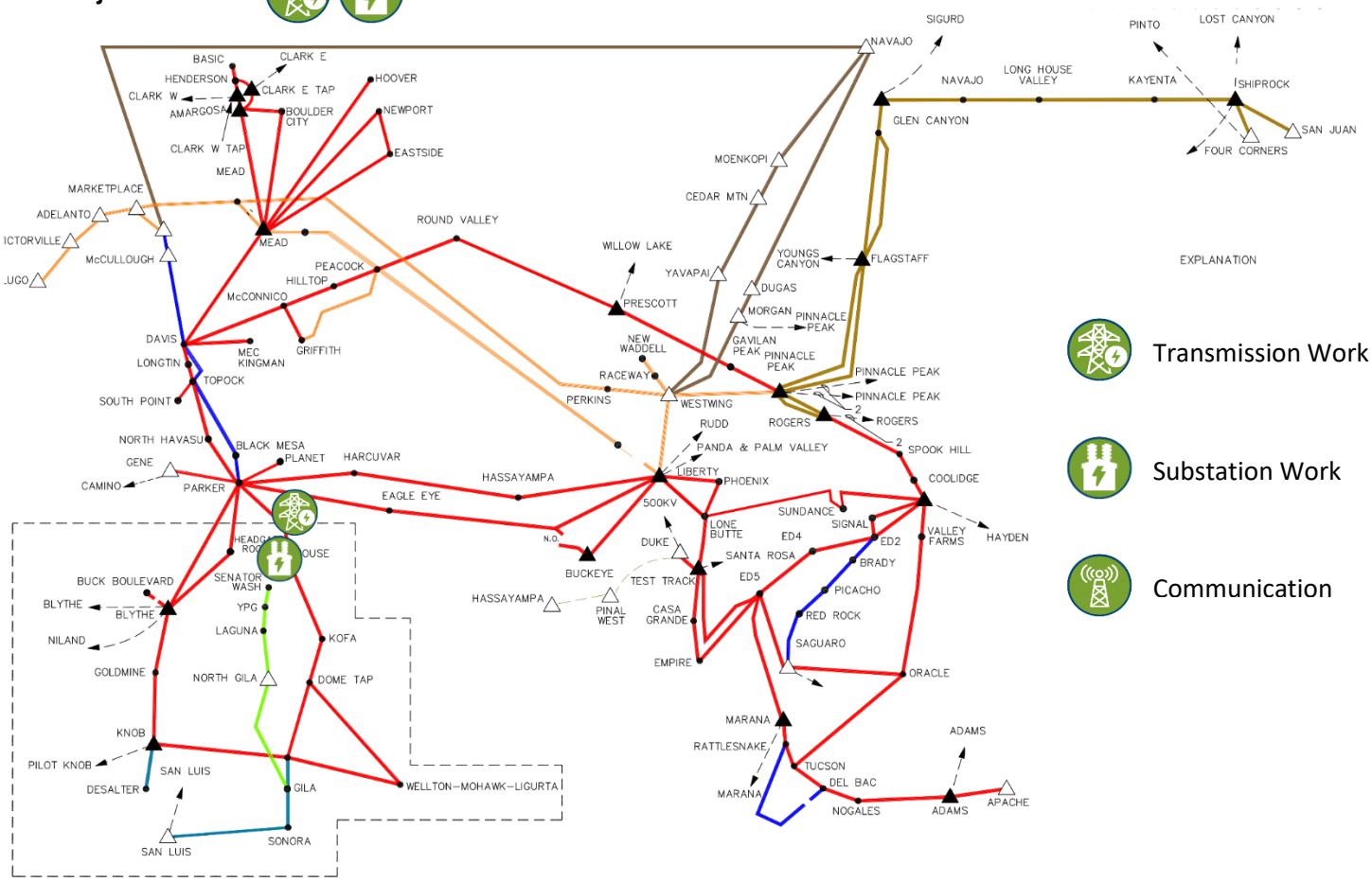


Figure 19- WAPA DSW Transmission Line Map

Project Background

Beginning in October 2018, WAPA initiated ~$900,000 in appropriated seed funding to investigate the Bouse Upgrade project as an alternative to the Parker-Bouse & Parker Headgate Rock Reroute project. The objective was to begin preliminary design and generate a refined total project estimate for prepayment customer review and consideration for full project funding. In this section you will find a combination of details and information from the AOA study and in-progress seed funding phase.

Project Scope Highlights

For planning purposes you will see the Bouse Upgrade Project as a single project throughout 10-Year Plan materials. However, it is WAPA's intent to phase this project into manageable smaller scopes of work that can be spread across multiple years to mitigate unnecessary upward rate pressure. The final project phasing and related cost will be available in late 2020.

Conceptual Project Steps

STEP ONE: Build a new 230-kV transmission line

- Construct 15 miles of new double circuit 230-kV transmission line from Bouse substation to existing Parker-Liberty #2 transmission line
- Results in redirection of Parker-Liberty 230-kV line through Bouse Substation (See figure 18)
- Approximately 60 steel monopole structures
- Proposed 1272-KCMIL ACSR conductor or most economical to support load
- One overhead ground wire and one overhead optical ground wire.
- Construct across flat, unpopulated, BLM land

STEP TWO: Expand Bouse Substation

- Bouse substation rebuilt in 2012 to 230-kV standards, operated at 161-kV
- Three breaker ring-bus configuration
- Renovate into a 161-kV double-breaker-double-bus configuration
- Add two 230-kV bays in 4-breaker ring-bus configuration with two 230/161-kV transformers

STEP THREE: Connect Headgate Rock to Bouse utilizing a Jumper

- Install jumper between a new dead-end structure on the existing Parker-Headgate Rock 161-kV line with one new dead-end structure on the existing Parker-Bouse 161-kV line
- Connect Bouse to Headgate Rock using a new Jumper
- New Headgate Rock-Bouse 161-kV line is established

STEP FOUR: Remove 20 miles of transmission line

- Remove 10 of the 14 miles of single circuit line from Parker towards Headgate Rock.
- Remove 10 of the 22 miles of existing single circuit line from Parker towards Bouse.
- Relinquish existing ROW through Parker strip

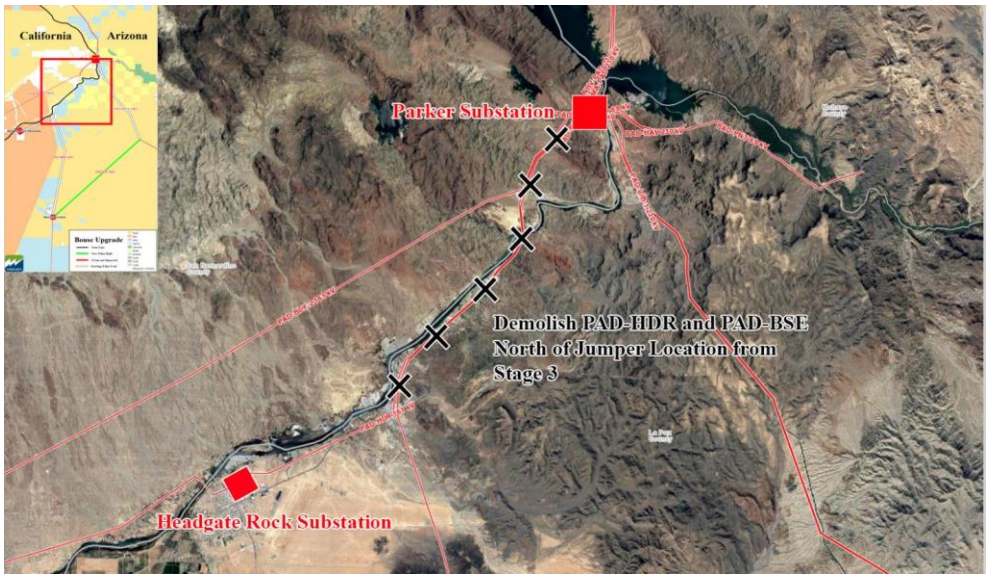


Figure 20- Proposed demolition of transmission lines through densely populated areas of Parker, AZ

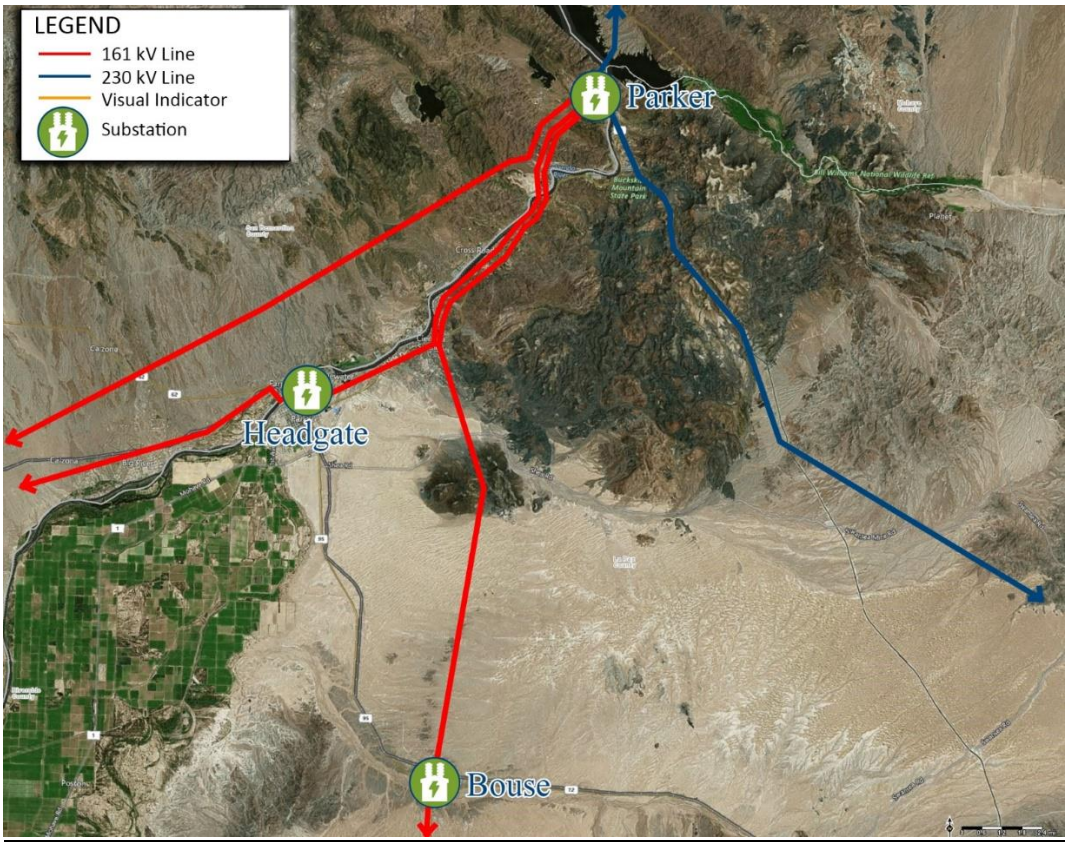


Figure 21 - Current configuration

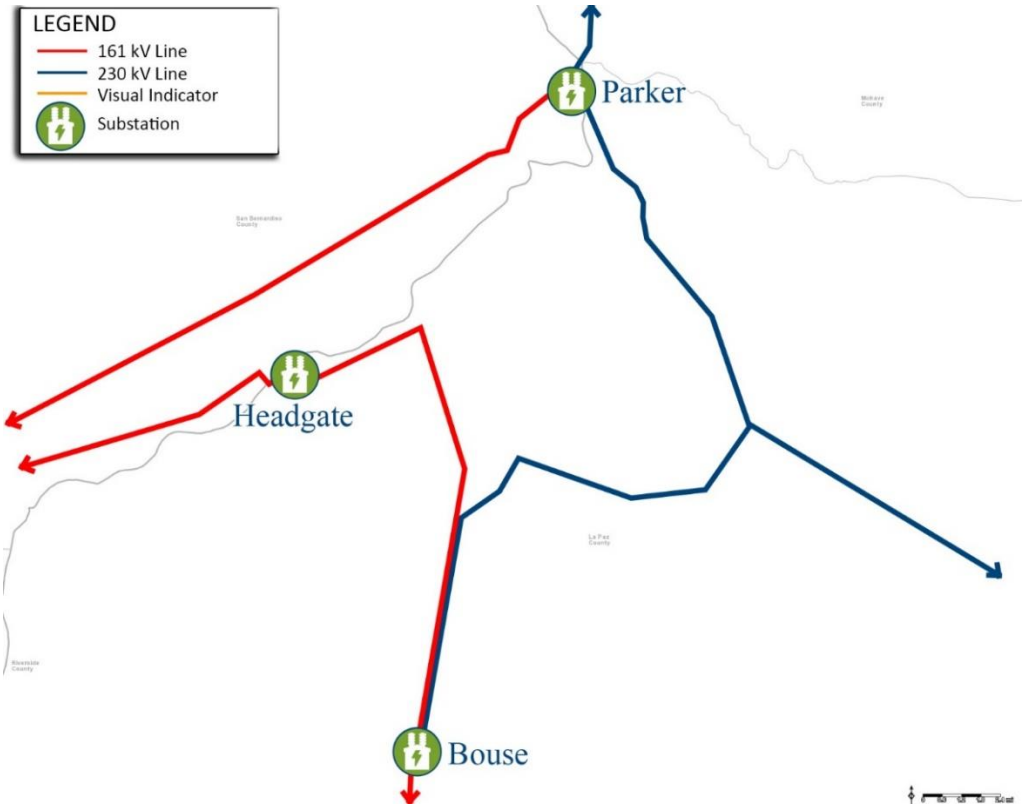


Figure 22 - Proposed Bouse Upgrade configuration

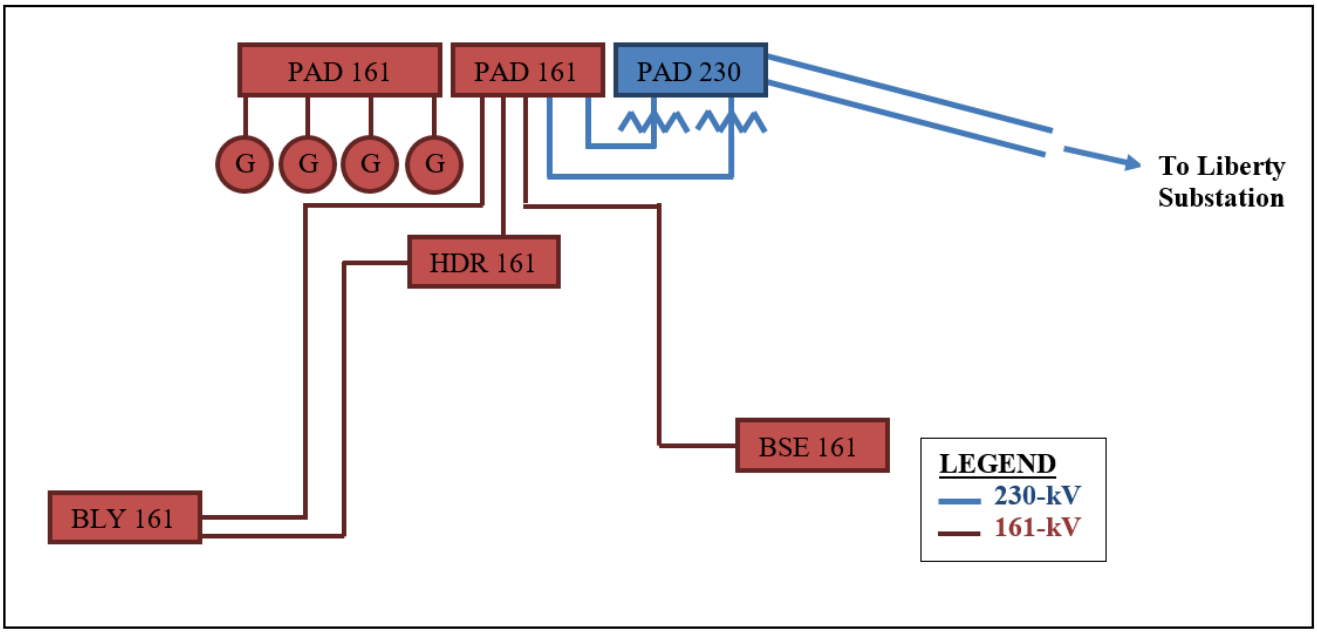


Figure 23 - Existing south of Parker, AZ system configuration

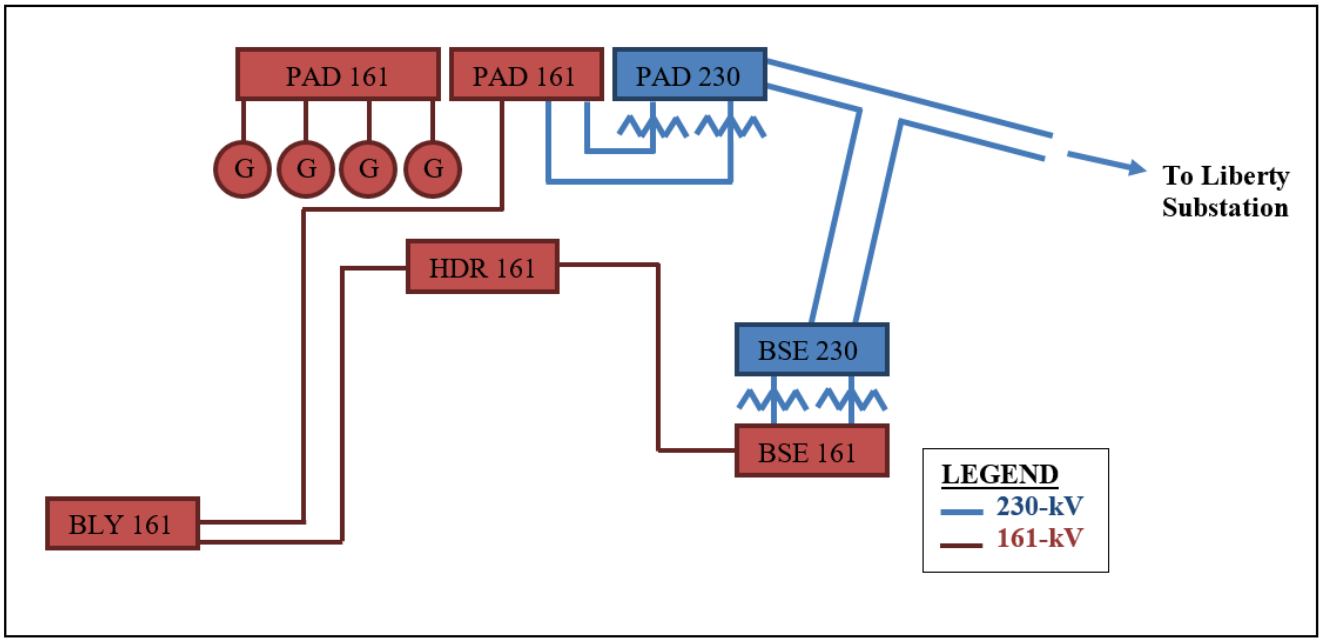


Figure 24 - Proposed Bouse Upgrade configuration south of Parker, AZ

Project Updates (Seed Funding Phase)

WAPA has engaged both its environmental and lands groups to analyze the transmission line corridor and begin the Environmental Assessment (EA) process. In doing so, WAPA discovered several areas of avoidance as seen in the Figure 26 below, as protected wilderness areas. This is an excellent example of why WAPA is now including Environmental in the AOA Study and Seed Funding Phase, as it allows the identification of environmental and lands constraints prior to entering construction that previously would have caused potential delays and additional costs.

The Seed Funding Phase has also identified that the two originally proposed locations for the jumper, required to connect the existing Headgate Rock-Parker line to the existing Bouse-Parker line, are not feasible. Identifying this siting issue early will prevent delays in the design and construction of the project.

To aid in the development of the design, WAPA is also currently acquiring aerial survey data (LiDAR) along the proposed transmission line corridor along with geotechnical analysis. This data is crucial in further developing the project cost estimate for the purposes of seeking full project funding.

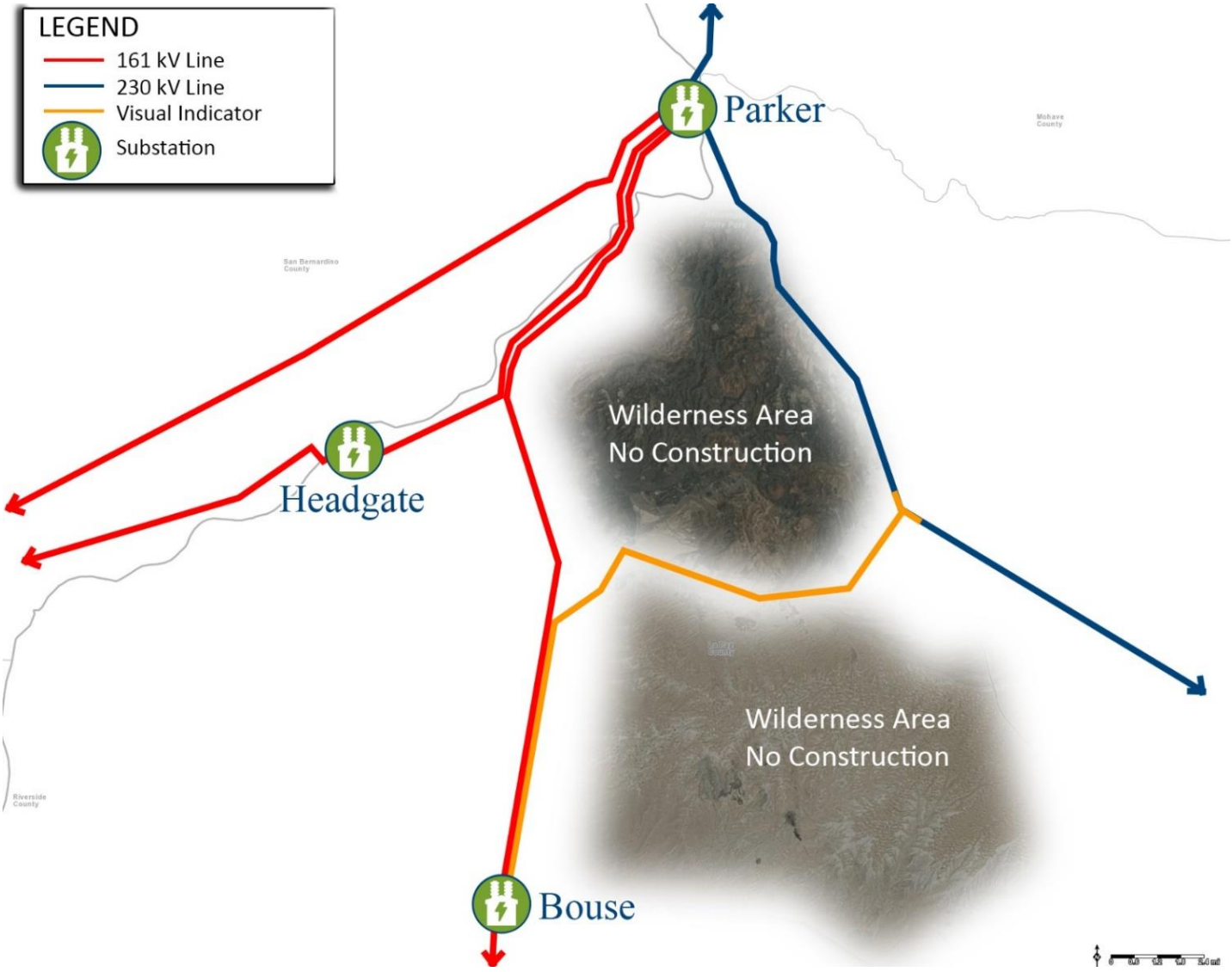


Figure 25 - Wilderness Areas Discovered During Seed Funding Phase

Seed Phase Updates

The Bouse Upgrade Project was originally projected to go to prepayment vote for full project (all phases) funding in December of 2019, approximately one year after the start of the Seed Funding Phase. However, design could not begin until LiDAR and geotechnical analysis data were available, both of which were subject to delay due to the government shutdown. The government shutdown impacted the start of the Seed Funding Phase by limiting WAPA's coordination effort with the Bureau of Land Management (BLM) through early 2019. WAPA anticipates the LiDAR and geotechnical data will be available in late 2019.

These developments, coupled with the magnitude of the project, have prompted WAPA to extend the seed funding phase by one year, with a prepayment vote scheduled for December of 2020. There are critical factors contributing additional time proposed in the Seed Funding Phase.

First, there is extensive coordination and cooperation required with the BLM due to the nature of building on a new right-of-way across BLM land. This includes substantial investigation into environmental and cultural sensitivities within the area of the proposed project prior to design. Secondly, it is critical to allow additional time for engagement with external stakeholders on the status and development of the project scope.

Project Financial Summary

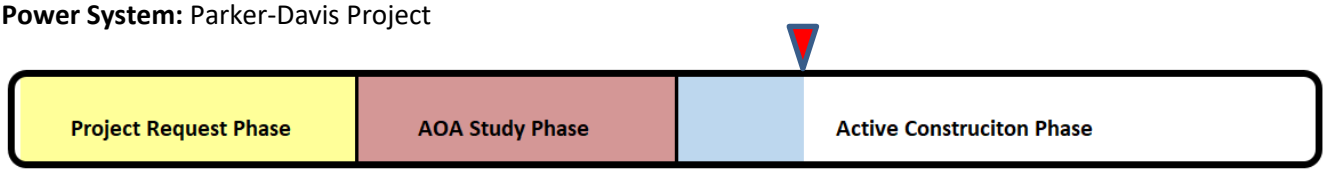
FUNDING TYPE	ORIGINAL BUDGET	BUDGET ADJUSTMENT 2019	CURRENT BUDGET	COST TO DATE	REMAINING FUNDS	ADDITIONAL FUNDS REQUIRED
Prepayment	$ 601,181	$ -	$ 601,181	$ 601,181	$ -	$ -
Appropriations	$ 890,821	$ 1,208,000	$ 2,098,821	$ 890,821	$ 1,208,000	$ -
TOTAL	**$ 1,492,002**	**$ 1,208,000**	**$ 2,700,002**	**$ 1,492,002**	**$ 1,208,000**	**$ -**
**Cost = All Executions, Obligations, & Commitments Through 9/30/19*						

Conceptual Project Milestones

PROJECT MILESTONE	STATUS	DATE
Seed Funded	Completed	Q4 2018
Approved for Funding	Projected	Q4 2020
Design Completed	Projected	TBD
Construction Mobilization	Projected	TBD
In-Service / Energization	Projected	Q4 2025
Financial Closeout	Projected	Q3 2026

4.9 Bouse-Kofa 161-kV Rebuild

Power System: Parker-Davis Project



Project Location =

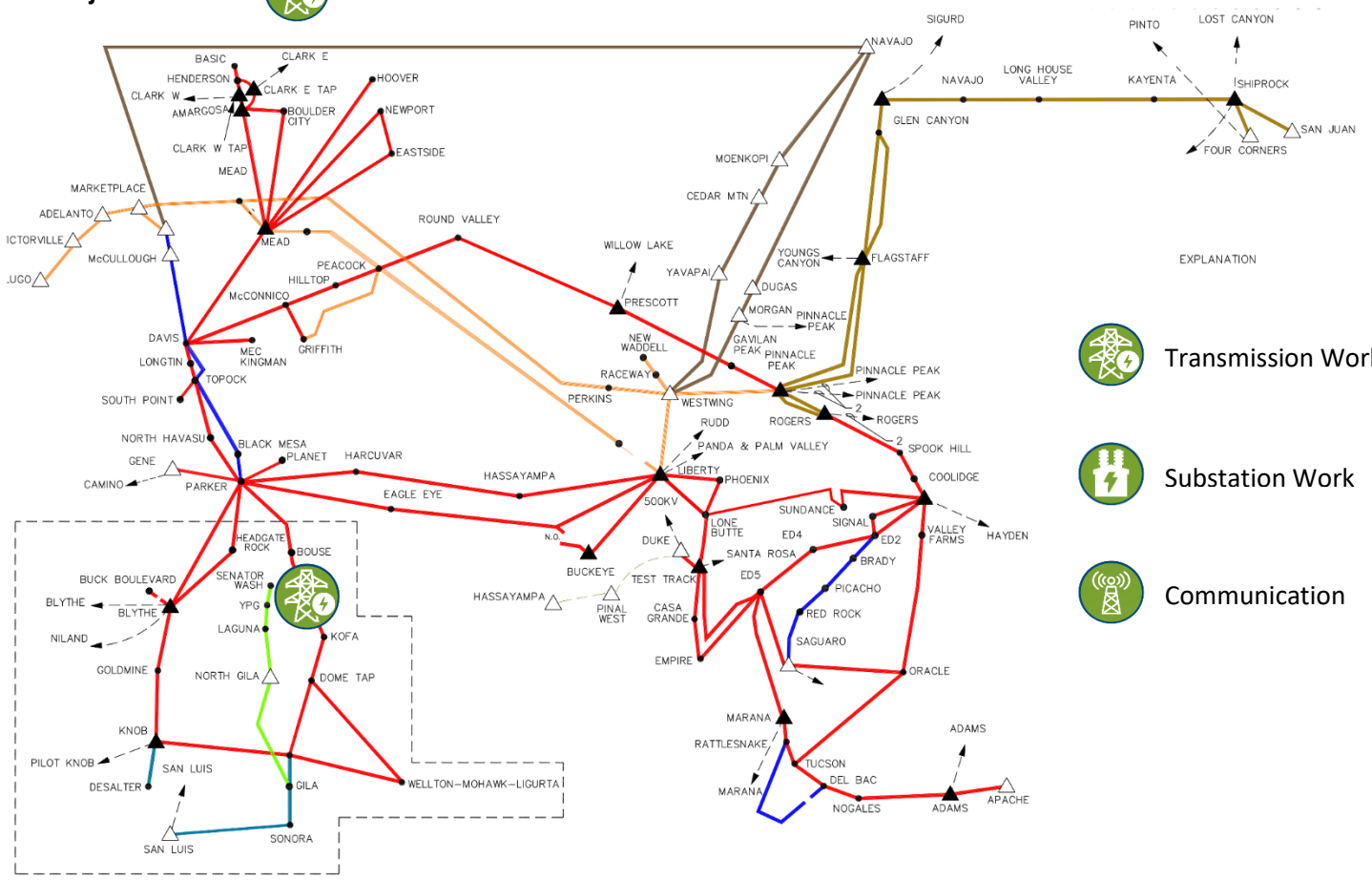


Figure 26- WAPA DSW Transmission Line Map

Project Background

The Bouse to Kofa (BSE-KOF) 161-kV transmission line is a single circuit, 84.3 mile line segment of the overall Parker-Gila 161-kV Transmission Line originally built in 1943.

The BSE-KOF line is located in western Arizona running south from Bouse Substation to Kofa Substation. Bouse Substation is located just north of the junction of AZ Highways 72 and 95 in La Paz county. Kofa Substation is located approximately 16 miles northeast of the city of Yuma. The terrain along the transmission line corridor is mostly low desert with multiple wash crossings and low rises. Toward the south end of the transmission line the terrain becomes more mountainous across the Castle Dome Mountains near Dome Tap.

Figure 27 Bouse-Kofa Existing Wood H-frame structure, February 2018

The line was originally 78.9 miles long, constructed with three 300-Kcmil hollow core copper conductors (Anaconda R178R2). Most of the wood H-Frame structures have been replaced with light-duty steel H-Frame structures, and only 82 wood structures remain. In 2006 a portion of the line was rerouted around the town of Quartzsite. The reroute replaced 3.3 miles of the existing line through Quartzsite with 8.4 miles of three 954-Kcmil ACSR conductors supported on single circuit steel monopoles.

Project Updates

Project was fully funded with prepayments in December of 2018, with an official start date for design work in late 2019. The project is currently in the process of revalidating the scope, schedule, and budget. WAPA projects that the construction will span two years but will not be conducted in two separate phases as previously considered. A single construction contract will be solicited to minimize the complexity of managing multiple construction contracts, multiple procurement actions, and outage restrictions; resulting in a reduction in the overall administration effort required. The U.S. Department of Energy requires the implementation of Earned Value Management (EVM) on projects over $20 million dollars. The Bouse-Kofa 161-kV Rebuild project may be subject to EVM with a projected project cost of ~$26 million dollars, which may carry additional administrative

cost. However, the additional cost incurred as a result of the EVM administration, should be mitigated by the cost savings in the administration of a single procurement effort and single construction contract as compared to the two phases previously considered.

Project Financial Summary

FUNDING TYPE	ORIGINAL BUDGET	BUDGET ADJUSTMENTS	CURRENT BUDGET	COST TO DATE	REMAINING FUNDS	ADDITIONAL FUNDS REQUIRED
Prepayment	$ 26,520,000	$ -	$ 26,520,000	$ 415,320	$ 26,104,680	$ -
Appropriations	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL	**$ 26,520,000**	**$ -**	**$ 26,520,000**	**$ 415,320**	**$ 26,104,680**	**$ -**
**Cost = All Executions, Obligations, & Commitments Through 9/30/19*						

Project Milestones*

PROJECT MILESTONE	STATUS	DATE
Seed Funded	N/A	N/A
Approved for Funding	Completed	Q4 2018
Design Completed	Projected	Q3 2020
Construction Mobilization	Projected	Q4 2021
In-Service / Energization	Projected	Q2 2023
Financial Closeout	Projected	Q1 2024

**REVISED 10/28/2019*

5. ANALYSIS OF ALTERNATIVES STUDY: PARKER-BLYTHE #2

Power System: Parker-Davis Project

Project Request Phase	AOA Study Phase	Active Construction Phase

Project Location =

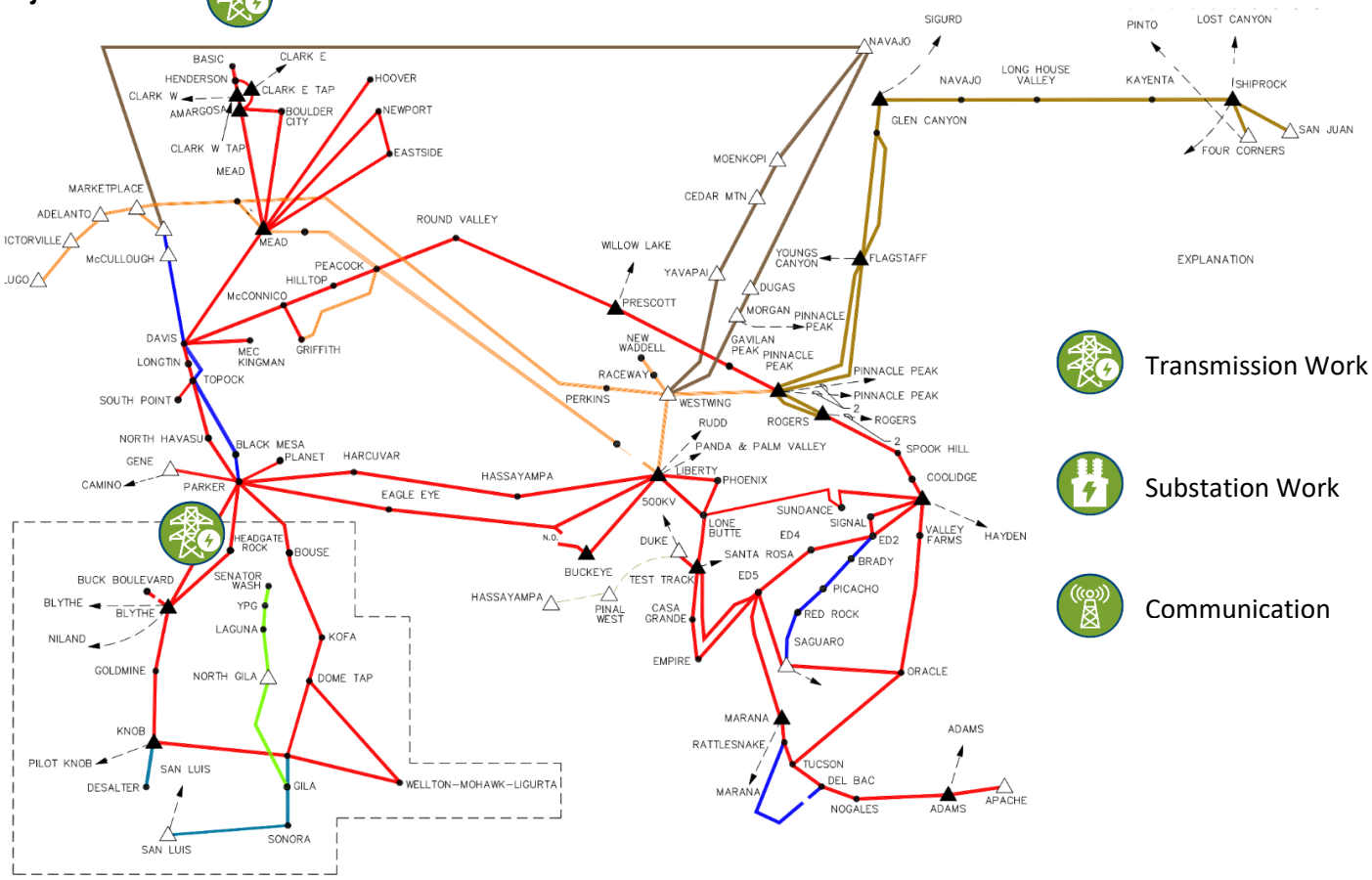


Figure 28- WAPA DSW Transmission Line Map

5.1 Project Description

The Parker to Blythe (PAD-BLY) number two 161-kV transmission line was built in 1969 and runs along the Colorado River in eastern California. The transmission line is 63.9 miles long utilizing 954 KCMIL ACSR conductor and two steel overhead ground wires supported on wooden H-frame structures with 3-pole wooden structures at angle points and dead-ends.

During the proposed rebuild project, all wood H-Frame structures would be replaced with new light duty steel H-Frame structures. Steel dead-end structures would be installed at approximately five to ten mile intervals to

mitigate the risk of cascading failure. The rebuild would also include new conductor, overhead ground wire, optical ground wire, insulators and hardware. All structures would be installed using 230-kV clearances and standards. The line would be operated at 161-kV until future demand required conversion to 230-kV.

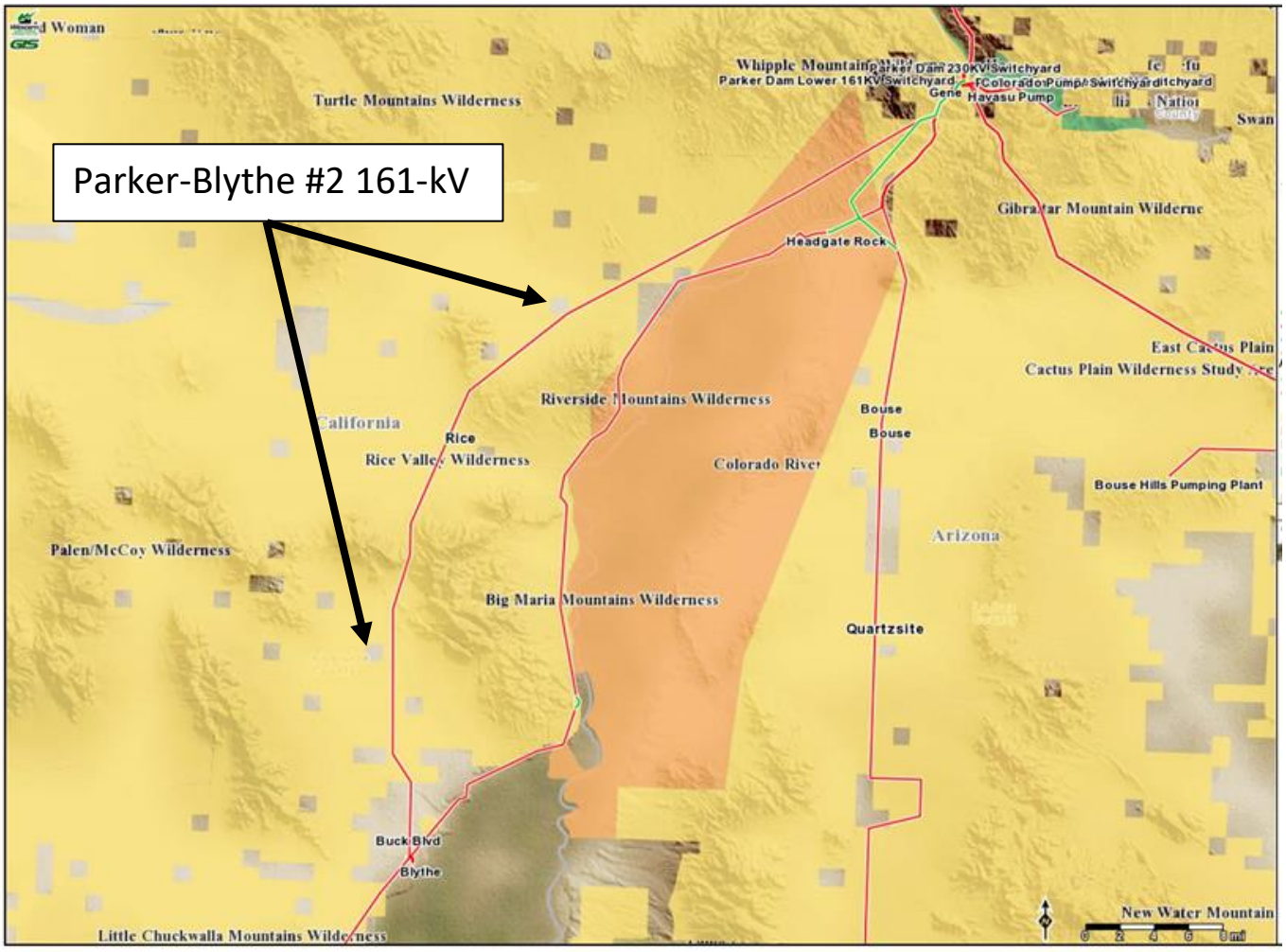


Figure 29 - Parker-Blythe #2 Area Map

5.2 Project Justification

An AOA study was performed in 2017 to identify various performance gaps and deficiencies associated with this line segment and identify viable, diverse, and economical alternatives.

Identified performance gaps and deficiencies:

- Eighty percent (~881 poles) of the wood poles on the line segment require repair/replacement
- Conductor, insulators, and hardware are 50+ years old
- NERC/NESC violations have been identified and need to be corrected
- Access road(s) and right-of-way availability and conditions are sub-par
- Lack of fiber optic ground wire to meet current and future protection, control, communication and security requirements

Rehabilitation of the PAD-BLY 161-kV Transmission line is needed to ensure the safe, secure, reliable and affordable energy and transmission services to our customers. Rehabilitation would include:

- Replacement of all wood poles with light-duty steel H-frame structures
- Installation of dead-ends at intervals of less than 10 miles to prevent cascading failures
- Correction of all NERC/NESC violations that have been identified
- Repairing of access roads as needed to construct this project
- Installation of fiber optic ground wire to meet current and future protection, control, communication and security requirements

NERC/NESC Violations:
There are five cases of phase-to-ground clearances not meeting the minimum clearance required by the NESC and NERC that need to be corrected.

Transmission Line Condition:
The PAD-BLY transmission line is 50 years old and eighty percent of its supporting structures need replacement or repair as identified by detailed ground inspection and Polux® wood fiber strength testing.

Figure 30 - Parker-Blythe #2: Signs of Significant Pole Degradation and Heart Rot

Figure 31 - Parker-Blythe #2: Signs of Significant Pole Degradation and Heart Rot

Access Roads and ROW:
GIS data and inspection field reporting shows the condition of the ROW access road is sandy, eroded, or steep. A detailed ground inspection of the PAD-BLY transmission line identified ~20% of the structures investigated (103 out of 523) require vehicles be towed in by a bulldozer for access.

Communication Requirements:
The PAD-BLY transmission line does not have OPGW installed. OPGW has the added benefit of drastically increasing total bandwidth for data transfer versus power line carrier or point-to-point microwave systems. WAPA's security is currently in the process of installing live feed video cameras and IT networks at substations. The addition of these systems will tax or bypass the current communications bandwidth provided by the existing communication networks in place.

5.3 Conceptual Project Phasing

Parker-Blythe #2 161-kV Rebuild, Phase 1, Phase 2, and Phase 3

Figure 32 - Proposed project phasing of the Parker-Blythe 161-kV Rebuild Project

Phase 1
Design and construct 21 miles of 161-kV transmission line from Parker Substation to structure 20-8. Design includes replacing 160 wood structures with new light duty steel H-Frame structures, installing new conductor, one new OGW, one new OPGW, and new hardware and insulators. Design typically includes installing steel dead-end structures every 5 to 10 miles to prevent cascading failure. The line would be designed to 230-kV standards and specifications but operated at 161-kV.

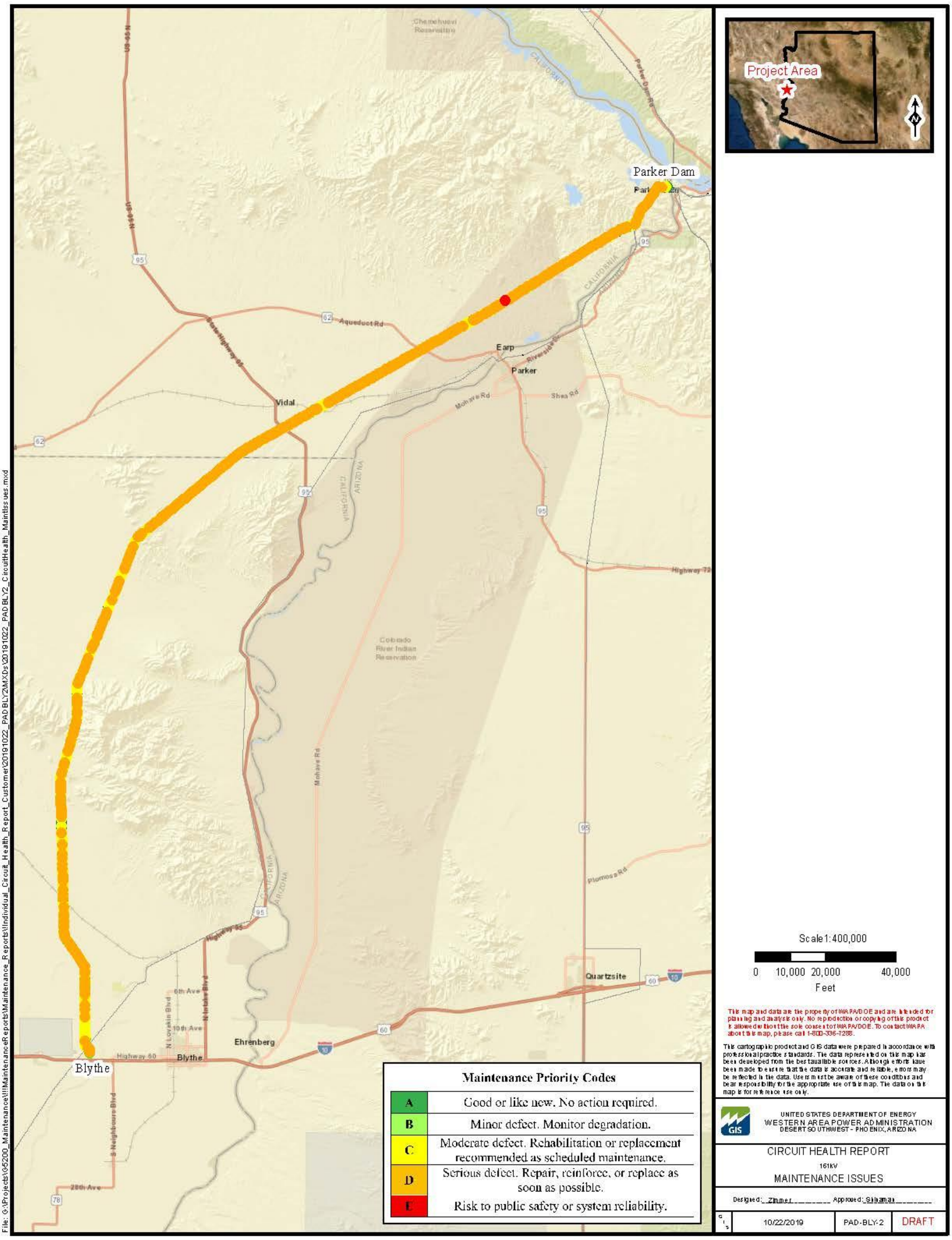
Phase 2
Design and construct 21.75 miles of 161-kV transmission line from structure 20-8 to structure 41-7. Design includes replacing 181 wood structures with new light duty steel H-Frame structures, installing new conductor, one new OGW, one new OPGW, and new hardware and insulators.
Design typically includes installing steel dead-end structures every 5 to 10 miles to prevent cascading failure. The line would be designed to 230-kVstandards and specifications but operated at 161-kV.

Phase 3
Design and construct 21.25 miles of 161-kV transmission line from structure 41-7 to Blythe substation. Design includes replacing 182 wood structures with new light duty steel H-Frame structures, installing new conductor, one new OGW, one new OPGW, and new hardware and insulators. Design typically includes installing steel dead-end structures every 5 to 10 miles to prevent cascading failure. The line would be designed to 230-kV standards and specifications but operated at 161-kV.

5.4 New Potential Alternatives to PAD-BLY #2 Rebuild

As a result of design developments in the seed funding phase of the Bouse Upgrade Project, WAPA discovered new potential alternatives that could result in a net cost savings to the current 10-Year Plan. Based on preliminary investigations it may not be necessary to rebuild the transmission line to the previously preferred scope, built to 230-kV standards, and operated at 161-kV using light duty steel poles.

5.5 Wood Pole Health Report



6. 10-YEAR PLAN (Fiscal Year 2020-2029)

6.1 Background

The 10-Year Plan spreadsheet presents budgets for each individual project and is separated into the Parker-Davis Project and Intertie Project, respectively. The individual project budgets, also referred to as a spend plans, show the total amount of required annual funding for each year a project is active. Spend plans are provided for each active construction project, partially funded seed project(s), and future projects within fiscal year 2020-2029. WAPA's fiscal year starts on October 1st and concludes on September 30th.

6.2 Project Budget Accuracy

The 10-Year Plan is also color-coded to differentiate between spend plan (budget) accuracy levels. Each color coded category represents a unique spend plan confidence level dependent on what phase of the process the project resides.

For example, when a project request is initiated (Project Request Phase) the spend plan estimate accuracy is +/- 100%, or zero confidence, as only a mission need has been identified with no preferred scope identified. As the project scope evolves through conceptual design, the estimate accuracy improves to +/- 30% by means of an Analysis of Alternatives (AOA) study. Once an AOA study is complete, a preferred alternative is identified and the project is handed off for partial funding, otherwise known as seed funding, which is currently funded by appropriations.

In the Seed Funding Phase, formal design efforts are initiated with the goal to achieve 50-75% complete drawings and specifications (partial design package). At the conclusion of the Seed Funding Phase, the estimate accuracy again improves with a target +/- 20% spend plan (budget) accuracy. Once the design package is finalized and ready for procurement, the expectation is that the project spend plan (budget) is +/- 5% accuracy as the Pre-Construction Phase begins.

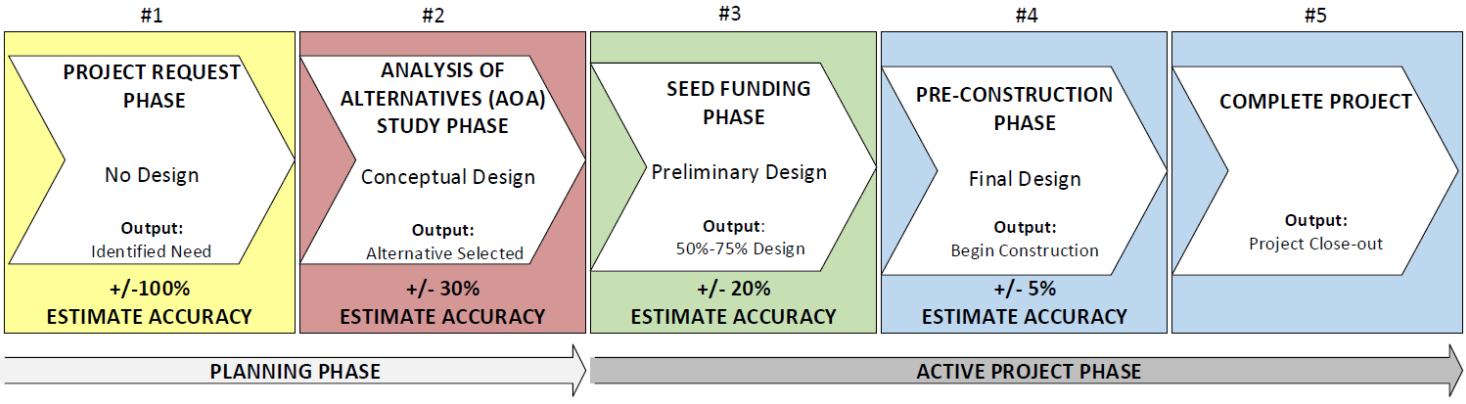
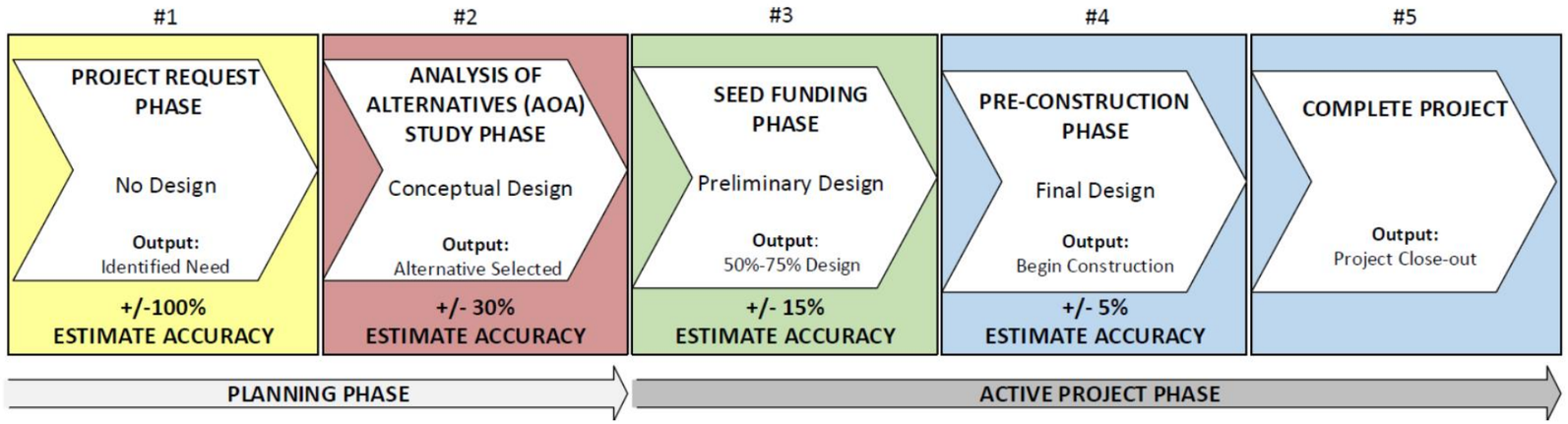


Figure 33 - Project Phases with Color-Coded Estimate Accuracy Indicators

Intertie Project 10-Year Plan (Costs in Thousands of Dollars)

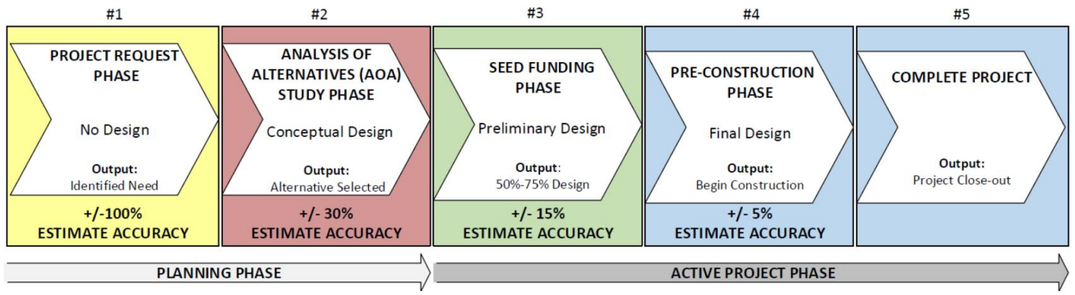
	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
PROJECT	**BUDGET FY20-29**	**PROJECTED TOTAL**	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**FY28**	**FY29**
Liberty Series Capacitor Bank Replacement	$ 1,623	$ 9,835	1,598	25								
FISCAL YEAR (FY) TOTALS			**$ 1,598**	**$ 25**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**



Parker-Davis Project 10-Year Plan (Costs in Thousands of Dollars)

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
PROJECT	BUDGET FY20-29	PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
Gila-Wellton Mohawk Interstate-8 Crossing Rebuild	$ 40	$ 7,623	40									
Gila Substation 161-kV Rebuild	$ 3,125	$ 23,873	3,100	25								
Dome Tap-Gila 161-kV Rebuild	$ 3,016	$ 5,630	2,966	50								
Coolidge-Valley Farms 115-kV Rebuild	$ 957	$ 2,543	932	25								
Crossman Peak Microwave Facility	$ 3,037	$ 4,525	170	2,534	333							
Kofa-Dome Tap 161-kV Rebuild	$ 4,814	$ 5,138	4,634	130	50							
Bouse-Kofa 161-kV Rebuild	$ 26,105	$ 26,520	614	21,095	2,556	1,800	40					
Bouse Upgrade Project	$ 44,475	$ 45,967	1,208	704	9,658	11,493	12,925	7,950	537			
Parker-Blythe 161-kV #2 Rebuild Phase-1	$ 18,542	$ 18,542		250	237	17,086	805	164				
Parker-Blythe 161-kV #2 Rebuild Phase-2	$ 18,542	$ 18,542			237		17,336	805	164			
Parker-Blythe 161-kV #2 Rebuild Phase-3	$ 18,542	$ 18,542			237			17,336	805	164		
Parker Substation 161-kV Replacements	$ 16,200	$ 16,850						300	100	100	8,000	7,700
Blythe-Headgate Rock #1 161-kV Rebuild	$ 22,666	$ 23,900						1,195	100	100	9,560	11,711
Parker Substation 230-kV Replacements	$ 2,800	$ 12,100							600	100	100	2,000
Gila Substation 69-kV Rebuild	$ 1,000	$ 10,500								800	100	100
Gila-Knob 161-kV Remaining Rebuild	$ 900	$ 23,000									800	100
Gila Substation 34.5-kV & 14-kV Rebuild	$ 500	$ 15,250										500
FISCAL YEAR (FY) TOTALS			**$ 13,664**	**$ 24,813**	**$ 13,308**	**$ 30,379**	**$ 31,106**	**$ 27,750**	**$ 2,306**	**$ 1,264**	**$ 18,560**	**$ 22,111**

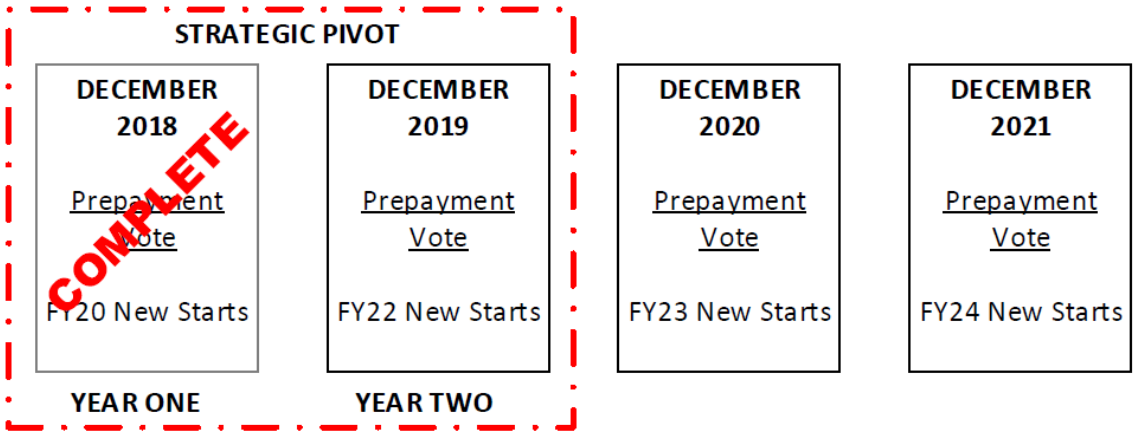
Continuation of Lands & Environmental Activities



7. PIVOT STRATEGY 2019

7.1 What Is The 10-Year Plan Pivot?

The pivot is a strategic one-time shift in the 10-Year Plan process that requires simultaneous approval of multiple upcoming capital improvement projects across several years. The pivot spans two 10-Year Plan cycles (two calendar years) and incorporates simultaneous prepayment funding approvals across fiscal years (FY) 2019 - 2022. A successful pivot will conclude in December 2019 at the Prepayment Funding Meeting. Upon completion, the 10-Year Plan will be in alignment with the federal budget formulation Process such that prepayment funding will be approved two years in advance of the start of new projects.



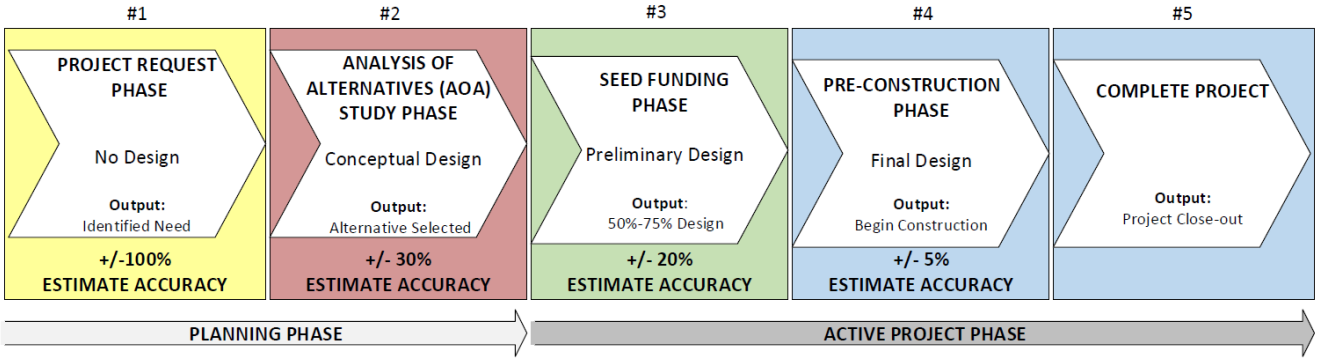
Prepayment Vote Schedule. ***NOTE:*** *No New Project Starts in Fiscal Year (FY) 2021*

7.2 Why Do We Need to Pivot?

The federal budget formulation process begins two fiscal years prior to the execution year (current year). Historically, conducting the prepayment funding vote in the same year as the proposed construction start creates inconsistencies and unpredictability in the execution of Western Area Power Administration's (WAPA) annual budget, which is formulated two years prior. The result is last minute modifications to resource allocations in order to compensate for budgetary swings. Historically, the two year period between budget formulation and prepayment funding approval was prone to changes and fluctuations due to competing priorities and uncertainty of approved prepayment funding. By aligning the customer prepayment vote with the budget formulation process, WAPA can improve accuracy, consistency, and predictability of its budget formulation and execution with a pivot process. The alignment of capital planning with budget formulation improves the planning accuracy of the 10-Year Plan.

7.3 Seed Funding

In conjunction with WAPA's 10-Year Plan pivot strategy was the implementation of a seed funding mechanism. This mechanism was initiated in 2016 in response to the inherent variability of pre-design construction estimates (+/-30% accuracy).



In the figure above, you can see the progression from the Project Request Phase (Box #1) to Project Completion Phase (Box #5) and the associated level of accuracy of the project estimate at each phase. Estimate accuracies are approximate targets and may vary depending on the nature of the project. See Section #10.1, Project Life Cycle for additional information on project phases and their respective budget estimate accuracy.

Seed funding is a not-to-exceed allowance to start the preliminary design of a construction project. Seed funding allows a project to evolve from the Analysis of Alternative (AOA) Study Phase, box #2 above, into the Seed Funding Phase, box #3 above. The objective of the Seed Funding Phase is to develop 50%-75% of the design package for the purposes of developing an engineer's cost estimate, which is more accurate than the AOA conceptual design estimate. It is in the Seed Funding Phase that the project baselines are formulated for customer review and consideration for full project funding with prepayments.

The Seed Funding Phase coupled with the pivot strategy and its alignment with WAPA's budget formulation process, results in two additional years in each project spend plan. The two year gap bridges the Seed Funding Phase with the start of active construction. Below is an example of how seed funding impacts a project spend plan.

PROJECT - Q2 DRAFT	TOTAL BUDGET	FY24	FY25	FY26	FY27	FY28	FY29
Parker Substation 161-kV Replacements	16,850		300	8,000	7,700	850	

PROJECT - Q3 FINAL	TOTAL BUDGET	FY24	FY25	FY26	FY27	FY28	FY29
Parker Substation 161-kV Replacements	16,850		300	100	100	8,000	7,700

7.4 Benefits

As a result of a successful pivot, the 10-Year Plan process will include seed funding of all new projects in alignment with budget formulation. Customers will gain additional input into Analysis of Alternatives (AOA) study prioritization, planning, and results. Previously the AOAs were performed concurrent with the budget formulation process, such that opportunities for customer input/engagement were limited. The strategic plan to pivot will provide customers with capital planning information in advance of budget formulation, therefore allowing sufficient time for WAPA to develop diverse, viable, and economical investment alternatives for consideration.

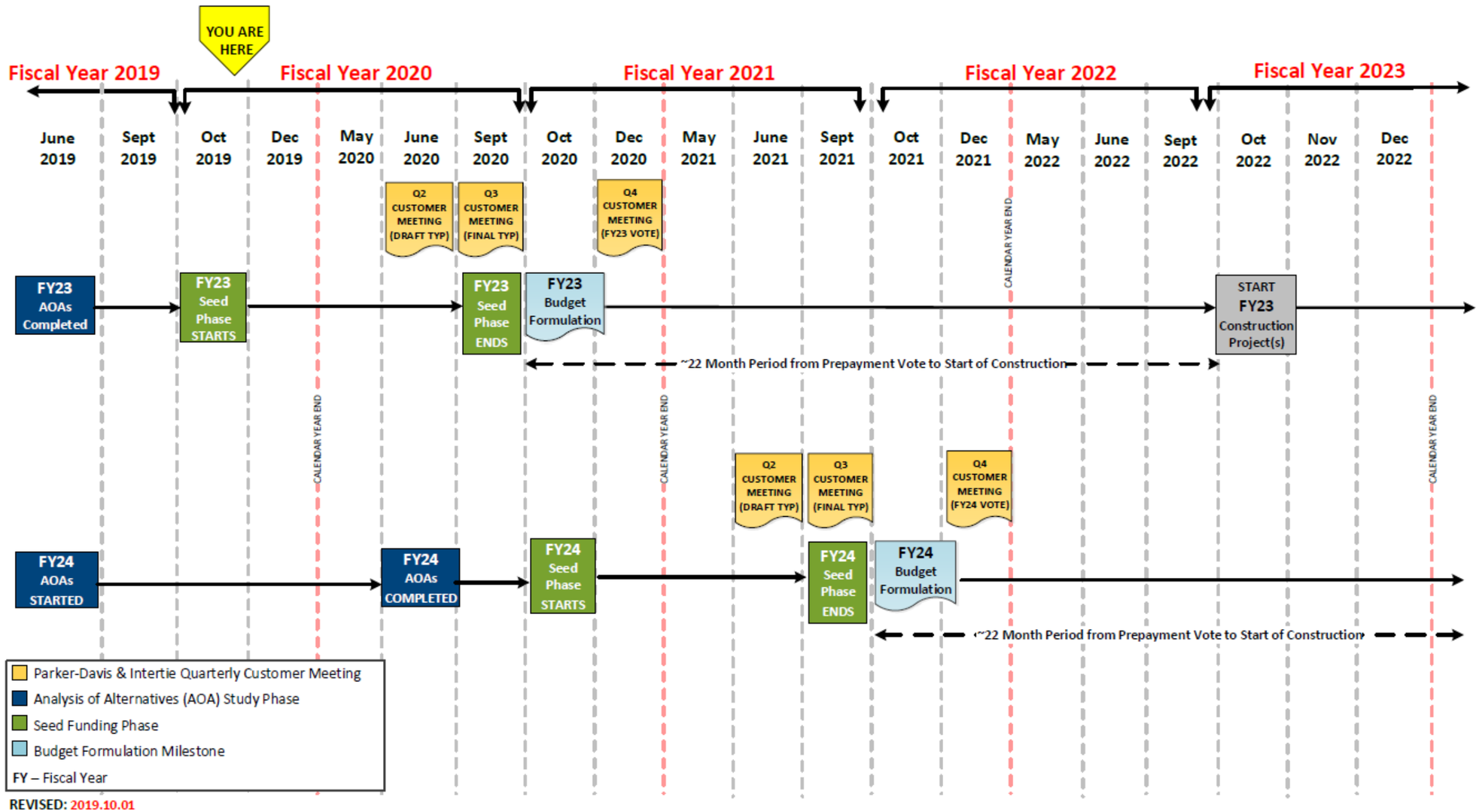
7.5 Post-Pivot Planning Schedule

Western Area Power Administration

Desert Southwest Region 10-Year Plan

POST-PIVOT SCHEDULE

AS OF OCTOBER, 2019 → Calendar Year: 2019 Fiscal Year: 2020 Budget Formulation: FY23 AOA Study Formulation: FY24 New Starts



REVISED: 2019.10.01

8. RATE ANALYSIS

8.1 Rates Introduction

WAPA must establish rates sufficient to cover operating, maintenance and purchase power expenses and repay capital investments in generation and transmission facilities within the allowable period.

Capital investments are repaid independent of funding source – both appropriations and alternative financing such as prepayments. Repayment begins the fiscal year following the in-service date of the capital investment.

Parker-Davis Project:
Parker-Davis Project (P-DP) uses a formula rate; meaning the rate is calculated each year with updated financial and sales inputs. The P-DP rate is forward looking, which considers a 5-year forecast of annual expenses and repayment of capital investments, including replacements.

P-DP uses a "mortgage-type" amortization to calculate the annual principal and interest to be included in the rate. Repayment of capital investments includes existing unpaid investments as well as projections of future investments identified in the 10-Year Plan. P-DP replacements are required to be repaid within 40 years, based on a weighted-average service life, while additions are required to be repaid within 50 years.

Intertie Project:
The Intertie Project (Intertie) uses a stated rate; meaning once the rate is calculated, it is kept in place until no longer sufficient. The rate is reviewed annually to determine sufficiency. Similar to P-DP, the Intertie rate is also forward looking but considers the projected annual expenses and capital investments for the next 50 years.

Intertie uses the "pinch-point" repayment methodology. The pinch-point year is when a significant required payment is due for a capital investment and therefore the annual revenue requirement is the highest. Repayment of capital investments includes existing unpaid investments as well as projections of future investments. Replacements are required to be repaid by their service life according to the Federal Hydropower Replacements Book and additions are required to be repaid within 50 years. The current pinch-point year for Intertie is fiscal year (FY) 2020, when most of the original capital investment in the project requires repayment.

8.2 Analysis of Capital Investments

The projects in the 10-Year Plan are analyzed to determine their rate impact. Project costs, including 'Interest during Construction', and in-service dates are used in the analysis. Estimated principal and interest from the projects in the 10-Year Plan is divided by typical sales for the period to determine the rate impact.

In the analysis, the annual rate impact for each project is displayed. For the P-DP rate, an average of the amounts in the 5-year rate window would determine the rate impact of the 10-Year Plan.

The Intertie rate analysis only reflects payments of interest before the FY 2020 pinch-point to maximize the amount of principal applied to the original capital investment in the project. After FY 2020, interest and principal will be collected for the investments in the 10-Year Plan.

8.4 10-Year Spend Plans

Intertie Project 10-Year Plan (Costs in Thousands of Dollars)

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
PROJECT	BUDGET FY20-29	PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
Liberty Series Capacitor Bank Replacement	$ 1,623	$ 9,835	1,598	25								
FISCAL YEAR (FY) TOTALS			$ 1,598	$ 25	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Parker-Davis Project 10-Year Plan (Costs in Thousands of Dollars)

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
PROJECT	BUDGET FY20-29	PROJECTED TOTAL	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
Gila-Wellton Mohawk Interstate-8 Crossing Rebuild	$ 40	$ 7,623	40									
Gila Substation 161-kV Rebuild	$ 3,125	$ 23,873	3,100	25								
Dome Tap-Gila 161-kV Rebuild	$ 3,016	$ 5,630	2,966	50								
Coolidge-Valley Farms 115-kV Rebuild	$ 957	$ 2,543	932	25								
Crossman Peak Microwave Facility	$ 3,037	$ 4,525	170	2,534	333							
Kofa-Dome Tap 161-kV Rebuild	$ 4,814	$ 5,138	4,634	130	50							
Bouse-Kofa 161-kV Rebuild	$ 26,105	$ 26,520	614	21,095	2,556	1,800	40					
Bouse Upgrade Project	$ 44,475	$ 45,967	1,208	704	9,658	11,493	12,925	7,950	537			
Parker-Blythe 161-kV #2 Rebuild Phase-1	$ 18,542	$ 18,542		250	237	17,086	805	164				
Parker-Blythe 161-kV #2 Rebuild Phase-2	$ 18,542	$ 18,542			237		17,336	805	164			
Parker-Blythe 161-kV #2 Rebuild Phase-3	$ 18,542	$ 18,542			237			17,336	805	164		
Parker Substation 161-kV Replacements	$ 16,200	$ 16,850						300	100	100	8,000	7,700
Blythe-Headgate Rock #1 161-kV Rebuild	$ 22,666	$ 23,900						1,195	100	100	9,560	11,711
Parker Substation 230-kV Replacements	$ 2,800	$ 12,100							600	100	100	2,000
Gila Substation 69-kV Rebuild	$ 1,000	$ 10,500								800	100	100
Gila-Knob 161-kV Remaining Rebuild	$ 900	$ 23,000									800	100
Gila Substation 34.5-kV & 14-kV Rebuild	$ 500	$ 15,250										500
FISCAL YEAR (FY) TOTALS			$ 13,664	$ 24,813	$ 13,308	$ 30,379	$ 31,106	$ 27,750	$ 2,306	$ 1,264	$ 18,560	$ 22,111

Continuation of Lands & Environmental Activities

8.5 Intertie Project Rates Analysis

PROJECT	In Service Date	Interest Rate	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
Prior Year Projects (Pending Closeout)/Capital O&M	2020 +	3.000%	$ 0.02	$ 0.13	$ 0.25	$ 0.31	$ 0.37	$ 0.42	$ 0.48	$ 0.53	$ 0.59	$ 0.62
Liberty Series Capacitor Bank Replacement	2021	3.000%			$ 0.31	$ 0.31	$ 0.31	$ 0.31	$ 0.31	$ 0.31	$ 0.31	$ 0.31
Total /kW-Year			**$ 0.02**	**$ 0.13**	**$ 0.56**	**$ 0.63**	**$ 0.68**	**$ 0.74**	**$ 0.79**	**$ 0.85**	**$ 0.90**	**$ 0.93**
Total /kW-Month			**$ 0.00**	**$ 0.01**	**$ 0.05**	**$ 0.05**	**$ 0.06**	**$ 0.06**	**$ 0.07**	**$ 0.07**	**$ 0.08**	**$ 0.08**

8.6 Parker-Davis Project Rates Analysis

FY20 Rate without Future Capital **$ 19.20 / kW-Year**

$ 1.60 / kW-Month

PROJECT	In Service Date	Interest Rate	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
Prior Year Projects (Pending Closeout)	2020 +	various	$ 0.05	$ 0.13	$ 0.13	$ 0.14	$ 0.14	$ 0.14	$ 0.14	$ 0.14	$ 0.14	$ 0.14
Capital O&M	2020 +	various	$ 0.09	$ 0.22	$ 0.35	$ 0.45	$ 0.56	$ 0.67	$ 0.78	$ 0.88	$ 0.99	$ 1.05
Prior Year Projects (Pending Closeout)/Capital O&M	2020 +	various	$ 0.14	$ 0.35	$ 0.48	$ 0.58	$ 0.70	$ 0.80	$ 0.91	$ 1.02	$ 1.12	$ 1.18
Tucson Substation Rebuild	2019	3.000%	$ 0.17	$ 0.17	$ 0.17	$ 0.17	$ 0.17	$ 0.17	$ 0.17	$ 0.17	$ 0.17	$ 0.17
Gila-Knob 161-kV T-Line Reroute	2019	3.000%	$ 0.06	$ 0.06	$ 0.06	$ 0.06	$ 0.06	$ 0.06	$ 0.06	$ 0.06	$ 0.06	$ 0.06
Black Point Mesa Reroute	2019	3.000%	$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04
Parker-Davis Facility Rating Year 2	2019	3.000%	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13
Gila-Wellton Mohawk Interstate-8 Crossing Rebuild	2020	3.000%		$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13	$ 0.13
Gila Substation 161-kV Rebuild	2021	3.000%			$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41
Dome Tap-Gila 161-kV Rebuild	2021	3.000%			$ 0.09	$ 0.09	$ 0.09	$ 0.09	$ 0.09	$ 0.09	$ 0.09	$ 0.09
Coolidge-Valley Farms 115-kV Rebuild	2021	3.000%			$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04	$ 0.04
Crossman Peak Microwave Facility	2022	3.000%				$ 0.08	$ 0.08	$ 0.08	$ 0.08	$ 0.08	$ 0.08	$ 0.08
Kofa-Dome Tap 161-kV Rebuild	2022	3.000%				$ 0.09	$ 0.09	$ 0.09	$ 0.09	$ 0.09	$ 0.09	$ 0.09
Bouse-Kofa 161-kV Rebuild	2024	3.125%						$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47
Bouse Upgrade Project	2026	3.000%								$ 0.80	$ 0.80	$ 0.80
Parker-Blythe 161-kV #2 Rebuild Phase-1	2025	3.375%							$ 0.34	$ 0.34	$ 0.34	$ 0.34
Parker-Blythe 161-kV #2 Rebuild Phase-2	2026	3.375%								$ 0.34	$ 0.34	$ 0.34
Parker-Blythe 161-kV #2 Rebuild Phase-3	2027	3.375%									$ 0.34	$ 0.34
Parker Substation 161-kV Replacements	2030	3.625%										
Blythe-Headgate Rock #1 line 161-kV Rebuild	2030	3.625%										
Parker Substation 230-kV Replacements	2031	3.625%										
Gila Substation 69-kV Rebuild	2032	3.625%										
Gila-Knob 161-kV Remaining Rebuild	2033	3.625%										
Gila Substation 34.5-kV & 14-kV Rebuild	2034	3.625%										
Total /kW-Year	-		**$ 0.53**	**$ 0.87**	**$ 1.54**	**$ 1.80**	**$ 1.92**	**$ 2.49**	**$ 2.94**	**$ 4.17**	**$ 4.61**	**$ 4.67**
Total /kW-Month			**$ 0.04**	**$ 0.07**	**$ 0.13**	**$ 0.15**	**$ 0.16**	**$ 0.21**	**$ 0.24**	**$ 0.35**	**$ 0.38**	**$ 0.39**

9. 2019 PREPAYMENT VOTE

9.1 Prepayment Voting Schedule 2019

The 2019 prepayment vote meeting will be held on December 10, 2019. The below section outlines some of the changes to the anticipated vote schedule from what was previously proposed in the Draft 10-Year Plan Presentation in July 2019.

As discussed in Section 4.2, the Gila Substation 161-kV to 230-kV Rebuild project will require an additional $4,878,500 in prepayments. WAPA anticipates transferring a total of $3,536,000 in prepayments from other active projects that are currently under budget. Those projects and the amount to be transferred from each is listed in the chart below.

PROJECT	FUNDS AVAILABLE FOR TRANSFER
Liberty Series Capacitor Bank Replacement	$ 537,000
Coolidge-Valley Farms 115-kV Rebuild	$ 807,000
Gila-Dome Tap 161-kV Rebuild	$ 2,000,000
Kofa-Dome Tap 161-kV Rebuild	$ 192,000
TOTAL FUNDS AVAILABLE FOR TRANSFER	**$ 3,536,000**

ADDITIONAL FUNDS REQUIRED	$ 4,878,500
TOTAL FUNDS AVAILABLE FOR TRANSFER	$ 3,536,000
NET INCREASE IN PREPAYMENTS	**$ 1,342,500**

The seed funded Bouse Upgrade project scheduled to go to vote December 2019 is being extended an additional year to allow the completion of the design work and an independent government estimate. The Parker-Blythe #2 161-kV Rebuild project phase 1, 2, & 3, also scheduled to go to vote December 2019 is postponed to re-evaluate for potential cost savings through a reduced scope of work. As a result, no new projects will be voted on in 2019. WAPA anticipates that a vote will take place on Gila Substation 161-kV to 230-kV Rebuild to approve of the transfer of funds and additional prepayments funds requested.

PREPAYMENT VOTE SCHEDULE 2019	
PROJECT	AMOUNT
Gila Substation 161-kV Rebuild (Reprogrammed)	$ 3,536,000
Gila Substation 161-kV Rebuild (Additional Funds)	$ 1,342,500

10. APPENDICES

10.1. Project Life Cycle

The graphic below was created to illustrate the major milestones of a typical 10-Year Plan Project from project request (inception) to project financial close-out (completion).

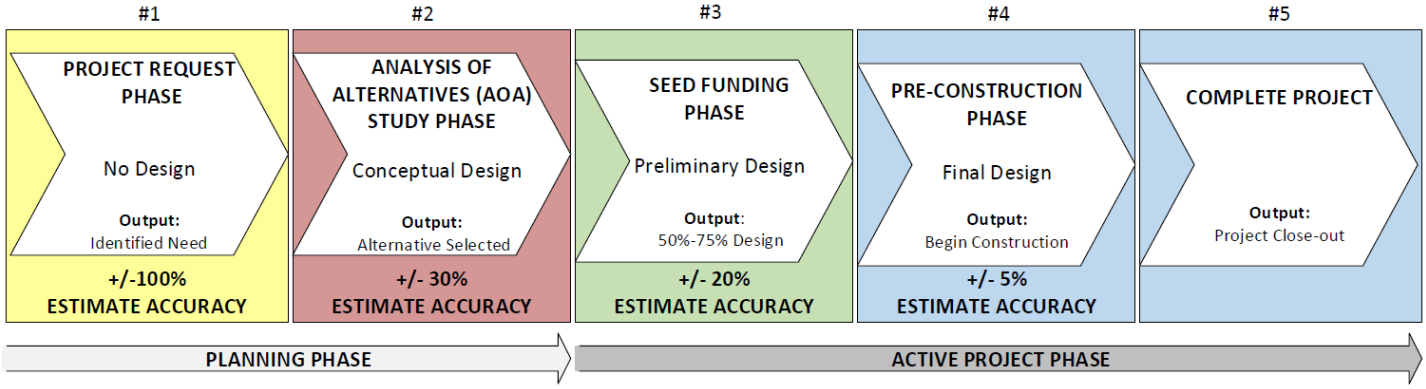


Figure 34 Project Life Cycle with Estimate Accuracy Progression

Project Request Phase

Project Request (PR) forms are required to initiate any capital improvement project with an anticipated budget great that one million dollars. PRs can be submitted by either WAPA internal stakeholders or external customer stakeholders. The PR marks the inception of the project and aims to identify a credible performance gap or deficiency between the current capabilities and capacities and those required in the mission need. Each PR is evaluated and prioritized based on compliance, reliability, and economic metrics. The submission of a PR does not guarantee the initiation of an active project. PRs are actively analyzed and those of the highest priority are handed off to the Analysis of Alternatives (AOA) study team for further investigation and development.

Project Request Forms can be found here:
https://www.wapa.gov/regions/DSW/Pages/10-year-capital-program.aspx

Analysis of Alternatives (AOA) Study

The Analysis of Alternatives (AOA) study phase is used to develop a conceptual design using the Project Request form information as the basis for the mission need. The AOA study aims to identify and analyze sufficient alternatives that are diverse, viable, and economically feasible, representing a suitable range of design alternatives. Each alternative is developed to the conceptual design level for the purposes of establishing a scope, schedule and cost estimate. AOA studies are performed in concert with WAPA customers and internal stakeholders from the point of identifying alternatives, to selecting the preferred alternative. The completion of an AOA study does not guarantee the initiation of an active project. Completed AOA studies are also subject to prioritization, competing priorities, resource availability, approved funding, and customer support. AOA studies must be completed for any project being considered for the budget formulation year.

Seed Funding Phase

New in 2016 was the implementation of the seed funding mechanism. This mechanism was initiated in response to the inherent variability of pre-design construction estimates (+/-30% accuracy). In Figure 3 above, you can see the progression from the Project Request Phase (Box #1) to Project Completion Phase (Box #5) and the

associated level of accuracy of the project estimate at each phase. Estimate accuracies are approximate targets and may vary depending on the nature of the project.

The transition from the AOA Study Phase to the Seed Funding Phase is representative of the transition from O&M planning activities to formal active project activities. Once the Seed Funding Phase is initiated, a formal project management team is assigned to the project and year one of the active project is officially underway.

While the AOA studies provide a +/-30% accurate project cost estimate based on conceptual design parameters, the seed funding phase improves to +/-20% estimate accuracy. The limitations of the AOA estimate exist in the inherent variables of the conceptual design and its impacts on lands/realty, the environment, outage coordination, procurement, market values, and a host of other cost drivers. Through the development of the preliminary design in the seed funded phase, these variables are identified, improving the estimate accuracy to within +/-20% accuracy. Once the design is deemed complete (100% drawings and specifications) at the end of the Pre-construction Phase, then the estimate accuracy is improved to +/-5%.

Using conceptual design information developed in the AOA Study Phase, WAPA determines the amount of seed funding required to develop 50%-75% of the project design package. The project design package consists of the construction specifications, drawings, and associated preliminary procurement documents. The respective seed budget supports federal and contract labor only, no equipment is procured in the seed phase.

Once a project has successfully been funded through the seed funding phase, it is then subject to review by WAPA and its customer's for full funding consideration (Figure 4, Box #4 & #5). In the event appropriations cannot be secured to fully fund the remainder of the project to completion, prepayment funds will be requested from the customers during the annual prepayment vote meeting in December.

Preconstruction Phase

At the conclusion of the Seed Funding Phase, the project enters the Pre-Construction Phase which advances the partial design package from 50-75% to 100% final design. The final design includes the design drawings, specifications, and in some cases required procurement documents for solicitation of government furnished equipment. If a construction contractor is required then a solicitation package is generated and issued to execute all required contracts to complete the design package. This may include a variety of service, construction, and/or equipment contracts. At the conclusion of this phase the construction contractor will be issued a notice to proceed and field activities will begin.