



10-Year Capital Plan

Active Construction and RRADs Meeting

2018-2027



March 29th, 2018

Desert Southwest Region
Phoenix, AZ

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AGENDA

1. Welcome
2. Previous Action Items
3. FY18 Completed Projects
4. FY18 Active Construction Projects
5. RRADs Overview
6. Pivot Strategy 2018
7. FY19 Proposed Project
8. FY20/21 Proposed Project
9. TYP Next Steps / Action Item Recap



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WELCOME



March Quarterly Customer Meeting

- Welcome to the first quarter customer meeting
- The goal of these quarterly meetings is to establish a program of routine, predictable topics, with shorter durations
- The focus of today's quarterly meeting is active construction and the RRADS Program

Quarterly meeting MARCH 29TH Active Projects	Quarterly meeting JUNE Draft 10-Year Plan	Quarterly meeting SEPTEMBER Formal 10-Year Plan	Quarterly meeting DECEMBER Prepayment Vote
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Action Items Discussion

Overview of Outstanding Action Items

- *Many of the action items relating to the proposed 10-Year Plan projects are covered in this presentation*
- *A complete list of the Action Items gathered from the February 27th "Pivot Meeting" and the February 28th CTC meeting can be located in the Appendix of the Handout Book*
- *WAPA has begun to assess and prepare documentation relating to the Wood vs. Steel decision, in regards to structure replacements and standard operating procedure*
- *Once the wood vs. steel information has been compiled a customer work group session will be scheduled*
- *WAPA will also host a separate customer work group session to discuss the RRADs program and address any customer questions and concerns*



FY18 COMPLETED PROJECTS



Tucson Substation Rebuild

See page 7 of the handout booklet

Project Updates

- Construction activities are complete
- Substation currently energized
- The following line segments have been tied-in
 - Del Bac – Tucson
 - Saguaro – Tucson
 - Oracle – Tucson

Closeout Status

- Projected for June 2018



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Project Manager: Mike Garcia

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Tucson Substation Rebuild



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+F]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	7,000,000	-	7,000,000	7,173,187	-	173,187	7,173,187
Appropriations (WCF)	-	2,042,967	2,042,967	2,042,967	-	-	2,042,967
Total Project Funding	7,000,000	2,042,967	9,042,967	9,216,154			9,216,154

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



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Project Manager: Mike Garcia

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Mesa Substation Remediation

See page 8 of the handout booklet

Project Updates

- WAPA environmental final report completed
- Received final approval from Arizona Department of Environmental Quality (ADEQ) on the remedial completion report
- Contractor public notice posting time period has ended, waiting for public responses

Closeout Status

- Request a “No Further Action” letter from ADEQ
- Projected for May 2018



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Project Manager: Roger Wright

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Mesa Substation Remediation



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+F]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	1,025,000	2,510,000	3,535,000	638,155	2,896,845	-	3,535,000
Appropriations (WCF)		1,343,262	1,343,262	1,343,262	-	-	1,343,262
Total Project Funding	1,025,000	3,853,262	4,878,262	1,981,417	2,896,845	-	4,878,262

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



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Project Manager: Roger Wright

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Mesa Substation Remediation

Land Disposal

- *WAPA does not have a need or use for the property currently or in the foreseeable future*
- *Property will be cleared and prepared for sale through the GSA process*
- *The value of the property is undetermined and will depend upon the purchasing entity and provisions provided to them by GSA*
- *WAPA has inquired about possible land swap options and will continue to seek a land disposal option that maximizes the benefit to the Parker-Davis Project*



FY18 ACTIVE CONSTRUCTION PROJECTS



Parker-Headgate Rock & Parker-Bouse

See page 10 of the handout booklet

Project Milestones

- This project has been put **on hold** for reevaluation. WAPA is currently considering other alignment options for the rebuild.

Project Updates

- The results and comments from the last public scoping meeting are still being considered

Project Risks

- Project Risks vary depending on which alignment is selected

Projected Completion

- **On hold** pending transmission line routing



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Project Manager: Mike Baird

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Parker-Headgate Rock & Parker-Bouse



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+F]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	17,954,000	(334,176)	17,619,824	517,386	17,102,438	-	17,619,824
Appropriations (WCF)	-	792,099	792,099	792,099	-	-	792,099
Total Project Funding	17,954,000	457,923	18,411,923	1,309,485	17,102,438	-	18,411,923

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



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Project Manager: Mike Baird

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Gila Substation 161-kV Rebuild

See page 12 of the handout booklet

Project Milestones

- 100% design April 2018
- Construction start October 2018

Project Updates

- All lands activities complete
- All pre-construction environmental activities complete

Project Risks

- Due to line congestion outside of substation several coordinated outages will be required

Projected Energization

- April 2020



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Project Manager: Tony Gagajewski

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Gila Substation 161-kV Rebuild



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+G]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	12,000,000	5,135,365	17,135,365	5,603,538	11,531,827	-	17,135,365
Appropriations (WCF)	-	1,858,635	1,858,635	1,858,635	-	-	1,858,635
Total Project Funding	12,000,000	6,994,000	18,994,000	7,462,173	11,508,223	-	18,994,000

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



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Project Manager: Tony Gagajewski

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Gila-Knob 161-kV Rebuild

See page 14 of the handout booklet

Project Milestones

- Construction began January 2018
- Outage completion April 2018
- Project closeout begins May 2018

Project Updates

- Majority of contractor submittals have been received and approved

Project Risks

- Limited outage window

Projected Energization

- April 2018



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Project Manager: Tony Gagajewski

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Gila-Knob 161-kV Rebuild



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+F]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	2,000,000	728,158	2,728,158	2,185,399	542,759	-	2,728,158
Appropriations (WCF)	1,975,748	-	1,975,748	1,975,748	-	-	1,975,748
Total Project Funding	3,975,748	728,158	4,703,906	4,161,147	542,759	-	4,703,906

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



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Project Manager: Tony Gagajewski

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Crossman Peak Microwave Facility

See page 16 of the handout booklet

Project Milestones

- 100% design package June 2018
- Final design and specification to procurement August 2018
- Construction start January 2019

Project Updates

- Finalized design of communication building

Project Risks

- No current risk

Projected Completion

- November 2019



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Project Manager: Mike Garcia

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Crossman Peak Microwave Facility



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+E]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	4,525,000	-	4,525,000	971,624	3,553,376	-	4,525,000
Appropriations (WCF)	-	-	-	-	-	-	-
Total Project Funding	4,525,000	-	4,525,000	971,624	3,553,376	-	4,525,000

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



Desert Southwest Region - Ten Year Capital Plan

Project Manager: Mike Garcia

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Liberty Series Capacitor Bank

See page 18 of the handout booklet

Project Milestones

- 100% design February 2018
- Outage on the Liberty – Peacock 345-kV transmission line is scheduled for January 2019 – March 2019

Project Updates

- Government furnished capacitor bank factory testing is scheduled for May 2018

Project Risks

- Limited outage window

Projected Energization

- April 2019



Liberty Series Capacitor Bank



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+F]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	10,372,000	(3,776,633)	6,595,367	1,898,861	4,696,506	-	6,595,367
Appropriations (WCF)	-	3,776,633	3,776,633	3,776,633	-	-	3,776,633
Total Project Funding	10,372,000	-	10,372,000	5,675,494	4,696,506	-	10,372,000

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



Gila-Wellton Mohawk I-8 Crossing

See page 20 of the handout booklet

Project Milestones

- 100% design January 2018
- Construction contract award April 2018
- Construction begins November 2018

Project Updates

- Lands and Environmental activities progressing on time
- All Government furnished equipment and primary contract currently in progress

Project Risks

- New technology to WAPA – employing the use of micro-piles due to rough terrain on site

Projected Energization

- May 2019

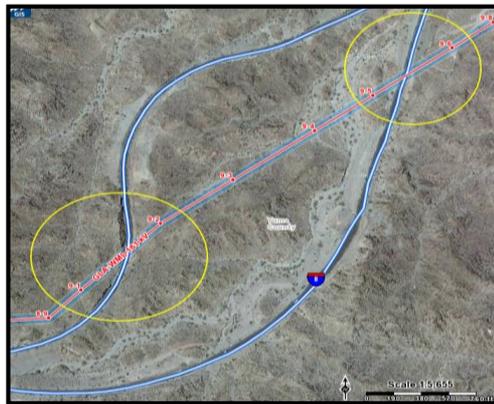


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Project Manager: Tony Gagajewski

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Gila-Wellton Mohawk I-8 Crossing



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+F]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	-	7,242,665	7,242,665	48,082	7,194,583	-	7,242,665
Appropriations (WCF)	400,000	(122,011)	277,989	277,989	-	-	277,989
Total Project Funding	400,000	7,120,654	7,520,654	326,071	7,194,583	-	7,520,654

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



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Project Manager: Tony Gagajewski

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SEED FUNDING UPDATE



Seed Funding Projects

- *See page 44 of the handout booklet.*
- Kofa-Dome Tap and Dome Tap-Gila were selected to utilize appropriated seed funding in November 2017
- The goal is to develop >50% design package and a revalidated project budget
- Continuing Resolution through March 23rd, 2018 had limited WAPA's available appropriated funds. The full budget was passed on March 23rd.
- Appropriations are currently coming from DOE to WAPA HQ and will be distributed to regions.



Impacts of Continuing Resolution

- To date only Coolidge-Valley Farms has kick-off design, due to the use of prepayments for seed funding in lieu of appropriations
- Currently WAPA is awaiting distribution of appropriations to seed fund Kofa-Dome Tap and Dome-Tap Gila
- Construction has initiated the formal design process.



Appropriated Seed Funding Project Delays

- WAPA estimates that approximately six months is required to develop >50% design package and a revalidated project budget
- Prior delays in seed funding could impact the vote for full prepayment funding in December of this year.
- Construction is currently on track to meet the partial design required for the September meeting leading to the vote in December.



Coolidge-Valley Farms 115-kV Rebuild

See page 23 of the handout booklet

Project Milestones

- Kick-off meeting February 2018
- Preliminary design complete August 2018
- Request full prepayment funding December 2018

Project Updates

- Project has begun design phase

Project Risks

- Environmentally and culturally sensitive areas near ROW

Projected Energization

- TBD based on full funding approval



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Project Manager: Roger Wright

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Coolidge – Valley Farms 115-kV Rebuild



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+F]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	800,000	-	800,000	2,743	797,257		800,000
Appropriations (WCF)	-	-	-	-	-	-	-
Total Project Funding	800,000	-	800,000	2,743	797,257		800,000

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



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Project Manager: Roger Wright

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Kofa-Dome Tap 161-kV Rebuild

Status: In Formal Design Process

See page 25 of the handout booklet

Transmission Line Description

- Single-circuit, 7.3-mile line segment along the Parker-Gila Transmission line
- Originally constructed in 1943 with 300 kcmil hollow core copper conductors
- Most wood H-Frame structures have been replaced with light duty steel H-Frame structures
- Seven wood structures remain in service



Project Description

Project Manager: Mike Garcia

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Kofa-Dome Tap 161-kV Rebuild

Status: In Formal Design Process



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+F]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	-	-	-	-	-	-	500,000
Appropriations (WCF)	500,000	-	500,000	-	500,000	-	-
Total Project Funding	500,000	-	500,000	-	500,000	-	500,000

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



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Project Manager: Mike Garcia

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Kofa-Dome Tap 161-kV Rebuild

Status: In Formal Design Process

Project Description:

- Replace 7.3 miles of 300 kcmil hollow core conductor with 336.4 kcmil ACSS conductor.
- Replace the existing steel OGW with OPGW
- Replace the existing 7 wood structures with light duty steel H-Frames.
- Additional H-Frames to be installed as needed to rectify any remaining clearance issues.
- \$500,000 appropriated seed funds will be used to complete >50% design package and revalidated project estimate
- Prepayment funds will be requested in December 2018 to fully fund the project through closeout in accordance with revalidated project estimate



AOA Study Alternatives Identified

Project Manager: Mike Garcia

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Dome Tap-Gila 161-kV Rebuild

Status: In Formal Design Process

See page 28 of the handout booklet

Transmission Line Description

- Single circuit, 7.5 mile line segment along the Parker-Gila transmission line
- Originally constructed in 1943 the line is constructed with 300 kcmil hollow core copper conductor
- Current mix of wood and light duty steel H-frame structures
- 16 wood structures remain in this segment



Project Description

Project Manager: Tony Gagajewski

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Dome Tap- Gila 161-kV Rebuild

Status: In Formal Design Process



FUNDING SUMMARY	[A]	[B]	[C] [A+B]	[D]	[E] [C-D]	[F]	[G] [C+F]
Funding Type	Original Project Budget	Adjustments To Date	Current Project Budget	Total Executed*	Remaining Funds	Additional Funds Required	Revised Project Budget
Prepayment (PCN)	-	-	-	-	-	-	500,000
Appropriations (WCF)	500,000	-	500,000	-	500,000	-	-
Total Project Funding	500,000	-	500,000	-	500,000	-	500,000

* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18



Desert Southwest Region - Ten Year Capital Plan

Project Manager: Tony Gagajewski

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Dome Tap-Gila 161-kV Rebuild

Status: In Formal Design Process

Project Description:

- Replace 7.6 miles of 300kcmil hollow core conductor with 336.4 kcmil ACSS conductor.
- Replace the existing steel OGW with OPGW
- Replace the existing 16 wood structures with light duty steel H-Frames.
- Additional H-Frames to be installed as needed to rectify any remaining clearance issues.
- \$500,000 appropriated seed funds will be used to complete >50% design package and revalidated project estimate
- Prepayment funds will be requested in December 2018 to fully fund the project through closeout in accordance with revalidated project estimate



AOA Study Alternatives Identified

Project Manager: Tony Gagajewski

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DSW RETIREMENTS, REPLACEMENTS, ADDITIONS, DELETIONS (RRADs) PROGRAM



RRADs Overview

- RRADs projects are typically completed in less than one year and rely primarily on federal labor to complete
- Minimal design is required for RRADs projects
- Some examples of RRADs projects are battery replacements and transmission line repair



DSW RRADs PROGRAM MANAGEMENT

- RRADs Program Manager
 - Facilitates Meetings with Committee Members
 - Coordinates all Communication pertaining to this program
 - Presents planned Budgets programs to DSW Senior Management to get approval
 - Administers all aspects of the program to include financial documents to Budget Office, plan programs for current year and out years, coordination of funding issues, and monitors execution

- DSW RRADs Program Committee Members
 - Committee Members represents all DSW Organizations
 - Subject Matter Experts consists of Senior Management, Foremen, Procurement, Budget and Finance, Power Marketing, Environmental, Operations, Senior Analysts, Project Managers, and Engineers



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Program Manager: Nancy Ruiz

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RRADs COMMITTEE ROLES AND RESPONSIBILITIES

- Program DSW's 10-Year Plan

- Program a Budget Plan for 2 years out for Budget Submission for DSW's OMB Formulation

- Revalidation in the year of execution based on current program needs
 - Committee will prioritize projects based on current year needs, goal is to stay within programmed budget marks set 2 year ago
 - Emergency and Unfunded projects are reprogrammed utilizing current Budget allocations

- Committee members are responsible to ensure that planned program for the current year is executed
 - Provide status on their projects
 - Provide documentation for their project submissions



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Program Manager: Nancy Ruiz

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RRADs 10-YEAR PLAN

- Existing 10-Year Plan is programmed like any other Budget Program
 - Current Year, plus two years out are locked Budgets
 - On the Year Four Plan and out there are **reoccurring programs** that are done annually and are programmed in the current year and the rest of the out years of the 10-Year Program.
 - Examples of Reoccurring Programs:
 - Wood Pole
 - Meter Replacements
 - Relay Line Replacements
 - Microwave Sites
 - Remote Terminal Units (RTUs)
 - Test Equipment
 - Facility Upgrades
 - Headquarters IT RRADs Software and Hardware Upgrades
 - Heavy Equipment Purchases
 - Power System Replacements 48VDC Charger and Battery for Communication Sites
 - Critical Infrastructure Protection for Cyber Security Assets (WIN/CIP)
 - Radio Replacements Joint Use System (JUS)
 - Digital Monitoring Equipment (DME)/Digital Fault Equipment



Desert Southwest Region - Ten Year Capital Plan

Program Manager: Nancy Ruiz

Benefits to Utilizing RRADs Program

- Utilization of DSW Internal Resources
 - The ability to procure equipment and materials and then have our craft employees do the work is a cost savings to our customers rather than contracting out the work.
 - Areas of support:
 - Communication and Protection Projects
 - Substation Projects
 - Transmission Line Projects



Desert Southwest Region - Ten Year Capital Plan

Program Manager: Nancy Ruiz

DSW's RRADs 10-YEAR PLAN DETAILS

- For a full breakout of the RRADs program see the handout book section 6.2, starting on page 31.
- This breakout also includes the IT program.



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Program Manager: Nancy Ruiz

BREAK
(10 MINUTES)



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10-YEAR PLAN PIVOT STRATEGY



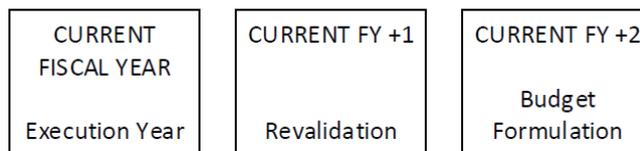
What is the Pivot?

- The pivot strategy was first discussed last month during WAPA's "10-Year Plan Pivot Meeting" held February 27th, 2018
- The pivot is a onetime effort to shift the 10-Year Plan into alignment with Government's budget formulation
- An ambitious plan this calendar year to shift from FY19 project approvals, to FY21 approvals
- A successful pivot concludes in December of 2018 with a prepayment voting meeting



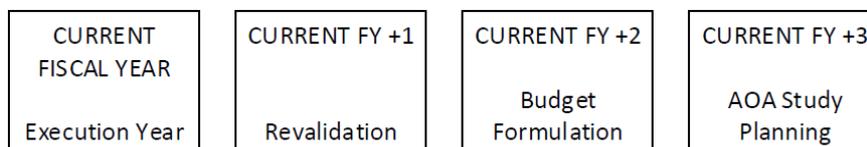
Why Do We Need to Pivot?

- Federal Government Budget Formulation process occurs two fiscal years prior to execution year
- Current 10-Year Plan hosts the Prepayment Funding vote during the execution year (current fiscal year)



Customer Benefits

- Customer meetings focus on input into budget formulation
- AOA studies are performed in advance of budget formulation
- Customer engagement in AOA planning
- New alignment will improve consistency from Budget Formulation to Execution year



Objectives to Execute the Pivot?

- AOA' for FY19, FY20, & FY21 are complete
- Preferred alternative (scope) for each proposed project must be reviewed and approved
- Budgets for proposed projects must be approved by customers in advance of prepayment vote



Objectives to Execute the Pivot?

- Look ahead at the upcoming projected Pre-Payment Vote for FY 19/20/21.
 - FY22 and FY23 are speculative and have not gone through MDCC Ranking.

PREPAYMENT VOTING MEETINGS	START	PROPOSED PROJECTS
DECEMBER 18'	FY18	Coolidge-Valley Farms 115kV Rebuild
	FY18	Kofa-Dome Tap 161kV Rebuild
	FY18	Dome-Gila 161kV Rebuild
	FY19	Bouse-Kofa 161kV Rebuild Ph:I
	FY19	Bouse-Kofa 161kV Rebuild Ph:II
	FY20	Parker-Blythe 161kV Rebuild Ph: I
DECEMBER 19'	FY21	Parker-Blythe 161kV Rebuild Ph: II
	FY22	Parker-Blythe 161kV Rebuild Ph: III
DECEMBER 20'	FY22	TBD
	FY23	Blythe-Headgate Rock 161kV Rebuild
	FY23	TBD

Bouse-Kofa 161-kV AOA

Transmission Line Details

- *84 mile segment of the Parker-Gila transmission line built in 1943*
- *Single circuit transmission line*
- *Mix of wood and light duty steel H-frame structures*
- *82 wood structures remain*
- *211 Light duty steel H-frame structures added in early 2000's*
- *In 2006 a 8.4 mile portion of the line was rerouted around town of Quartzsite with 954 ACSR on steel monopoles*

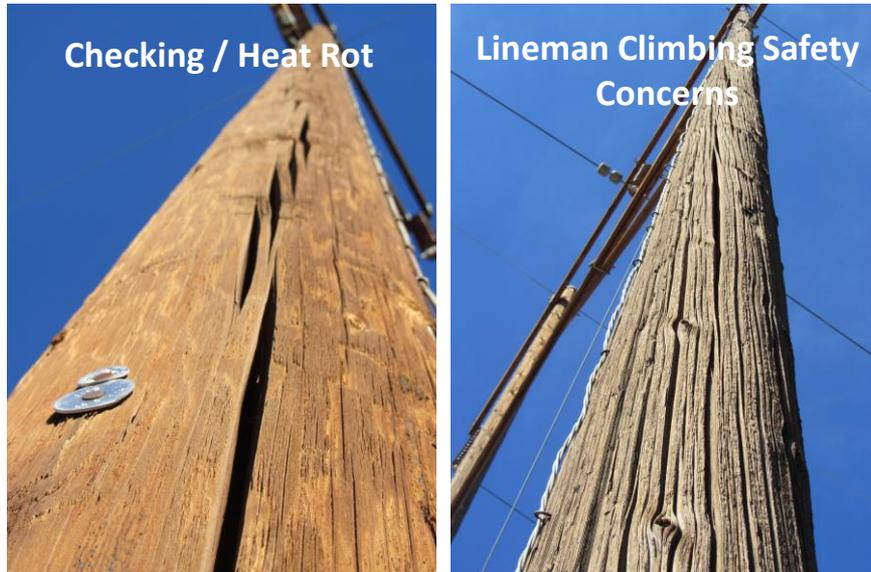


Bouse-Kofa 161-kV AOA

Project Justification

- *106 NERC/NESC violations require corrective action/engineering fix*
- *Significant deteriorated and unsafe wood structures*
- *Vintage 1943 300 kcmil hollow core copper conductor experiencing significant sag*
- *Access roads and ROW require rehabilitation*
- *Currently 82% of the line has up-to-date inspection data and the total failing wood pole count is 32*
- *Additional communication bandwidth is required via Fiber optic ground wire to meet current and future protection, control, communication and security requirements*





Bouse-Kofa 161-kV AOA

Alternatives Studies

- *Alternative 1- Status Quo (Maintenance only)*
 - *Does not meet NERC Requirements to mitigate clearance violations*
- *Alternative 2- Reconductor + Replace failing wood poles in-kind*
 - *82 wood structures remain. While this option has a lower up-front construction cost, the long term maintenance of wood poles offsets the initial investment*
- *Alternative 3- Reconductor + Replace all wood poles with Light Duty Steel H-Frame Structures (Selected Alternative)*
 - *Larger initial investment than Alternative 2 however, long term maintenance cost is less than wood pole alternatives. Removes all wood so line is 100% steel.*
- *Alternative 4- Rebuild the line to 230-kV Standards operated at 161-kV using Steel Monopole*
 - *Is prohibitively expensive and no commercial need for 230-kV capacity in the region*
- *Alternative 5- Install 106 Inset Structures as needed to mitigate NERC/NESC violations*
 - *Increases structure count without addressing wood pole replacement/maintenance cost.*



Bouse-Kofa 161-kV AOA

Proposed Rebuild Scope

- *Reconductor 75 miles (9 mile reroute around Quartzite does not require rebuild) with 336.4 kcmil ACSS to reduce sag, eliminating most of the 106 NERC/NESC violations*
- *Upgrade 82 wood structures to light duty steel H-frames*
 - *Of these, ~5-10 will be steel dead-end structures*
- *Install new steel structures as needed to correct NERC/NESC clearance issues not corrected by stringing new conductor*
- *Add Optical Overhead Ground Wire (OPGW) along all 85 miles of transmission line*
- *Repair/Reclaim ROW access*
- *Copper conductor has an estimated salvage value of ~\$1.7M*



Bouse-Kofa 161-kV AOA

FY19 Proposed Projects: Phase I & II

WAPA is investigating a single design package for the entire BSE-KOF line segment, with two solicitation packages for procurement of separate concurrent construction contracts

- Phase I
 - ~44 miles of rebuild from Kofa Substation heading north
- Phase II
 - ~31 miles of rebuild from Bouse Substation heading south

This will allow concurrent construction of both phases in a single outage window. Reducing total project duration and improving constructability within difficult terrain.



Bouse-Kofa 161-kV AOA

Currently In Progress

- *Revalidating of estimates to split project into phases*
 - *AOA study was initially performed as a single construction project. Phasing will lead to modifications of the estimate and is currently being re-evaluated to ensure accurate phasing budgets*
 - *New Estimate should be available for June Quarterly Meeting*
- *Revalidating lifetime maintenance estimates for alternative comparisons*
 - *WAPA is currently evaluating the costs and effort associated with maintenance of wood poles. The results of this investigation will be used to generate up-to-date estimates for lifetime maintenance costs for proposed project alternatives.*



FY20-21 PROPOSED PROJECTS



FY20-21 PROPOSED PROJECT



Parker-Blythe 161-kV Transmission Line Rebuild



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Parker-Blythe 161-kV AOA

Transmission Line Details

- 64 miles of wood pole transmission line built in 1969
- Single circuit 954 kcmil ACSR
- H-frame wood pole structures with 3-pole angle structures
- ROW crosses Arizona and California state lines
- Incredibly rough terrain for large sections of the line
 - Directly West of Parker Substation the terrain is very mountainous with limited access
 - Further south lies open desert with sand dunes crossing WAPA's ROW
- Area outside of Parker Substation is heavily congested with Transmission lines
- Current ROW held by WAPA is perpetual and redirecting line would cause the loss of that easement



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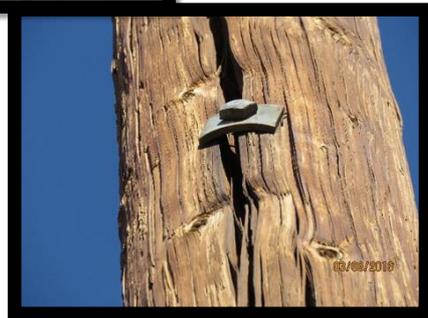
Parker-Blythe 161-kV AOA

Project Justification

- *80% of the wood poles are rejected/require replacement*
- *5 NERC/NESC clearance violations requiring engineering fix*
- *Repair/Reclaim ROW access*
- *20% of the structures (100+) require dozer tow-in for access to structures*
- *Additional communication bandwidth is required via Fiber optic ground wire to meet current and future protection, control, communication and security requirements*



Parker-Blythe 161-kV AOA



Parker-Blythe 161-kV AOA

Alternatives Studies

- *Alternative 1- Status Quo (Maintenance only)*
 - *80% of line is currently rated C or D for pole health. The line has high maintenance costs due to terrain restrictions. Many poles unreachable by trucks alone. Helicopters and/or Bulldozers required to access many structures in the event maintenance is required.*
- *Alternative 2- Replace wood poles in kind and add steel structure dead-ends every <10 miles*
 - *Due to difficult terrain, replacing in-kind would require continued maintenance inside this difficult corridor which is prone to high maintenance cost compared to light-duty steel alternatives*
- *Alternative 3- Rebuild with light duty steel H-Frame structures using 161-kV specifications and standards*
 - *161-kV hardware/parts are less readily available and can be costly compared to 230kV. Standardizing maintenance equipment/parts/tools is more cost efficient across WAPA's system*
- *Alternative 3a- Rebuild with light duty steel H-Frame structures using 230-kV specifications and standards (Selected Alternative)*
 - *A larger investment than Alternative 3, however allows for standardization of maintenance parts/hardware/tools and creates efficiencies across WAPA system. Also allows the ability to convert to 230-kV should any future interconnections be proposed.*
- *Alternative 4- Rebuild with steel monopoles using 161-kV specifications and standards*
 - *Cost prohibitive due to large upfront cost of steel monopoles and installation cost*
- *Alternative 5- Rebuild with steel monopoles using 230-kV specifications and standards (operated at 161-kV)*
 - *Load growth and a need for increased capacity is not anticipated therefore the cost benefit is unfavorable*



Parker-Blythe 161-kV AOA

Proposed Rebuild Scope

- *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 ROW access*
- *Design using 230-kV standards/specifications operated at 161-kV to help standardize maintenance and improve availability of replacement/equipment*



Parker-Blythe 161-kV AOA

FY20 Proposed Project: Phase I, II and III – Alternate 3a

WAPA is investigating a single design package, with three solicitation packages for procurement of separate construction contracts for each phase.

- Phase I
 - Proposed for FY20
 - ~21 miles of rebuild from Parker Substation heading south
- Phase II
 - Proposed for FY21 start
 - ~22 miles of rebuild from the end of Phase I to the start of Phase III
- Phase III
 - Proposed for FY22 start
 - ~21 miles of rebuild from Phase II to Blythe Substation

Allows for potential concurrent construction of phases in a single outage window. Reducing total project duration and improving constructability within difficult terrain.



Parker-Blythe 161-kV AOA

Currently In Progress

- Revalidating of estimates to split project into phases
 - AOA study was initially performed as a single construction project. Phasing will lead to modifications of the estimate and is currently being re-evaluated to ensure accuracy
 - New Estimate should be available for June Quarterly Meeting
- Revalidating lifetime maintenance estimates for alternative comparisons
 - WAPA is currently evaluating the costs and effort associated with maintenance of wood poles. The results of this investigation will be used to generate up to date estimates for lifetime maintenance costs for proposed projects



10-YEAR PLAN NEXT STEPS



December 2018 Projected Prepayment Vote

DECEMBER 2018 PROJECTED PREPAYMENT VOTE (PIVOT YEAR)												
Start	Project	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25		PCN Total	Project Total
FY18	Coolidge-Valley Farms 115kV Rebuild	\$ 800	\$ 2,673	\$ 1,138	\$ 205						\$ 4,816	\$ 4,816
FY18	Kofa-Dome Tap 161kV Rebuild	\$ 500	\$ 4,630	\$ 500							\$ 5,130	\$ 5,630
FY18	Dome-Gila 161kV Rebuild	\$ 500	\$ 5,951	\$ 950							\$ 6,901	\$ 7,401
FY19	Bouse-Kofa 161kV Rebuild Ph:I		\$ 465	\$ 6,376	\$ 7,620	\$ 778	\$ 311				\$ 15,085	\$ 15,550
FY19	Bouse-Kofa 161kV Rebuild Ph:II		\$ 465	\$ 6,376	\$ 7,620	\$ 778	\$ 311				\$ 15,085	\$ 15,550
FY20	Parker-Blythe 161kV Rebuild Ph: I			\$ 500	\$ 12,779	\$ 6,385	\$ 236	\$ 100			\$ 19,500	\$ 20,000
Fy21	Parker-Blythe 161kV Rebuild Ph: II				\$ 500	\$ 12,779	\$ 6,385	\$ 236	\$ 100		\$ 19,500	\$ 20,000
FY22	Parker-Blythe 161kV Rebuild Ph: III					\$ 500	\$ 12,779	\$ 6,385	\$ 236	\$ 100	\$ 19,500	\$ 19,900
			\$14,184	\$15,840	\$28,724	\$21,220	\$20,022	\$ 6,721	\$336	\$100	\$ 86,017	\$ 88,947



Next Quarterly Meeting

June 2018

• Agenda Focus:

- DRAFT 10-Year Plan
- FY19-21 project details
- Focus on answering any remaining questions on proposed projects
- Address any outstanding action items from February and March meetings.



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THANK YOU



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