

HEADQUARTERS

TEN-YEAR CAPITAL PLAN Fiscal Year 2018-2027



**Annual Customer Meeting:
September 12, 2017**



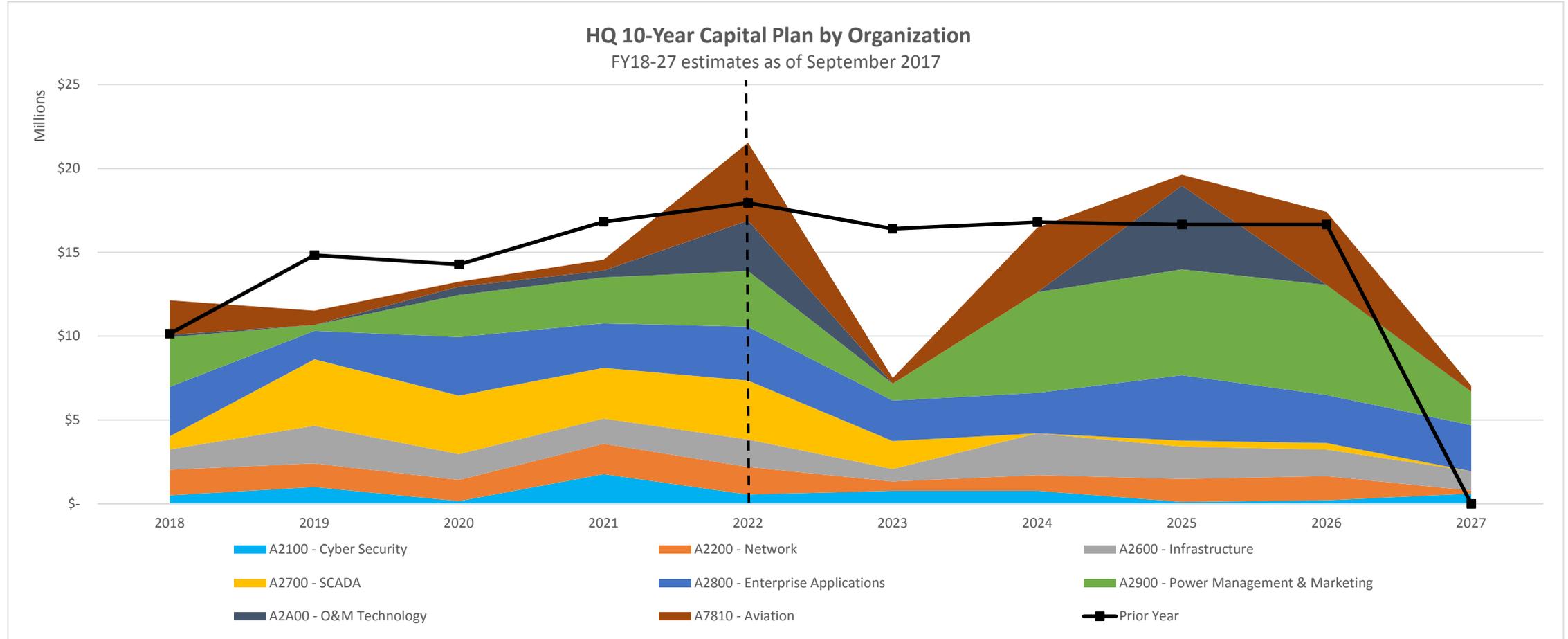
Western Area
Power Administration

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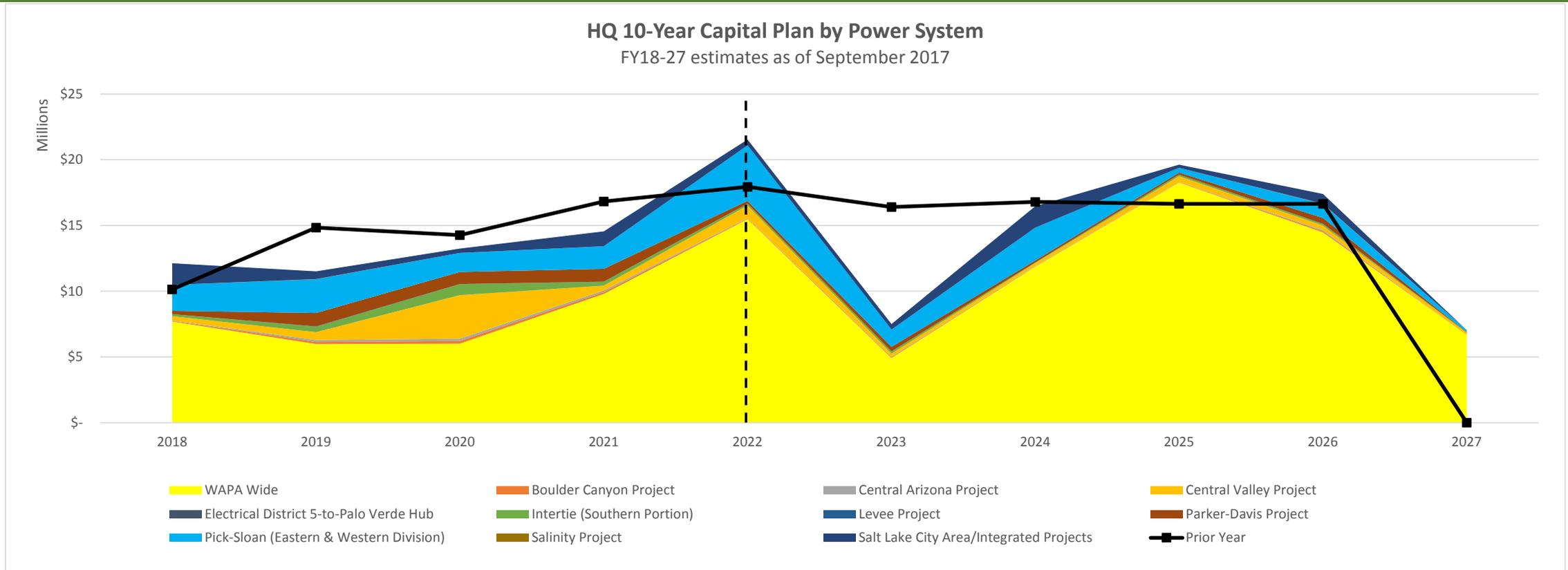
HQ 10-Year Capital Plan by Organization

| Organization | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | Grand Total | % of Total |
|--------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|------------------|--------------------|-------------|
| A2100 - Cyber Security | 502,000 | 1,003,000 | 164,000 | 1,769,000 | 556,000 | 773,000 | 771,000 | 110,000 | 210,000 | 611,000 | 6,469,000 | 5% |
| A2200 - Network | 1,530,750 | 1,408,100 | 1,257,000 | 1,814,100 | 1,635,000 | 561,000 | 934,750 | 1,378,750 | 1,439,850 | 178,750 | 12,138,050 | 9% |
| A2600 - Infrastructure | 1,219,500 | 2,249,500 | 1,543,500 | 1,503,200 | 1,647,900 | 744,000 | 2,504,400 | 1,919,500 | 1,590,120 | 1,155,000 | 16,076,620 | 11% |
| A2700 - SCADA | 775,000 | 3,955,000 | 3,485,000 | 3,020,000 | 3,515,000 | 1,671,500 | | 365,000 | 390,000 | | 17,176,500 | 12% |
| A2800 - Enterprise Applications | 2,950,000 | 1,700,000 | 3,500,000 | 2,650,000 | 3,210,000 | 2,410,000 | 2,410,000 | 3,900,000 | 2,860,000 | 2,750,000 | 28,340,000 | 20% |
| A2900 - Power Management & Marketing | 2,950,000 | 350,000 | 2,500,000 | 2,750,000 | 3,324,000 | 1,000,000 | 6,000,000 | 6,300,000 | 6,566,260 | 2,000,000 | 33,740,260 | 24% |
| A2A00 - O&M Technology | 150,000 | | 500,000 | 400,000 | 3,000,000 | | | 5,000,000 | | | 9,050,000 | 6% |
| A7810 - Aviation | 2,050,000 | 850,000 | 300,000 | 650,000 | 4,650,000 | 350,000 | 3,850,000 | 650,000 | 4,350,000 | 350,000 | 18,050,000 | 13% |
| Grand Total | 12,127,250 | 11,515,600 | 13,249,500 | 14,556,300 | 21,537,900 | 7,509,500 | 16,470,150 | 19,623,250 | 17,406,230 | 7,044,750 | 141,040,430 | 100% |



HQ 10-Year Capital Plan by Power System

| Power Systems | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | Grand Total | % of Total |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|------------------|--------------------|-------------|
| Boulder Canyon Project | 36,401 | 165,325 | 222,887 | 133,874 | 42,167 | 49,012 | 33,409 | 27,051 | 98,595 | 3,163 | 811,882 | 1% |
| Central Arizona Project | 31,890 | 139,878 | 156,442 | 122,612 | 31,851 | 43,735 | 24,635 | 21,756 | 72,703 | 2,332 | 647,834 | 0% |
| Central Valley Project | 340,400 | 601,160 | 3,311,450 | 370,755 | 965,635 | 254,068 | 211,750 | 431,520 | 362,054 | 190,300 | 7,039,092 | 5% |
| Electrical District 5-to-Palo Verde Hub | 73 | 414 | 1,206 | 177 | 171 | 84 | 145 | 87 | 429 | 14 | 2,799 | 0% |
| Intertie (Southern Portion) | 146,826 | 408,464 | 833,794 | 286,838 | 133,843 | 150,192 | 42,311 | 119,985 | 106,054 | 3,402 | 2,231,709 | 2% |
| Levee Project | 4,319 | 18,453 | 9,102 | 17,138 | 3,808 | 6,003 | 2,876 | 2,754 | 8,488 | 272 | 73,213 | 0% |
| Parker-Davis Project | 243,406 | 1,030,599 | 920,671 | 975,668 | 205,075 | 339,772 | 153,418 | 151,542 | 452,767 | 14,523 | 4,487,439 | 3% |
| Pick-Sloan (Eastern & Western Division) | 1,978,000 | 2,562,645 | 1,446,250 | 1,713,763 | 4,237,420 | 1,319,219 | 2,496,643 | 353,700 | 1,075,145 | 151,250 | 17,334,034 | 12% |
| Salinity Project | 2,284 | 9,872 | 5,541 | 8,941 | 2,130 | 3,156 | 1,627 | 1,501 | 4,801 | 154 | 40,007 | 0% |
| Salt Lake City Area/Integrated Projects | 1,640,301 | 593,959 | 334,158 | 1,128,115 | 427,476 | 421,009 | 1,629,401 | 237,726 | 750,908 | 3,641 | 7,166,695 | 5% |
| WAPA Wide | 7,703,350 | 5,984,830 | 6,008,000 | 9,798,420 | 15,488,325 | 4,923,250 | 11,873,936 | 18,275,630 | 14,474,286 | 6,675,700 | 101,205,727 | 72% |
| Grand Total | 12,127,250 | 11,515,600 | 13,249,500 | 14,556,300 | 21,537,900 | 7,509,500 | 16,470,150 | 19,623,250 | 17,406,230 | 7,044,750 | 141,040,430 | 100% |

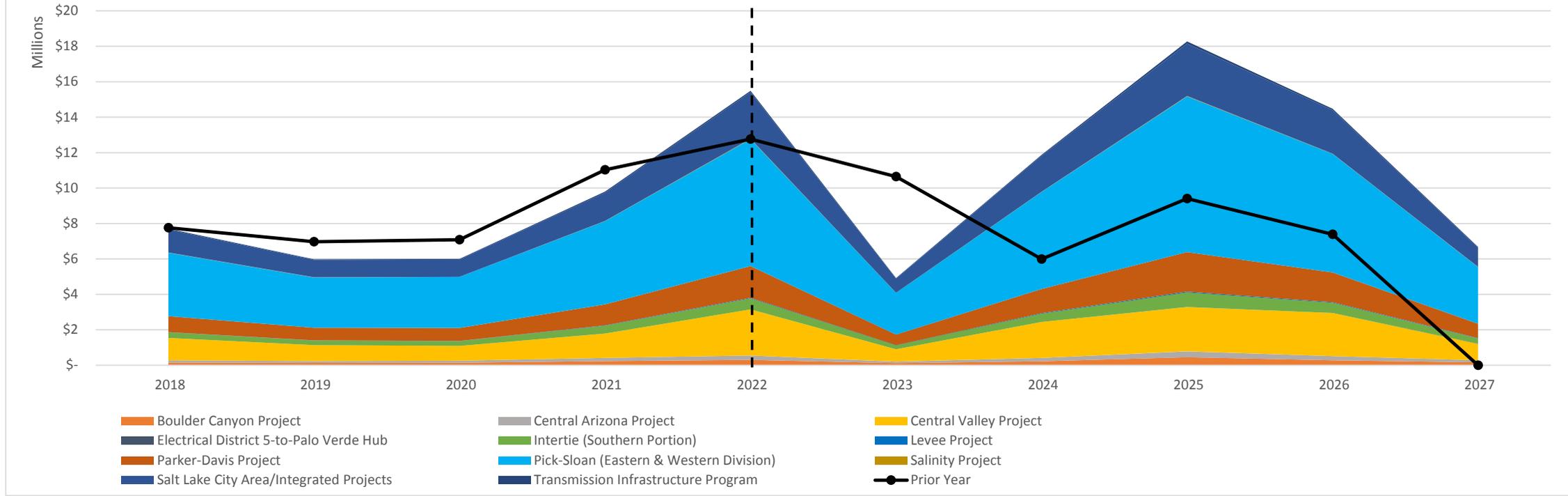


WAPA Wide 10-Year Capital Plan Post-Allocation

| Power Systems | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | Grand Total | % of Total |
|---|------------------|------------------|------------------|------------------|-------------------|------------------|-------------------|-------------------|-------------------|------------------|--------------------|-------------|
| Boulder Canyon Project | 154,354 | 135,522 | 147,671 | 237,459 | 299,244 | 118,820 | 223,422 | 454,714 | 279,559 | 163,732 | 2,214,497 | 2% |
| Central Arizona Project | 126,677 | 103,088 | 106,966 | 173,440 | 251,375 | 86,998 | 190,920 | 327,030 | 234,889 | 118,749 | 1,720,131 | 2% |
| Central Valley Project | 1,262,632 | 893,830 | 832,383 | 1,376,385 | 2,600,615 | 694,315 | 2,027,180 | 2,501,209 | 2,430,871 | 926,844 | 15,546,265 | 15% |
| Electrical District 5-to-Palo Verde Hub | 2,958 | 1,603 | 1,092 | 1,931 | 6,441 | 992 | 5,204 | 3,076 | 6,023 | 1,229 | 30,551 | 0% |
| Intertie (Southern Portion) | 310,144 | 257,642 | 271,072 | 438,478 | 611,705 | 219,789 | 462,549 | 830,468 | 571,556 | 300,823 | 4,274,227 | 4% |
| Levee Project | 16,596 | 12,737 | 12,669 | 20,696 | 33,480 | 10,404 | 25,727 | 38,482 | 31,289 | 14,081 | 216,160 | 0% |
| Parker-Davis Project | 900,661 | 716,528 | 731,814 | 1,189,877 | 1,798,920 | 597,329 | 1,372,673 | 2,232,028 | 1,681,043 | 812,767 | 12,033,639 | 12% |
| Pick-Sloan (Eastern & Western Division) | 3,580,481 | 2,833,552 | 2,883,137 | 4,690,877 | 7,162,031 | 2,355,314 | 5,470,784 | 8,788,488 | 6,692,815 | 3,202,392 | 47,659,871 | 47% |
| Salinity Project | 9,311 | 7,203 | 7,208 | 11,762 | 18,743 | 5,911 | 14,381 | 21,915 | 17,516 | 8,010 | 121,961 | 0% |
| Salt Lake City Area/Integrated Projects | 1,298,810 | 986,133 | 972,868 | 1,591,609 | 2,627,692 | 800,432 | 2,023,291 | 2,951,245 | 2,455,791 | 1,081,503 | 16,789,374 | 17% |
| Transmission Infrastructure Program | 40,727 | 36,991 | 41,120 | 65,905 | 78,079 | 32,946 | 57,804 | 126,974 | 72,935 | 45,570 | 599,051 | 1% |
| Grand Total | 7,703,350 | 5,984,830 | 6,008,000 | 9,798,420 | 15,488,325 | 4,923,250 | 11,873,936 | 18,275,630 | 14,474,286 | 6,675,700 | 101,205,727 | 100% |

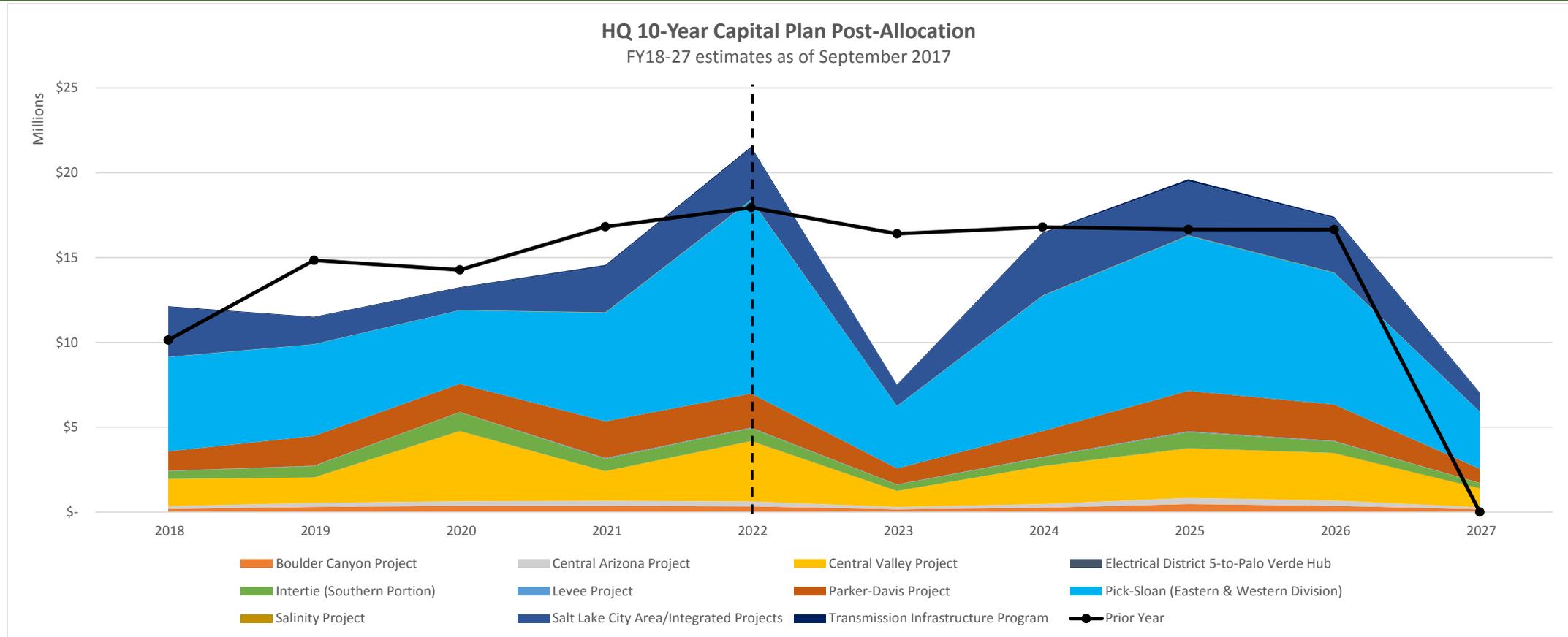
WAPA Wide 10-Year Capital Plan Post-Allocation

FY18-27 estimates as of September 2017



HQ 10-Year Capital Plan Post-Allocation

| Power Systems | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | Sum of Total | % of Total |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|------------------|--------------------|-------------|
| Boulder Canyon Project | 190,755 | 300,847 | 370,558 | 371,332 | 341,411 | 167,832 | 256,830 | 481,764 | 378,154 | 166,895 | 3,026,379 | 2% |
| Central Arizona Project | 158,567 | 242,966 | 263,408 | 296,051 | 283,225 | 130,733 | 215,555 | 348,785 | 307,592 | 121,081 | 2,367,965 | 2% |
| Central Valley Project | 1,603,032 | 1,494,990 | 4,143,833 | 1,747,140 | 3,566,250 | 948,383 | 2,238,930 | 2,932,729 | 2,792,925 | 1,117,144 | 22,585,357 | 16% |
| Electrical District 5-to-Palo Verde Hub | 3,030 | 2,018 | 2,298 | 2,108 | 6,611 | 1,077 | 5,350 | 3,163 | 6,452 | 1,243 | 33,350 | 0% |
| Intertie (Southern Portion) | 456,970 | 666,107 | 1,104,866 | 725,316 | 745,548 | 369,981 | 504,860 | 950,453 | 677,610 | 304,225 | 6,505,936 | 5% |
| Levee Project | 20,916 | 31,190 | 21,771 | 37,834 | 37,288 | 16,407 | 28,603 | 41,236 | 39,777 | 14,353 | 289,373 | 0% |
| Parker-Davis Project | 1,144,067 | 1,747,127 | 1,652,484 | 2,165,545 | 2,003,995 | 937,100 | 1,526,091 | 2,383,570 | 2,133,809 | 827,290 | 16,521,079 | 12% |
| Pick-Sloan (Eastern & Western Division) | 5,558,481 | 5,396,197 | 4,329,387 | 6,404,640 | 11,399,451 | 3,674,533 | 7,967,427 | 9,142,188 | 7,767,960 | 3,353,642 | 64,993,905 | 46% |
| Salinity Project | 11,596 | 17,075 | 12,749 | 20,703 | 20,873 | 9,067 | 16,008 | 23,416 | 22,317 | 8,164 | 161,968 | 0% |
| Salt Lake City Area/Integrated Projects | 2,939,111 | 1,580,092 | 1,307,027 | 2,719,724 | 3,055,168 | 1,221,441 | 3,652,692 | 3,188,971 | 3,206,699 | 1,085,144 | 23,956,069 | 17% |
| Transmission Infrastructure Program | 40,727 | 36,991 | 41,120 | 65,905 | 78,079 | 32,946 | 57,804 | 126,974 | 72,935 | 45,570 | 599,051 | 0% |
| Grand Total | 12,127,250 | 11,515,600 | 13,249,500 | 14,556,300 | 21,537,900 | 7,509,500 | 16,470,150 | 19,623,250 | 17,406,230 | 7,044,750 | 141,040,430 | 100% |



**HQ 10-Year Capital Plan
Projects >\$1M**

| Org Title | Project # | Name Of Project | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | Grand Total |
|--|------------|--|------------------|------------------|------------------|------------------|-------------------|------------------|-------------------|-------------------|-------------------|------------------|-------------------|
| A2200 - Network | #1 | Lifecycle replacement of the Folsom, Phoenix Data Center Network Equipment | | | | 1,270,000 | | | | | | | 1,270,000 |
| A2200 - Network Total | | | | | | 1,270,000 | | | | | | | 1,270,000 |
| A2700 - SCADA | #2 | Common SCADA/EMS Vendor | | 3,955,000 | | | | | | | | | 3,955,000 |
| | #3 | Implementation of the Common SCADA vendor - RMR/DSW (PD) | | | | 2,840,000 | | | | | | | 2,840,000 |
| | #4 | Implementation of the Common SCADA vendor - SNR (PD) | | | 2,840,000 | | | | | | | | 2,840,000 |
| | #5 | Implementation of the Common SCADA vendor - UGP (PD) | | | | | 2,840,000 | | | | | | 2,840,000 |
| | #6 | PI enterprise license renewal - FY23 | | | | | | 1,671,500 | | | | | 1,671,500 |
| A2700 - SCADA Total | | | | 3,955,000 | 2,840,000 | 2,840,000 | 2,840,000 | 1,671,500 | | | | | 14,146,500 |
| A2800 - Enterprise Applications | #7 | Enterprise Applications - Hardware Lifecycle Replacement - 2022 | | | | | 1,500,000 | | | | | | 1,500,000 |
| | #8 | Enterprise Applications - Hardware Lifecycle Replacement - 2023 | | | | | | 1,210,000 | | | | | 1,210,000 |
| | #9 | Enterprise Applications - Hardware Lifecycle Replacement - 2027 | | | | | | | | | | 1,600,000 | 1,600,000 |
| | #10 | Enterprise Applications Enhancements - 2024 | | | | | | | 2,160,000 | | | | 2,160,000 |
| | #11 | FIMS 12.2 Upgrade - 2020 | | | 2,450,000 | | | | | | | | 2,450,000 |
| | #12 | FIMS 12.2 Upgrade and Enhancements - 2021 | | | | 1,700,000 | | | | | | | 1,700,000 |
| | #13 | Enterprise Applications Upgrades - 2025 | | | | | | | | 2,750,000 | | | 2,750,000 |
| | #14 | Enterprise Applications Upgrades - 2026 | | | | | | | | | 2,000,000 | | 2,000,000 |
| A2800 - Enterprise Applications Total | | | | | 2,450,000 | 1,700,000 | 1,500,000 | 1,210,000 | 2,160,000 | 2,750,000 | 2,000,000 | 1,600,000 | 15,370,000 |
| A2900 - PMM | #15 | Metering Strategy - MV90 Infrastructure Enhancement | | | | | 2,500,000 | | | | | | 2,500,000 |
| | #16 | Power Billing Software COTS System - Phase I | | | | | | | 2,000,000 | | | | 2,000,000 |
| | #17 | Power Billing Software COTS System - Phase II | | | | | | | | 5,800,000 | | | 5,800,000 |
| | #18 | Power Billing Software COTS System - Phase III | | | | | | | | | 5,800,000 | | 5,800,000 |
| | #19 | Market Tools and replacement of in-house developed scheduling tools | 2,950,000 | | | | | | | | | | 2,950,000 |
| | #20 | Power Marketing In-house development tools upgrade | | | | 1,500,000 | | | | | | | 1,500,000 |
| | #21 | Reporting Tools for In-house developed applications | | | | | | 1,000,000 | | | | | 1,000,000 |
| | #22 | Power Marketing In-house development tools refresh - 2024 | | | | | | | 1,000,000 | | | | 1,000,000 |
| | #23 | Market Tools - 2024 | | | | | | | 3,000,000 | | | | 3,000,000 |
| | #24 | Power Marketing In-house development tools refresh - 2027 | | | | | | | | | | 2,000,000 | 2,000,000 |
| | #25 | Standardize EMMO tools across WAPA | | | 2,500,000 | | | | | | | | 2,500,000 |
| | #26 | Standardize Settlements tools across WAPA | | | | 1,250,000 | | | | | | | 1,250,000 |
| A2900 - PMM Total | | | 2,950,000 | | 2,500,000 | 2,750,000 | 2,500,000 | 1,000,000 | 6,000,000 | 5,800,000 | 5,800,000 | 2,000,000 | 31,300,000 |
| A2A00 - O&M | #27 | Key Management System Concept | | | | | 3,000,000 | | | | | | 3,000,000 |
| | #28 | Security Operations Center Concept | | | | | | | | 5,000,000 | | | 5,000,000 |
| A2A00 - O&M Total | | | | | | | 3,000,000 | | | 5,000,000 | | | 8,000,000 |
| A7810 - Aviation | #29 | Additional helicopter for Aviation department | 1,700,000 | | | | | | | | | | 1,700,000 |
| | #30 | 2022 Aviation Helicopter replacement | | | | | 4,000,000 | | | | | | 4,000,000 |
| | #31 | 2024 Aviation Helicopter Replacement | | | | | | | 3,500,000 | | | | 3,500,000 |
| | #32 | 2026 Aviation Helicopter Replacement | | | | | | | | | 4,000,000 | | 4,000,000 |
| A7810 - Aviation Total | | | 1,700,000 | | | | 4,000,000 | | 3,500,000 | | 4,000,000 | | 13,200,000 |
| Grand Total | | | 4,650,000 | 3,955,000 | 7,790,000 | 8,560,000 | 13,840,000 | 3,881,500 | 11,660,000 | 13,550,000 | 11,800,000 | 3,600,000 | 83,286,500 |



Glossary

| Term | Description |
|--------------------------|---|
| BES | the Bulk Electric System is defined as all transmission elements operated at 100 kV or higher and real power and reactive power resources connected at 100 kV or higher. This does not include facilities used in the local distribution of electric energy. |
| CIP | the North American Electric Reliability Corporation (NERC) developed the Critical Infrastructure Protection (CIP) reliability standards to protect against utility cyberattacks. The standards provide a framework for protecting the reliability of the North American utility industry's bulk electric system by identifying and protecting critical cyber assets that could affect utility operations. The NERC CIP standards were approved by the Federal Energy Regulatory Commission in early 2008, making compliance with the standards mandatory and enforceable by law. |
| COTS | Commercial off the Shelf is an adjective that describes software or hardware products that are ready-made and available for sale to the general public. For example, Microsoft Office is a COTS product that is a packaged software solution for businesses. |
| EMS | an Energy Management System is a system of computer-aided tools used by operators of electric utility grids to monitor, control and optimize the performance of the generation and/or transmission system. An EMS also provides situational awareness of the bulk electric system through the use of advanced applications, such as power system state estimator and real-time contingency analysis. |
| Enterprise Applications | enterprise application software performs business functions such as order processing, procurement, production scheduling, customer information management, energy management, and accounting. It is typically hosted on servers and provides simultaneous services to a large number of users, typically over a computer network. This is in contrast to a single-user application that is executed on a user's personal computer and serves only one user at a time. |
| EMMO | Energy Management and Marketing Office- We sell power on a project-specific basis in 10 rate-setting systems. We develop marketing plans for each power system to ensure power is allocated appropriately. These plans identify customers, the amount of power available under contract, how to apply for an allocation and what WAPA will do, or not do, if there is not enough power to meet our contractual obligations. |
| FITARA | the Federal Information Technology Acquisition Reform Act made changes to the ways the U.S. federal government buys and manages computer technology. It became law as a part of the National Defense Authorization Act for Fiscal Year 2015. FITARA outlines specific requirements related to <ul style="list-style-type: none"> • Agency Chief Information Officer (CIO) authority enhancements • Enhanced transparency and improved risk management in IT investments • Portfolio review • Federal data center consolidation initiative • Expansion of training and use of IT cadres • Maximizing the benefit of the federal strategic sourcing initiative • Government wide software purchasing program |
| Lifecycle Management | lifecycle management is a process for administering system software, hardware, and support over the life of a system. |
| NERC | the North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to ensure the reliability of the bulk power system (BPS) in North America. NERC develops and enforces reliability standards; annually assesses seasonal and long-term reliability; monitors the BPS through system awareness; and educates, trains and certifies industry personnel. |
| Network | a system of computers that are joined together so that they can communicate by exchanging information and sharing resources. |
| OCIO | the Office of the Chief Information Officer partners effectively with every area of WAPA to develop high quality, cost-effective services that enable WAPA to execute its strategy and create business value for its customers. The information technology team provides WAPA with the technical expertise to innovate securely to meet the changing landscape in the electric industry. |
| Operations & Maintenance | operations and maintenance technologies are software tools used to reliably operate and maintain power systems. The tools include physical security and end user as well as operational technology such as sensors and communications devices in substations. |
| SCADA | Supervisory Control and Data Acquisition is a system of software and hardware elements used primarily by operations staff to control and monitor the bulk electric system and record system events for historical analysis. |
| WAPA | Western Area Power Administration |
| PD | Program Direction provides compensation and all related expenses for its workforce. |
| Non-PD | Non-Program Direction provides for costs not included in Program Direction. |
| FY | Fiscal Year |



HQ 10-Year Capital Plan

FY18-27 estimates as of September 2017

Lakewood, CO

September 12, 2017



Introduction

- Welcome
- Approach to plan development
 - HQ /regional collaboration
 - Capital planning committee
- Primary drivers
 - “Markets” start-up and lifecycle costs
 - Information Technology lifecycle management
 - *Power Management and Marketing, SCADA, Enterprise Applications
 - Aviation program
- Today’s focus

Lifecycle Management Strategy

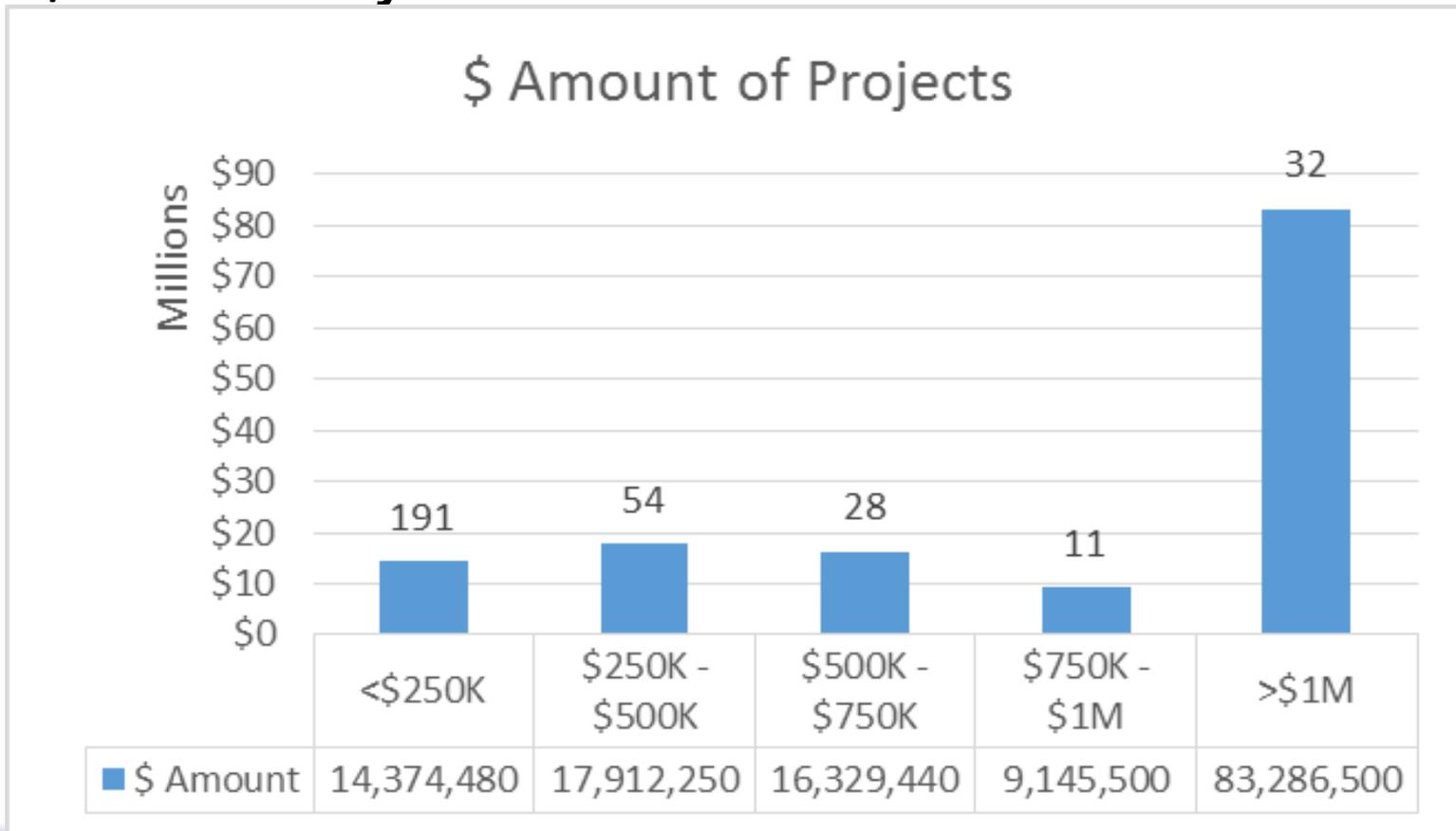
- Effective lifecycle management will:
 - Increase reliability
 - Enable effective financial planning
 - Meet compliance requirements
 - FISMA
 - NERC - CIP
 - FITARA
 - Financial

Lifecycle Management Strategy (cont.)

- Change out hardware every 4 – 7 years
 - Stay within vendor support
 - Stay current - no more than 2 versions behind
- Continue to move technology toward these goals
- Improve cybersecurity posture
- Take advantage of newer hardware architecture and software features

Changes Highlighted

- $\geq \$1\text{M}$ – Project-level information



Changes Highlighted (cont.)

- Financial data by power system
- Decrease (\$11M) compared to prior year plan
 - Improved planning
 - Enterprise Applications – significant reductions with staff augmentation vs systems integrator
 - O&M Technology – shift from IT to Maintenance

Network Refresh – Consolidated Centers

- What
 - Lifecycle replacement of network equipment at consolidated data centers in Folsom and Phoenix.
 - (#1) FY21 - \$1.3M.
- Why
 - Replace periodically to ensure reliable delivery of services
 - Increases the risk of network failures
- Value
 - Consolidated data centers host WAPA’s asset management, financial, and email systems. Maintaining equipment lifecycles ensures the availability of those systems.
 - Operations and Power Marketing use email and internet services. Outage at consolidated data centers would impact WAPA operations.

SCADA – Common EMS vendor

- What
 - Procure and install a common EMS vendor across control centers
 - High-end of projections are ~\$12.4M: (#2) FY19 - \$4M; (#3) FY21 - \$2.8M; (#4) FY20 - \$2.8M; (#5) FY22 - \$2.8M
 - Includes purchase and implementation costs
 - \$3.5M non-PD and \$5M to \$9.6M of PD, all capitalized
 - Comes with reduction of planned upgrades at RMR, DSW and SNR totaling ~\$2M
- Why
 - This project will minimize the following:
 - Multiple procurements
 - Additional costs for licensing fees
 - Repetitive labor efforts
 - Additional regional specific training
 - Allow for consistency of tools and software implementation in support of control centers across WAPA

SCADA – Common EMS vendor (cont.)

- Value
 - Achieve best prices for purchase and maintenance of SCADA/EMS systems and associated software
 - WAPA expects to avoid ~\$200k/year versus licensing individual products and ~\$250k/year of rework for each control center
 - Improved ability to support all regions SCADA, using shared resources within OCIO, resulting in increased reliability at each control center.
 - Implementation of best practices across all regions' control centers
 - Sets stage for consistency in market implementation and future operational reliability standard changes

SCADA – Data Historian

- What
 - This software is used as a Bulk Electric System historical data repository and analytical software
 - Renewal occurs every 5 years
 - (#6) FY23 - \$1.7M
- Why
 - This enterprise agreement provides WAPA with unlimited use of our current software vendor across 3 of WAPA's 4 control centers.
 - This software is used by power operations, power marketing and maintenance across three regions: RMR, DSW, and SNR
- Value
 - Avoids expenditures on training (~\$25k), user conference attendance (~\$15k) and saves based on per piece pricing of over \$300k based on our current usage.

Enterprise Applications – Hardware Lifecycle Replacements

- What
 - Enterprise Applications - Hardware Lifecycle Replacement
 - (#7) FY22 - \$1.5M; (#8) FY23 - \$1.2M; (#9) FY27 - \$1.6M
- Why
 - Hosts ~250 databases used by WAPA Operations, Marketing, Maintenance and financial groups
 - Replace mission hardware systems in WAPA data centers
 - Maintain business continuity, availability and reliability
- Value
 - Avoid maintenance costs, stay within warranty period and vendor support, and take advantage of newer server architectures
 - Server refresh for reliability purposes are every 4-5 years
 - Limits unplanned outages and improves disaster recovery

Enterprise Applications – Enhancements

- What
 - Enterprise Application enhancements
 - (#10) FY24 - \$2.2M
- Why
 - Upgrades and improvements for mission supporting financial, budget, maintenance, travel, procurement, reporting and collaboration systems
 - Maintain business continuity, availability, and reliability
- Value
 - Stay current with legislative, regulatory and compliance requirements
 - Maintain vendor support for software updates, maintenance and patches
 - Maintain a good cybersecurity posture

Enterprise Applications – Upgrades

- What
 - Financial Information Management System (FIMS) Upgrade
 - (#11) FY20 - \$2.5M; (#12) FY21 - \$1.7M; (#13) FY25 - \$2.8M; (#14) FY26 - \$2M
- Why
 - Upgrade to supported software version 12.2. Current version de-supported 12/21. 2025/2026 planning for future version upgrade.
 - Stay within one or two versions of the most current version
- Value
 - Integrity of the financial data
 - Maintain vendor support for updates, maintenance and patches
 - Leverage new features to comply with legislative, regulatory and compliance requirements
 - Use staff augmentation rather than systems-integrator approach saving on upgrade costs
 - Maintain a good cybersecurity posture

Metering Strategy—MV90 Infrastructure Enhancement

- What
 - Critical Revenue Metering system(s)
 - (#15) FY22 - \$2.5M
- Why
 - Each region currently has stand-alone implementation with multiple versions
 - Supporting and maintaining status quo requires significant resources
 - Single metering strategy sustainable and supportable
- Value
 - Improved efficiency in metering, energy accounting & billing
 - Sustainable and supportable with fewer resources
 - Better/more timely revenue reporting and tracking for revenue requirement calculations needed for rate-setting purposes

Power Billing Software System

- What
 - Commercial off the shelf (COTS) power billing system
 - Total estimated cost \$13.6M budgeted in 3 phases: (#16) FY24 - \$2M; (#17) FY25 - \$5.8M; (#18) FY26 - \$5.8M
- Why
 - Currently maintain in-house built billing system—15 years old
 - Each region/project pulls financial/billing data from multiple sources—very resource intensive
 - Status quo requires significant support system beyond recommended service life and developed with outdated and limited toolsets
 - Not sustainable as currently deployed
- Value
 - Creates common, sustainable, reliable billing system
 - Allows resources to focus on maintaining core mission vs. keeping a legacy billing system operational

Power Marketing Tools

- What
 - Standardize multiple tools used by Power Marketing and scheduling staff used in fulfillment of mission
 - Total estimated cost \$11.5M: (#19) FY18 - \$3M; (#20) FY21 - \$1.5M; (#21) FY23 - \$1M; (#22-#23) FY24 - \$4M; (#24) FY27 - \$2M
- Why
 - Existing regional tools created in-house on non-supported software
 - About 45 separate tools currently in use
 - Changing market environment—existing tools don't meet needs into the future
 - Changing market landscape could result in changes to these estimates
- Value
 - Improved ability to positively react to changing markets
 - Tools will be reliable, supportable and sustainable

Settlements/EMMO Tools

- What
 - Power and transmission settlements tools across WAPA
 - Estimated total cost \$3.8M: (#25) FY20 - \$2.5M; (#26) FY21 - \$1.3M
- Why
 - Anticipation of some level of market influence/participation
 - Standard toolsets needed to interface with various markets
- Value
 - Positions WAPA to better leverage any market participation benefits
 - Assuming market participation, allows timely financial settlement with the market(s)

O&M Technology – Key Management System (Concept)

- What
 - Key Management System
 - (#27) FY22 - \$3M
- Why
 - Inspector General identified shortcoming
 - CIP 003-6 requirement
 - Current manual system, lack of enforcement and control
- Value
 - Improved security and compliance
 - Improved ease of access by field personnel

O&M Technology – Security Operations Center Concept

- What
 - Security Operations Center
 - (#28) FY25 - \$5M
- Why
 - Current regional centers
 - Consolidated operations
 - Standardized monitoring of WAPA security systems
 - Access controls
 - Cameras
 - Alarms
 - Standardized reporting of security incidents
- Value
 - Improved security and compliance

Aviation – Helicopter (SNR)

- What
 - Bring contract helicopter services for SNR in-house in FY18
 - Will be part of centralized fleet
 - (#29) FY18 - \$1.7M
- Why
 - Safety - ability to manage and control pilots, aircraft, and maintenance aspects
 - Owning vs. contracting decreases costs up to \$900/hr
 - SNR relies on contract helicopter services to perform line maintenance because of environmental, right-of-way, and CAISO restrictions
 - Inability to perform maintenance as needed due to availability of contract aircraft resources (ex. out fighting fires)
- Value
 - Reduced costs for transmission maintenance
 - Ability to perform maintenance when needed
 - Ability to perform aerial patrols vs. other methods

Aviation – Helicopter Replacements

- What
 - Helicopter replacements in FY22 – (#30) \$4M (N619DE), (#31) FY24 - \$3.5M (N617DE) and (#32) FY26 - \$4M (N618DE)
 - \$3.5M - \$4M for new, similarly-equipped to current helicopters
- Why
 - Lifecycle replacements due to either age/hours on airframe
 - Increased operational costs of maintaining older aircraft
 - Helicopters originally purchased in 2000/2007/2008
 - In accordance with FAA and DOE-OAM recommendations
- Value
 - Difficult to find used helicopters in quality condition
 - Will look for opportunities similar to FY18 scenario for replacements
 - New helicopters have a 2-year warranty – reduced operational costs

Other Topics

- Transparency Act update
- State of appropriations
 - FY18 - BA \$93.4M covers all PD, RRADS and \$12M in C&R
 - FY19 - BA \$93.4M covers all PD, RRADS and \$9.5M in C&R
- Initial FY20 annual budget guidance

Questions & Next Steps

Provide feedback to Colin Marquez at

cmarquez@wapa.gov

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