



*INVESTING IN A
CONNECTED FUTURE*



ANNUAL REPORT 2019

WESTERN AREA POWER ADMINISTRATION



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LETTER FROM THE ADMINISTRATOR AND CEO

Western Area Power Administration has, for 42 years, remained dedicated to providing relevant, valuable, economic and sensible services to our customers and the nation. The incredible employees at WAPA continue to build on their successes every year, striving to ever-greater heights in delivering on our core mission to market and deliver renewable, reliable and cost-based federal hydroelectric power and related services.

At the end of each year, we review the organization's many accomplishments. As I close in on seven years of service as Administrator and CEO, I have never been more impressed by the commitment of our employees and the power of the public-private partnerships we share with our customers to benefit more than 40 million Americans.

Together, we are standing atop our legacy and looking toward the future – a connected future – to ensure we are investing appropriately to preserve and strengthen our value to customers, our neighbors and the nation.

We are investing in a connected future by being agile, integrated, responsive, engaged and resilient. And we are making those investments while staying true to our core values and mission to keep rates as low as possible, consistent with sound business principles.

As a small sample of our accomplishments, in fiscal year 2019:

- Nearly 80 percent of our customers enjoyed stable or decreased rates.
- We published a refreshed Tactical Action Plan, identifying our priorities for the next two to three years.
- We studied and selected energy imbalance providers to help us effectively and affordably adapt to changes in the energy industry.
- A purchase power and wheeling report was sent to Congress, defining a vital element for sustainable financing for power marketing activities.
- We explored the dichotomy between operational and informational technology to protect the operational equipment that relies on cyber assets.
- Customers and employees discussed opportunities for WAPA fiber assets in the future.
- We returned \$281 million to the U.S. Treasury, approaching \$2 billion during my tenure.

Supported by our customers, we are positioning WAPA to respond to and accommodate the continuously evolving and exciting future. It has been a thrilling journey thus far, and I look forward to seeing what the next year has in store.



Mark A. Gabriel
Administrator and CEO



MISSION

Market and deliver clean, renewable, reliable, cost-based federal hydroelectric power and related services

VISION

Continue to provide premier power marketing and transmission services to our customers, as well as contribute to enhancing America's energy security and sustaining our nation's economic vitality

ABOUT WAPA

WAPA is a power marketing administration within the Department of Energy that markets and transmits wholesale electrical power across 15 states through an integrated 17,000-plus circuit-mile, high-voltage transmission system.

Employees work around the clock to sell power and operate and maintain the transmission system that provides energy to:

- Rural electric cooperatives.
- State and federal agencies.
- Investor-owned utilities.
- Municipalities.
- Native American tribes.
- Public utility and irrigation districts.
- Power marketers.
- Joint power authorities.
- Transportation districts.
- Independent system operator corporations.
- Regional transmission organizations.

Our customers then provide electric service to more than 40 million Americans from Texas to the Dakotas, and from the lakes of Minnesota to the California coastline.

OUR CORE VALUES



Listen to understand, speak with purpose.

We must always consider our audience and speak to them in ways that will be clear, simple and relevant. We know active listening is the first step in effective communication. We consider context and check for clarity and simplicity. We are respectful, direct, honest, transparent and consistent. We assume positive intent.



Seek. Share. Partner.

We value partnership and actively engage others in the seeking and sharing of ideas. We collaborate to move forward and partner to add value. We actively engage others. We share all relevant information in a timely fashion, acting as one team united in our common mission.



Respect self, others and the environment.

We represent WAPA in being good neighbors and stewards of our collective resources. We are compassionate in our relationships with others, as well as toward ourselves. We are respectful in all of our dealings.



Do what is right. Do what is safe.

We are public servants who act with integrity, stand up for what is right and demonstrate courage when acting in the best interests of our customers and the communities they serve. We are safe in all of our actions and consider safety in all our planning.



Be curious, learn more, do better. Repeat.

We seek and welcome feedback to directly and quickly improve. We innovate, plan for the future and support the growth of our teams and colleagues. We reflect upon progress to learn and grow.



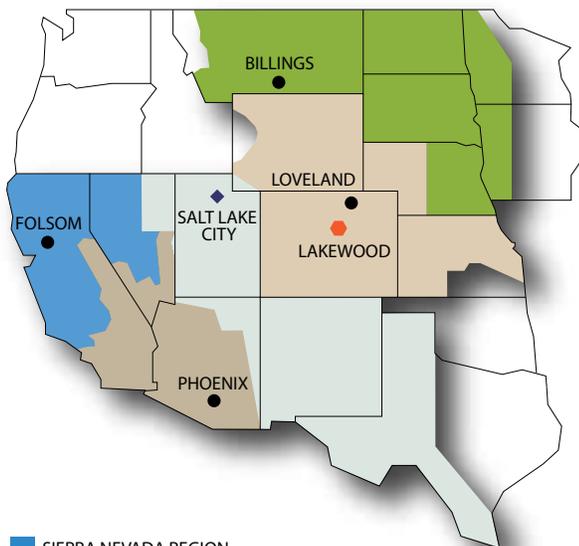
Serve like your lights depend on it.

We understand the importance of our mission to provide power to customers that serve more than 40 million Americans. We anticipate customer needs, build relationships, seek win-win solutions and embrace responsibility. We work hard to ensure other Americans know and understand the importance of our mission.

SERVICE AND MARKETING AREAS

WAPA delivers power from 11 rate-setting projects that encompass both WAPA’s transmission facilities and the power-generating facilities owned and operated by the Bureau of Reclamation, the Army Corps of Engineers and the International Boundary and Water Commission. These projects are made up of 15 multipurpose water resource projects, one coal-fired plant and one transmission project. Power rates are set to recover all costs associated with power delivery, such as annual operating costs, the specific allocated multipurpose costs associated with recovering the federal investment in the generation facilities, with interest, and other costs assigned to power for repayment.

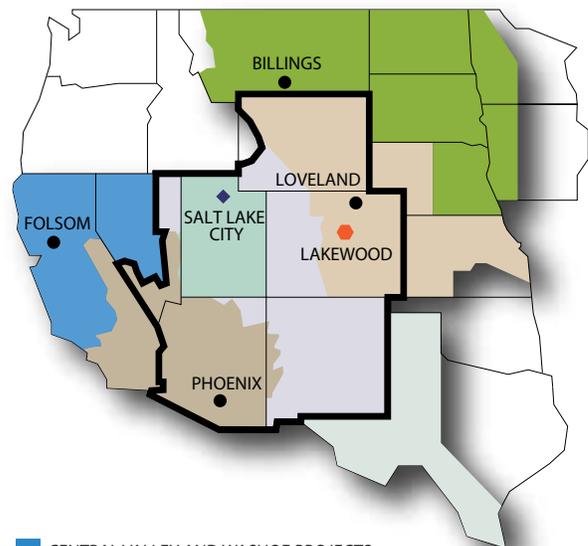
Service Areas



- SIERRA NEVADA REGION
- DESERT SOUTHWEST REGION
- COLORADO RIVER STORAGE PROJECT MANAGEMENT CENTER
- ROCKY MOUNTAIN REGION
- UPPER GREAT PLAINS REGION
- STATE BOUNDARY
- REGIONAL OFFICE
- HEADQUARTERS
- ◆ COLORADO RIVER STORAGE PROJECT MANAGEMENT CENTER OFFICE

A service area identifies a region’s geographic territory while a marketing area defines the boundaries of a hydropower project’s customer base.

Marketing Areas



- CENTRAL VALLEY AND WASHOE PROJECTS
- PARKER-DAVIS, BOULDER CANYON AND CENTRAL ARIZONA PROJECTS
- FALCON-AMISTAD PROJECT
- PROVO RIVER PROJECT
- LOVELAND AREA PROJECTS
- PICK-SLOAN MISSOURI BASIN PROGRAM—WESTERN DIVISION AND FRYINGPAN-ARKANSAS PROJECT
- PICK-SLOAN MISSOURI BASIN PROGRAM—EASTERN DIVISION
- SALT LAKE CITY AREA/INTEGRATED PROJECTS
COLORADO RIVER STORAGE, COLLBRAN, RIO GRANDE, SEEDSKADEE AND DOLORES PROJECTS
- STATE BOUNDARY
- REGIONAL OFFICE
- HEADQUARTERS
- ◆ COLORADO RIVER STORAGE PROJECT MANAGEMENT CENTER OFFICE

OPERATIONAL SUMMARY¹

(UNAUDITED)
(DOLLARS IN THOUSANDS)

	2019	2018	2017
Sales of electric power	\$922,318	\$898,708	\$915,025
Income transfers to generating agencies	(393,795)	(387,911)	(430,308)
Transmission and other operating revenues	535,602	546,140	531,421
Total operating expenses	814,335	838,087	794,556
Operation and maintenance	297,184	342,107	312,347
Purchased power	155,106	114,856	118,282
Purchased transmission services	173,665	189,840	179,179
Net interest expense	13,172	16,024	12,828
Net revenues	236,618	202,826	208,754
Completed utility plant	4,583,397	4,517,058	4,415,376
Payable to U.S. Treasury	785,768	692,871	646,970

¹ This summary represents WAPA's stand-alone operational information for the past three years. WAPA will publish its combined financial statements separately after the independent auditor's opinion is issued.

HYDROPOWER GENERATION

Being in the business of marketing and delivering hydroelectric power, it is impossible to overlook the influence water has on WAPA's operations.

Regardless of the amount of water any given year brings and the amount of hydropower generated, WAPA delivers on its mission and fulfills its commitments to customers.

NET GENERATION

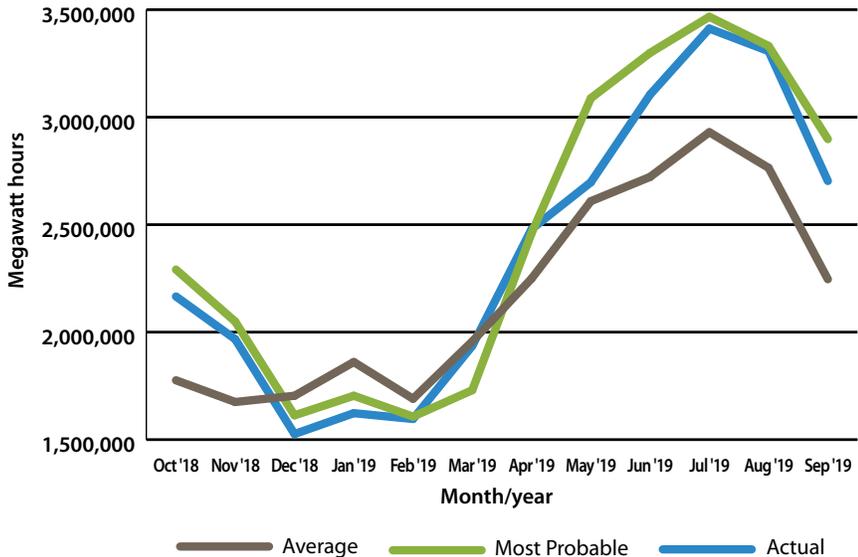
28,524

gigawatt-hours

108.9%

of average

Water Year 2019
Hydropower Generation
Average vs. Most Probable vs. Actual





INVESTING IN A CONNECTED FUTURE

Nobody can say with certainty what the future will hold, and therefore it is our responsibility to study trends, pay close attention to developments and invest resources accordingly.

Though the industry faces changes regularly, such as new forms of generation and regulations, these are not true disruptive forces. Instead, rapidly advancing societal and technological changes are reshaping the energy landscape, necessitating a grid that is smarter, more connected and more integrated than ever before.

These changes will directly and indirectly affect grid operations, utilities and customer relationships. Transmission and distribution systems will become more important, not less important, in a connected future.

WAPA is investing in a connected future, both in large, strategic changes and in smaller adjustments to daily processes and routines. In the pages that follow, you will read about many of the ways the organization is growing, strengthening and adapting to ensure continued relevance and consistently exceptional service.

Specifically, WAPA is investing in a connected future by being:

- **Agile**, anticipating and responding to changes in the industry, including from regulatory bodies.
- **Integrated**, accommodating new technologies and opportunities and developing a workforce of the future.
- **Responsive**, acting on customer requests, responding to unforeseeable developments and actively seeking opportunities for partnership.
- **Engaged**, listening to learn how to best support customers and connecting with subject matter experts on the big topics.
- **Resilient**, defending against and combating physical and cyber threats and staying strong in the face of new industry conditions.

This is an exciting time to be part of the energy industry, and WAPA looks forward to continuing its mutually beneficial partnerships with customers for the next 40 years ... and beyond.



AGILE

Changes in the industry arrive, regardless of who is or is not ready for them. To be agile is to be able to adapt and to do so without hesitation.

Much of being agile is looking forward, planning ahead and anticipating likely outcomes. The rest of being agile is being so well prepared that unexpected developments do not register as seismic shocks, but rather as signals to adjust methods or priorities.

WAPA remains agile by proactively seeking ways to enhance service, increase efficiency and fortify the organization against internal and external risks.

Agility will become an even more crucial skill as our connected future continues to take shape. WAPA will be prepared.

WAPA REFRESHES TACTICAL ACTION PLAN

In January, the Office of the Chief Strategy Officer published a refresh of WAPA's Tactical Action Plan. The TAP supports critical mission activities by ensuring tactical implementation of *Strategic Roadmap 2024*. The Roadmap charts a path forward for each employee working to keep the lights on for 40 million Americans.

Strategic Roadmap 2024 is WAPA's long-range strategic plan, identifying four Critical Pathways that contribute to improved mission accomplishment. *Strategic Roadmap 2024* was originally published in 2014 and has been refreshed twice in the past five years.

The TAP is WAPA's midrange tactical plan. It contains the specific goals and objectives on which WAPA will focus over a two- to three-year time period to advance the Critical Pathways and, ultimately, the organization's mission.

As part of this refresh, the number of Strategic Target Areas was reduced from five to four, and the number of goals was reduced from 19 to 14.



WAPA REVISES TARIFF TO IMPROVE ALIGNMENT WITH REGULATIONS

In fiscal year 2019, WAPA posted two notices of intent to revise its Open Access Transmission Tariff to improve benefits to customers and better align with Federal Energy Regulatory Commission orders.

The first tariff revision proposed the removal of the transmission resale price cap. The notice of the first tariff revision was posted on the Open Access Same-Time Information System Oct. 5, 2018, with a public meeting on Jan. 11. It was filed April 1 and FERC issued an order July 18 accepting the filing without modification.

The notice of the second tariff revision was posted on OASIS July 26 and the public meeting was held Aug. 19. The revision will be filed in fiscal year 2020. It proposes the revision of WAPA's Large and Small Generator Interconnection Procedures and Agreements as well as other OATT cleanup and maintenance revisions.

CREDITING PROVIDES AFFORDABLE POWER

WAPA's bill crediting and benefit crediting programs allow Native American tribes to receive hydropower allocations without having their own utilities.

Through bill crediting, WAPA delivers lower-cost hydropower allocations to the utility serving a tribe, displacing an equal amount of electricity that the utility would have acquired from other, more expensive sources. Tribes use their own discretion in how to spend their benefit credit, helping them move toward greater energy independence.

Benefit crediting is calculated similarly to the bill credit, but the utility pays the tribe the difference between the hydropower and the resource the utility would have had to acquire otherwise. The tribe uses the payment for the benefit of its members.

TANGIBLE BENEFITS TO TRIBES

Acoma Pueblo

Funding the establishment of their own utilities.

Alamo Navajo

Funding necessary equipment for residential water utility.

Navajo Tribal Utility Authority

Reducing wheeling and other transmission charges.

Ramah Navajo

Funding tribal land expansion, infrastructure and economic development initiatives.

HASSAYAMPA UPGRADE BENEFITS ARIZONA

On Nov. 30, the Desert Southwest region energized the Hassayampa Switching Station, representing a major upgrade to WAPA's relay and communication systems. The regional partnership brought WAPA, the Central Arizona Project, the Bureau of Reclamation, Arizona Public Service, CenturyLink and WAPA's construction contractor together to replace infrastructure that was more than 30 years old.

Construction of the new switching station required relaying and control equipment upgrades at the Hassayampa Pumping Plant along with the Parker, Harcuvar and Liberty substations. Replacing the conductors on five miles of existing transmission line and installing one mile of double-circuit transmission line completed the interconnections between the Hassayampa Switching Station, Arizona Public Service Company's Sun Valley Substation and the Hassayampa Pumping Plant.

Higher current fault levels due to the Sun Valley Substation interconnection made it necessary to replace motor-operated interrupter switches at the Hassayampa Pumping Plant. The instrument transformers at the pumping plant were also replaced for long-term reliability.



RECORDS AND INFORMATION MANAGEMENT TAKES BIG STEPS

The Records and Information Management program, required by the Federal Records Act, helped WAPA employees streamline the number of records that are created, sent and stored. The program accomplished this through a series of articles, posters and computer lock screens.

WAPA is working to meet the requirements set forth by the Office of Management and Budget and the National Archives and Records Administration.

The team completed a comprehensive WAPA-wide records inventory, allowing WAPA to identify the records and information the organization needs to manage. This information will next be used to create record retention schedules.

The team also procured and implemented the Alfresco Electronic Records Management System to bring WAPA into a new chapter of fully electronic record-keeping and business processes.

PROGRAM BENEFITS

Compliance with new federal records mandates calling for transparency.

Streamlined interaction with business associates and customers.

Effective management and preservation of official records and information.

Efficient use of network assets.

Responsible stewardship of materials and resources to reduce the corporate footprint.

State-of-the-art cybersecurity protection for WAPA data and property.

Active support of WAPA's Tactical Action Plan.

WAPA CREATES XLT TO ENHANCE COMMUNICATION

On Jan. 8-9, WAPA's Extended Leadership Team, or XLT, held its first formal meeting in Phoenix, Arizona.

In an organization as geographically-dispersed as WAPA, it can be difficult for leaders to remain in tune with each other, across both regional and functional areas. The XLT was designed to help provide opportunities for leaders to engage directly with the organization's larger strategy and tactics, and facilitate two-way communication throughout WAPA.

The XLT consists of senior leaders, vice presidents, administrative officers, regional financial managers and the Safety and Security directors. It was formed to enhance WAPA's communication and collaboration among its top two tiers of leadership on key strategic issues.

The XLT met face to face three times in fiscal year 2019 to discuss key strategic issues and will continue to do so in FY 2020. It also meets quarterly to review Tactical Action Plan progress and performance metrics.



MAJORITY OF CUSTOMERS SEE STABLE OR DECREASED RATES

Rates in WAPA's Loveland Area Projects and Pick-Sloan Missouri River Basin Program—Eastern Division remained stable for fiscal year 2019 after experiencing 14% and 15% decreases respectively in January 2018. These two projects make up nearly half of WAPA's customers across nine states.

Colorado River Storage Project power rates remained stable for the 10th straight year.

In fiscal year 2019, the Central Valley Project rate was lower than fiscal year 2018 when compared to the annual average monthly market price. That is despite the increase in the power repayment requirement of \$4.6 million. This increase was a result of not having \$10 million in credits or offsets from the Bureau of Reclamation.

The Desert Southwest region experienced stable rates for a small customer base in the Central Arizona Project and Pacific Northwest-Pacific Southwest Intertie. Rates decreased 9% for the Boulder Canyon Project and increased 8% for the Parker-Davis Project.

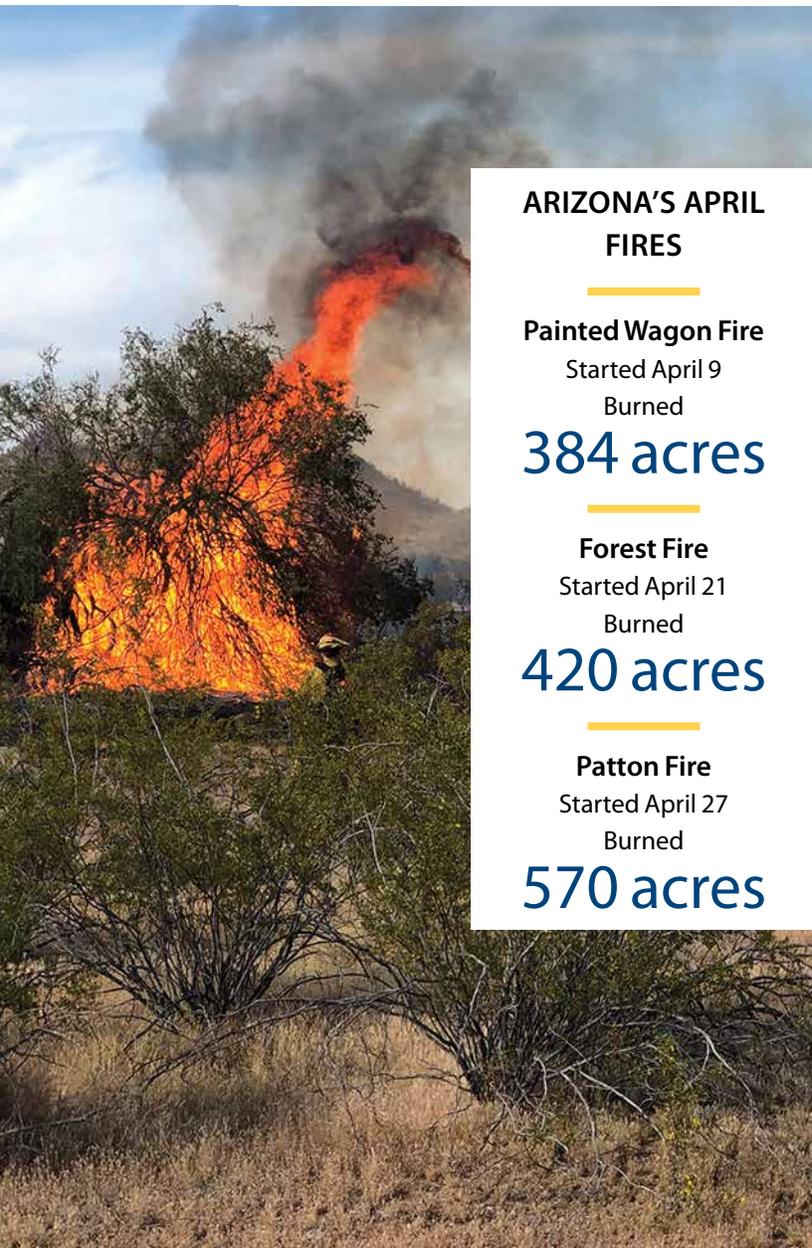


SN MOVES TO NEW RELIABILITY COORDINATOR

Sierra Nevada, a sub-balancing authority within the Balancing Authority of Northern California, began taking reliability coordinator services from the California Independent System Operator in July.

Balancing authorities and transmission operators are required by the North American Electric Reliability Corporation to have a reliability coordinator. The reliability coordinator oversees transmission operations and potential areas of congestion or instability across multiple balancing authorities or transmission operators within a geographic region.

On Sept. 4, 2018, WAPA announced that it would move from Peak Reliability, which will cease operation in late 2019, to other reliability coordinators. The Western Area Upper Great Plains – West, Western Area Colorado Missouri and Western Area Lower Colorado BAs and the associated transmission operators are expected to transition to Southwest Power Pool’s reliability coordinator in late 2019.



ARIZONA'S APRIL FIRES

Painted Wagon Fire

Started April 9
Burned

384 acres

Forest Fire

Started April 21
Burned

420 acres

Patton Fire

Started April 27
Burned

570 acres

VEGETATION MANAGEMENT PROTECTS ARIZONA'S GRID

Preventing fires that threaten transmission begins with managing the vegetation around the structures and under the lines. In fiscal year 2019, WAPA's vegetation management program saved transmission lines carrying energy across Arizona to Nevada.

In April, Arizona saw three human-caused wildfires that threatened homes, the ecosystem and WAPA's transmission system between Wickenburg and Tonopah. WAPA's transmission lines were safe, however, as the organization's vegetation management program prepared them for this type of event.

Desert Southwest's vegetation management involves a proactive approach to increasing right-of-way vegetation clearance and reducing fuel ladders—vegetation that allows fire to climb—within easements. This approach is cost effective and demonstrates WAPA's commitment to environmental stewardship.

In fiscal year 2019, DSW's energized assets were exposed to more than a dozen wildfires and experienced zero loss of reliability, keeping energy flowing to customers without interruption.



INTEGRATED

Every gear in a machine can be designed and polished to perfection, but if those gears do not turn together, the machine will not work.

WAPA is a complex machine, full of many moving parts and interconnections both within the organization's walls and without. Integration—with customers, with utilities, with each other—is vital.

By its very nature, a connected future requires connection. No one program, initiative or technology holds the key to understanding an evolving energy landscape.

An integrated workforce is the workforce of tomorrow. WAPA invests in developing its employees the same way it invests in everything else: wisely, judiciously and with an eye toward a connected future.

SCADA SOFTWARE SOLUTIONS EVALUATED

In alignment with a goal in its Tactical Action Plan, WAPA evaluated a number of potential software products for its supervisory control and data acquisition, or SCADA, systems in fiscal year 2019.

WAPA currently has three separate SCADA systems, each with primary and backup control centers for a total of six control centers. The three systems all grew independently, with different hardware, software and maintenance agreements. System operators and engineers do not use common WAPA-wide tools. The goal of this initiative is to standardize WAPA's SCADA and energy management systems across all control centers. This will drive a number of efficiencies, strengthening WAPA and enhancing the reliability, security and safety of the nation's grid.



Project timeline

FY 2019	FY 2020	FY 2020-2021	FY 2021-2022	FY 2023-2024
Evaluation of products	Selection and procurement of product	Sierra Nevada implementation	Upper Great Plains implementation	Desert Southwest and Rocky Mountain implementation

WAPA WEIGHS IN ON FIBER

WAPA launched its Fiber Optic Partnerships Assessment in the spring, providing opportunity for customers to share their interest and concerns.

The American Broadband Initiative has the goal of improving high-speed internet access for rural parts of the country. WAPA's need for robust transmission system communications to deliver reliable, resilient and secure power intersects with that goal. Fiber is crucial to grid reliability and resilience.

WAPA has installed more than 5,000 miles of optical ground wire—fiber cable on transmission lines—across its territory in the past 20 years, basing the buildout primarily on planned maintenance and replacements to minimize cost. The network interconnects with other entities' fiber optic networks and WAPA has sought partnerships with the focus on enhancing grid resilience.

As the grid brings in more operational data, fiber supports WAPA's ever-increasing need for bandwidth. The assessment will help WAPA communicate its priorities and needs and help establish best practices for fiber partnerships moving forward.



FIRST ALMANAC SHARES EARLY ASSET MANAGEMENT SUCCESSES

Asset Management reached out to external stakeholders in fiscal year 2019 with the publication of *The Value of Asset Management*, an almanac of what the program has achieved so far. The report summarizes the type of data Asset Management has been collecting, what can be learned and how WAPA is using that information.

The almanac is the first to target external and internal audiences. Previous reports contained granular data targeting specific departments, whereas the almanac presents an overview of the program that customers can reference to compare with their own asset-management efforts.

The reader-friendly format also gives WAPA representatives something to share with customers to start conversations about asset management. Formal asset management programs are relatively new to the industry and best practices are still being identified. Sharing experiences with other industry stakeholders will help WAPA build a program that successfully harnesses asset data to better inform business decisions.



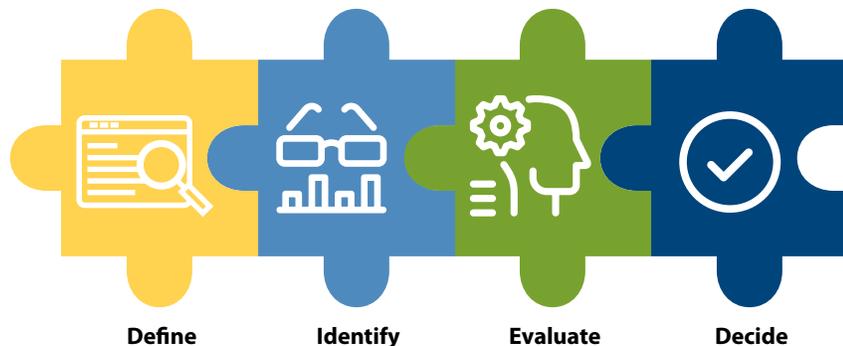
THINK IT THROUGH WITH DECISION FRAMEWORK

In January, WAPA introduced an organizationwide Decision Framework to improve its decision-making capability and provide clarity as decisions come together.

The framework is configured to address a range of decision types. It is a guide to assist individuals and teams in systematically walking through details that feed into a decision. The tools and templates are designed to empower teams and support better decision making.

The framework helps employees think through decisions and then effectively communicate the rationale based on the comprehensive documentation.

THE DECISION FRAMEWORK



WAPA, EPRI COLLABORATE FOR SAFETY AND INNOVATION

In fiscal year 2019, WAPA tested a portable protective arrester for live-line maintenance. This device was developed with the Electric Power Research Institute.

The collaboration with EPRI began in early 2016 with the goal of pairing an off-the-shelf transmission line arrester with EPRI-developed sensor technology to create a device that meets technical requirements while being able to withstand the rigors of the worksite.

The field testing was incorporated into a planned maintenance activity on Rocky Mountain's Ault-to-Craig 345-kilovolt line. In this case, it reduced the minimum approach distance to 6 feet, 1 inch, representing a reduction of well over 50%. Working closer to energized conductors reduces a line worker's reaching distance with hot sticks and tools and reduces strain. Additionally, some transmission tower designs do not provide enough space to perform live-line maintenance while maintaining minimum approach distance.

The resources WAPA expended on this effort represent a significant advancement in worksite safety for linemen and system reliability for operators.



HUMAN PERFORMANCE TAKES ROOT

On May 7, Safety and Occupational Health Manager Matt Monroe and Craft Supervisor Steve Tuggle had a contractor speak to line crews from multiple regions about Human Performance.

Human Performance helps employees understand how organizational weaknesses may lead to failures or mistakes. Human Performance has roots throughout the organization, from switching to software, but currently lacks a formal program.

The instructor-led course was an introduction to key elements in Human Performance and how to use them in day-to-day work, including behaviors to implement in the field to minimize errors and increase productivity.

The instructor stressed how coaching, management and leadership are critical in terms of how WAPA reacts to latent organizational weaknesses. Additional Human Performance trainings have since been held and will continue.

Human Performance and Just Culture is part of the People and Organization Strategic Target Area in the Tactical Action Plan. The two initiatives go hand in hand to eliminate the punitive culture that sometimes surrounds safety and operational errors.

IDC PARTNERS WITH INCLUSIVE MANAGERS

The Inclusion and Diversity Committee invited four managers to speak at its April meeting about their experiences promoting inclusive environments. They were chosen based on their Federal Employee Viewpoint Survey scores pertaining to inclusion and diversity, known as the New Inclusion Quotient.

The New IQ measures to what extent employees believe their workplace is fair, open, cooperative, supportive and empowering.

Each speaker discussed how information was openly shared. Supervisory Information Technology Specialist John Ginkel spoke of brief, daily standup meetings during which projects were discussed and barriers to completion analyzed. Vice President of Asset Planning and Management Chris Lyles described how he works with his team to contribute and collaborate on solutions.

Vice President of Governance and Policy Lisa Hansen holds weekly staff meetings that include both the internal audit team and the financial policy analysts, during which key decisions are made as a group. Supervisory Energy Management and Marketing Specialist John Paulsen emphasized the importance of listening to his team and learning from each of them to make changes.

The IDC identified 10 programs with New IQ scores that are significantly higher than the WAPA average of 63.6%.

EMPLOYEE COMPLETES EXHAUSTIVE CYBER SKILLS PROGRAM

Reliability Compliance Management Specialist Al Slucher graduated from the Federal Cybersecurity Reskilling Academy on July 15.

Slucher, a retired first sergeant from the Arizona Army National Guard, was selected to participate in the inaugural cohort of the FCRA. It was extremely competitive with 2,500 applicants.

He learned how easily a cybersecurity vulnerability can be exploited and how vigilant one must be to protect against and discover compromises.

“I used to look at it from a requirement and evidence-based approach,” he explained. “In other words, ‘What specifically does the requirement state and do we have the supporting evidence to show compliance?’ Now my approach is threefold: the intent of the standard; the methods available to meet the intent with appropriate evidence; and the risks associated with compliance and noncompliance.”

Based on his test scores, Slucher was offered a spot on the Global Information Assurance Certification Advisory Board. His expanded understanding of critical infrastructure protection has already allowed Slucher to train personnel more effectively and provide stronger insights into potential cyber controls to protect the bulk electric system.

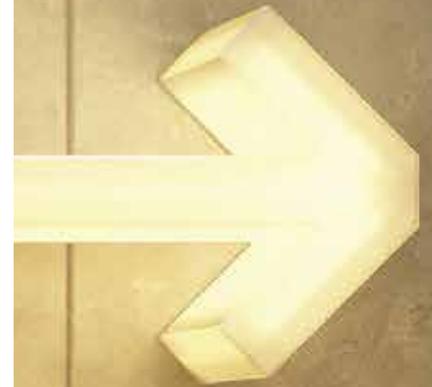


CONTINUING CULTURE OF IMPROVEMENT

In order to maximize the value of the services it provides, the organization launched a Continuous Process Improvement program in fiscal year 2014. Through different types of projects, employees identify cost-avoidance strategies and streamline operations. To date, the CPI program has captured more than \$93 million in saved or avoided costs.

WAPA's Lean Six Sigma Master Black Belt, Black Belt and 22 matrixed Green Belts identify opportunities, consult and lead improvement activities in all regions and functional areas across the organization. WAPA also supports employees who drive their own innovations and initiatives. These projects, called "Just Do It" efforts, identify cost-avoidance, improve processes and deliver additional value to customers.

In addition to the continued delivery of the process mapping workshops and managing improvement projects, the CPI program has developed a Lean Six Sigma Yellow Belt class. This one-and-a-half-day training will be delivered in all regions and focuses on the basic process improvement roadmap, using simple yet effective process improvement tools through an interactive simulation. The Yellow Belt training will further increase capability for gaining efficiencies and effectiveness, and help foster an improvement mindset across WAPA.



CPI RESULTS FOR FY 2019

1

Green Belt certified

6

projects completed

12

process mapping workshops completed

\$600,000

Cost savings and avoidance

FORMAL CPI PROJECTS COMPLETED IN FY 2019 INCLUDE

Timekeeping enhancement implementation.

Construction requirements development for Procurement.

Desert Southwest Purchase Power and Transmission invoicing process.

Power Marketing contracts workflow automation.

All-Employee Meeting preparation and event documentation.

Lands project initiation form intake process.



RESPONSIVE

Listening is only one of the skills involved in being a good listener. Responding productively, correctly and collaboratively is equally important. As an organization, WAPA remains sensitive and responsive to the industry, as well as to the obstacles and opportunities facing it.

Whether predictable or unforeseeable, quiet or urgent, large or small, WAPA is proudly able to respond to situations of any kind.

The organization has repeatedly demonstrated its ability to both plan ahead and leap into action at a moment's notice. It is able to keep the energy flowing to more than 40 million Americans even through times of change, challenge and adversity.

Responsiveness will be crucial in a connected future, as the public becomes even more accustomed to tight response times and open communication. WAPA will continue to prove it is ready.

NETWORK MODERNIZATION EFFORT COMPLETE

WAPA's Information Technology program completed its network modernization effort Aug. 22, increasing connectivity across the enterprise and reducing the time it takes for critical operations data to travel across the network.

The project consisted of three components:

- **Increasing network connectivity.**
More substations and communications sites across WAPA are now connected to the network, allowing mission-critical operations technology information to be instantly and securely assessed, monitored and analyzed.
- **Accommodating increased traffic.**
WAPA's network traffic is growing 30% each year. To meet this growing demand, WAPA migrated from its legacy network to an advanced, scalable Multi-Protocol Label Switching architecture.
- **Increasing advanced services.**
With increased reliance on mission-critical data, audio and video services, WAPA improved and expanded its wireless, remote-access Virtual Private Network, videoconferencing and Voice over Internet Protocol systems and capabilities.

NEW CYBERSECURITY DEFENSES PROTECT SUBSTATIONS

WAPA's Cyber Security program purchased Forescout's Silent Defense system in fiscal year 2019, taking the first steps toward extending a technical cybersecurity umbrella over its substations.

This system, when installed and fully operational, will give employees a level of visibility into substation-to-control-center communications that the organization has never before experienced

Traditional cybersecurity monitoring tools and techniques do not confer the depth of visibility WAPA requires to secure its power system operations. In addition to supporting WAPA's cybersecurity goals, these tools provide insight to Engineering and Maintenance staff and support ongoing Asset Management efforts.



OSEM SAVES, AVOIDS COSTS

Through risk-based methodologies, standardization and rigor, the Office of Security and Emergency Management achieved \$500,000 in cost avoidance in fiscal year 2019 by consolidating alarm monitoring and rightsizing the contract security force.

OSEM also saved more than \$443,000 annually by taking over roles performed by contractors. By implementing enhanced procedures for identifying security solutions, OSEM avoided an additional \$552,000 in unnecessary costs.

OSEM was created to protect people, property, information and federal assets by providing a secure environment. The effort included consolidating physical security efforts across WAPA's 15-state service area to ensure the adoption of common security standards and provide an enterprise-level approach to security and emergency management.

EMPLOYEES RESPOND TO 2018'S TWO STRONGEST STORMS

On Sept. 9, at the very end of fiscal year 2018, Power System Construction and Maintenance Advisor Will Schnyer deployed to Guam ahead of Category-5 Typhoon Mangkhut's landfall. It was his first deployment as an Emergency Support Function #12 responder. Less than one month later, at the dawn of this fiscal year, he responded to a second Category-5 typhoon in the same geographical region.

On Oct. 24, 2018, Category-5 Super Typhoon Yutu struck the Northern Mariana Islands at peak intensity, with storm surges of more than 20 feet and 10 inches of rain.

With 180-mph sustained winds and 220-mph gusts, Yutu is the second-strongest storm in recorded history to ever hit a U.S. territory. Mangkhut and Yutu ultimately tied for strongest storm of 2018.

Schnyer and Senior Power Operations Specialist Sean Erickson arrived in Guam as ESF-12 responders, their priority being to help bring essential services back online, including water wells, grocery stores, wastewater plants and sewer systems. WAPA is reimbursed by the Federal Emergency Management Agency for these response efforts.

WHAT IS ESF-12?

Emergency Support Function representatives primarily serve as liaisons between local authorities and the Federal Emergency Management Agency.

TYPHOON MANGKHUT

Category
5

Formed
Sept. 7

Peak intensity
Sept. 12

Dissipated
Sept. 17

Highest winds
180 mph

Fatalities
134

Damage
\$3.77 billion

AREAS AFFECTED

Guam, Northern Mariana Islands,
Philippines, Taiwan, Hong Kong, Macau,
South China, Vietnam

TYPHOON YUTU

Category
5

Formed
Oct. 21

Peak intensity
Oct. 24

Dissipated
Nov. 3

Highest winds
180 mph

Fatalities
30

Damage
\$854.1 million

AREAS AFFECTED

Caroline Islands, Northern Mariana Islands,
Philippines, South China



EMPLOYEES RESPOND TO WEEKEND OUTAGE

Early June 29, a breaker failed at Vining Substation in Powell, Wyoming. When electricians attempted to energize the breaker, the nearby oil-filled regulators exploded, causing a fire that left nearly everyone in Powell, a city of about 6,300 residents, without power.

Powell is a WAPA customer through the Wyoming Municipal Power Agency. WAPA also has meters at the substation.

Electrician Foreman II Paul Davis was enjoying his normal weekend routine in his home near Powell, Wyoming. While scrolling through social media, he noticed a number of posts about a power outage. He quickly traveled to the substation to offer his assistance. Meter and Relay Specialists Joe Haskins and Nathan Whitford from Cody assisted Davis and others in restoring power.

They worked with crews from the City of Powell and neighboring Garland Light & Power to fully restore power by 10 p.m.

TRANSPARENCY RECOGNIZED BY CORPORATE SOCIAL RESPONSIBILITY AWARDS

In October, WAPA received a Ragan Communications 2018 Corporate Social Responsibility Award for organizational transparency. The award was due in part to WAPA's expansion of The Source to share 10 years' worth of financial and business information related to operations.

The Source builds on a tradition of transparency at WAPA. The organization invites customers and members of the public to weigh in on the organization's proposed actions for its transmission system, rate-setting activities and capital investment and expenditure plans spanning 10 years.

“ Out of many outstanding submissions, we found WAPA's work to truly set a new standard of excellence for all corporate communications professionals. ”

**– Justine Figueroa
Ragan Communications**

TAKING TO THE SKIES SAVES MAINTENANCE DOLLARS

WAPA's aviation program helps the organization save thousands of dollars on transmission system inspections, maintenance and repairs. In particular, several jobs this summer went more smoothly and quickly than they would have without aerial support.

In Sierra Nevada, line crews used Human External Cargo and long-line helicopter techniques to replace dead-end insulators on a major transmission line in approximately six weeks, whereas climbing could have taken up to one year.

In Rocky Mountain, Maintenance crews replaced 90 miles of stock bridge dampers with spiral dampers. Using helicopters and HEC resulted in an estimated savings of \$640,000. It also allowed the job to be completed ahead of schedule with reduced exposure to live transmission equipment and minimal right-of-way interference.

Also in Rocky Mountain, Maintenance crews used a new unmanned aerial system to inspect 25 towers between Craig, Colorado, and Vernal, Utah. It would have taken around 25 hours for linemen to climb and inspect the towers manually, but instead took less than 13 hours and avoided around \$9,000 in costs.

AVIATION

Hours flown
1,639.5

Patrol miles flown
45,000+

HEC WORK

Jobs completed

12

Linemen trained

45

Miles of line maintained

375

Flight hours worked

266



EPTC REBRANDS, MAINTAINS QUALITY

In fiscal year 2019, electricity industry professionals continued to rely on WAPA's Electric Power Training Center to meet their needs for comprehensive training. In April, the EPTC adopted a new logo—designed in collaboration with Public Affairs—to update its branding as a reminder of their commitment to staying current.

Throughout the year, the EPTC hosted a number of valuable trainings, including Systematic Approach to Training, Simulator Training Techniques and Human Performance 101. It also added new courses to its schedule, including Electrical Fundamentals and Switching and Grounding.

In November the EPTC also partnered with the Change Management program to host a workshop in support of the Records Modernization Initiative.

IN FY 2019, THE EPTC

presented
38 classes

taught
620 students

hosted
83 meetings

provided
21 VIP tours

added
\$146,000 in value

ROARING FLOWS MIMIC NATURAL FALL FLOODING

For 60 hours between Nov. 5 and 8, 2018, the Colorado River Storage Project Management Center participated in a high-flow experiment to better manage the ecosystem of the Grand Canyon.

At its height, the high-flow experiment, or HFE, released about 31,700 cubic feet of water per second from Glen Canyon Dam to move sediment from downstream tributaries to rebuild sandbars, beaches and associated habitats in the Colorado River.

HFEs test the hypothesis that recreating the natural flooding cycle in spring and fall will slow erosion and maintain or increase sandbar size over several years.

New for this year was the shorter 60-hour HFE instead of the 96-hour HFEs that had been performed since 2012. The shorter duration of the experiment allowed for the testing of new variables and a decreased cost.





ENGAGED

Progress does not occur in a vacuum. In an industry as vast, complex and inter-reliant as this one, engagement is key to understanding how best to support customers, meet their needs and continue doing so in the future.

Engagement requires consistent and continuous understanding of what is happening not just within the industry, but in related disciplines, such as safety, technology, economics, inclusion and diversity and more.

It is also important to engage internally, keeping employees abreast of organizational direction and ensuring reliable transfer of knowledge.

In a connected future, engagement will be a necessity. WAPA is committed to engaging with thought leaders internally and externally to provide the best and most reliable service possible.

WAPA FACILITATES DOE 2019 CYBER CON

In May, the Department of Energy held its 2019 Cyber Convention in Denver, Colorado, providing Administrator and CEO Mark A. Gabriel and Information Technology employees the opportunity to meet and collaborate with leaders in the cybersecurity field.

The first day included briefings from DOE officials and a discussion on the future of the grids, featuring Gabriel; Dr. Martin Keller, laboratory director, National Renewable Energy Laboratory; Bruce Walker, assistant secretary, Office of Energy, DOE; and Max Everett, chief information officer, DOE. Gabriel also introduced Colorado Governor Jared Polis, who offered welcoming remarks during the morning plenary session.

WAPA contributed local logistical support to Cyber Con and was well represented in track sessions on cloud threats and countermeasures, multifactor authentication and industrial control systems cyber strategies.

WAPA hosted an exhibit in the networking area, attracting cybersecurity professionals and potential recruits. Participating in Cyber Con allowed WAPA to educate the cybersecurity community about power marketing administrations and their needs with respect to grid security.

MEETING TAKES ON TECHNOLOGY CHALLENGES

On Feb. 8, WAPA hosted the Cybersecurity for Protective Relays meeting at its Electric Power Training Center in Golden, Colorado, to explore the “next generation” of system protection and communication schemes that are more resilient to cyberattacks.

System protection experts from WAPA, interested electric utilities, the national labs and other Department of Energy organizations discussed secure enclave service centers, necessary versus ancillary communications and future trends in protective relaying.

The DOE provided \$200,000 for a research and development project led by the Pacific Northwest National Lab to address cybersecurity risks related to relay protection, evaluate technical approach and identify research gaps to ensure reliable and secure relay protection for power system elements during a cyberattack.

As the industry advisor to this project, WAPA is working with the Pacific Northwest National Lab to define use cases and evaluate attack surfaces, using the EPTC to simulate real-world situations.



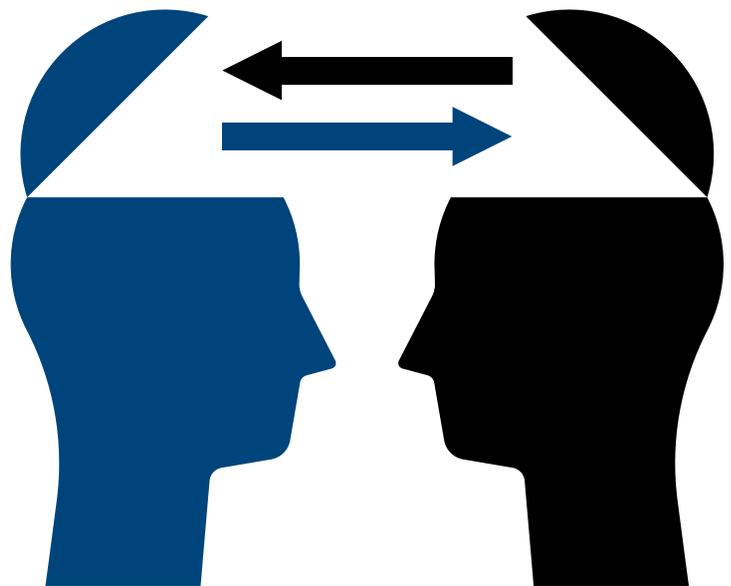
KNOWLEDGE TRANSFER VIA THE VIDEO CLOSET

Launched in 2017, the Knowledge Management Resource Center has grown to become the organization's central repository for video explanations of complex programs, projects and initiatives.

The Resource Center expanded in fiscal year 2019 with the introduction of the Video Closet, a partnership between Knowledge Management and the Electric Power Training Center. The Video Closet allows for the capturing of mixed-media presentations used by the EPTC's staff of professional trainers, involving PowerPoint files, whiteboards, equipment demonstrations and even audience interaction.

The Video Closet provides employees with engaging, comprehensive training materials that go beyond simple video presentations. It offers a library of highly technical background and supplemental information that can be used in a variety of contexts for refresher or foundation efforts to assist new and future EPTC trainers as they prepare lesson plans to continually improve how they educate trainees. It also provides selective resources for EPTC trainees seeking review or supplemental material.

The Video Closet helps ensure both that institutional knowledge is not lost and that onboarding employees are able to benefit from and build upon years' worth of information.



The goals of the Video Closet

- Capturing presentations with live audiences, so that the knowledge, spirit and style of the EPTC's trainers are recorded before they retire.
- Storing technical content in a SharePoint library, with summary paragraphs that enable trainers and others to find videos containing the information they need.
- Deploying a video-development platform that is inexpensive and able to support videographers as they capture presentations.
- Enhancing the overall EPTC capacity to serve employees and customers by supplementing the ongoing efforts of its training staff.
- Consolidating documents, photographs, whiteboard illustrations, slides, videos and other media into libraries that preserve continuity of presentation and retrieval over time.

KNOWLEDGE MANAGEMENT IN FY 2019

Videos produced
193

Videos requested
200+

Participating departments
35

Average monthly hits
744

Average daily hits
25

CRAFTS EXCHANGE BEST PRACTICES AT CONFERENCE

On June 24-27, WAPA employees attended the 14th International Engineering, Safety, Maintenance and Overhead Lines conference organized by the Institute of Electrical and Electronics Engineers Power and Energy Society.

The ESMO conference provides attendees with information about the latest technology and best practices the industry has to offer craft employees and engineers.

Foreman III Lineman Ed Hunt is chairman of the IEEE ESMO subcommittee that organizes the conference. Electrical Engineer Gary Zevenbergen presented on a technical panel and recently became chairman of the IEEE ESMO Grounding for Power Lines Subcommittee. Several WAPA linemen participated on a panel called Alternatives to Climbing Towers.

Administrator and CEO Mark A. Gabriel spoke at the opening panel regarding WAPA's inclusion of craft employees in the development of *Strategic Roadmap 2024* and the Asset Management program.



PROGRAMMATIC PARTNERSHIP PRODUCES OEID DASHBOARD

On April 22, the Office of Economic Impact and Diversity launched the OEID Dashboard, an analytical tool detailing WAPA demographics designed to assist in the organization's recruitment efforts.

This is one way in which the OEID administers WAPA's Affirmative Employment Plan, which keeps the organization in compliance with Equal Employment Opportunity Commission requirements.

The EEOC requires federal agencies such as WAPA to collect the demographic information of its employees, including race, gender and disability status. Federal agencies are also required to perform annual self-assessments to identify and eliminate barriers that impede free and open competition in the workplace.

The OEID Dashboard was developed by Auditor Caleb Williams. It allows for a visual presentation of WAPA's demographic data in a format readily accessible by managers and supervisors to inform their hiring decisions. It consists of three separate dashboard views providing a snapshot of workforce composition, trends and statistical changes.



WAPA PARTICIPATES IN GRAND CANYON TRIP

In late July, Administrator and CEO Mark A. Gabriel, Senior Vice President and General Counsel John Bremer, Chief Public Affairs Officer Teresa Waugh and Natural Resources Policy Analyst Steve Blazek joined 24 members of the Glen Canyon Dam Adaptive Management Work Group on a nine-day educational river trip through the Grand Canyon.

The 2019 Tribal-Stakeholder River Trip, hosted by the United States Geological Survey's Grand Canyon Monitoring and Research Center, was designed to teach participants about the history, culture and varying and often conflicting values and goals of stakeholders and tribes regarding the Grand Canyon and Glen Canyon Dam.



WAPA'S NEW EMPLOYEE ORIENTATION SETS PATH TO SUCCESS

In fiscal year 2019, WAPA restructured its employee onboarding process to better prepare new hires for success in the organization and in the industry.

Designed to create meaningful connection between the new hire, WAPA and the organizational culture, WAPA's new employee onboarding takes the process beyond the traditional paperwork- and process-driven approaches, fostering a greater level of interaction with new employees.

Introduction to WAPA begins with a three-hour course that is offered quarterly, at which new employees watch a brand-new video series to introduce the organization's mission, history and culture. The very first session was held April 22.

WAPA's new employee onboarding process is a yearlong, highly integrated process that includes ongoing interaction from supervisors, leaders and Human Resources.

SAFETY SHAPES SUCCESS

During fiscal year 2019, the Office of Safety and Occupational Health hosted program-improvement working groups, weekly craft safety meetings, annual fall protection training and much more. It also distributed a revamped version of *Safety Works*, a bimonthly, WAPA-wide safety bulletin containing safety tips, explanations of procedures and reports of recent incidents.

Additionally, Safety and Occupational Health refreshed WAPA's safe electrical work practices procedures, reviewed arc-flash risks and further matured its confined space program, all while continuing to enhance and develop the organization's industry-leading Fall Protection program.

SAFETY STATS

15

Learning Summaries

25

Articles addressing safety topics

1.1

**Recordable Incident Rate
compared to a Bureau of Labor
Statistics rate of 3.1**

976

Safety Incentive Program participants

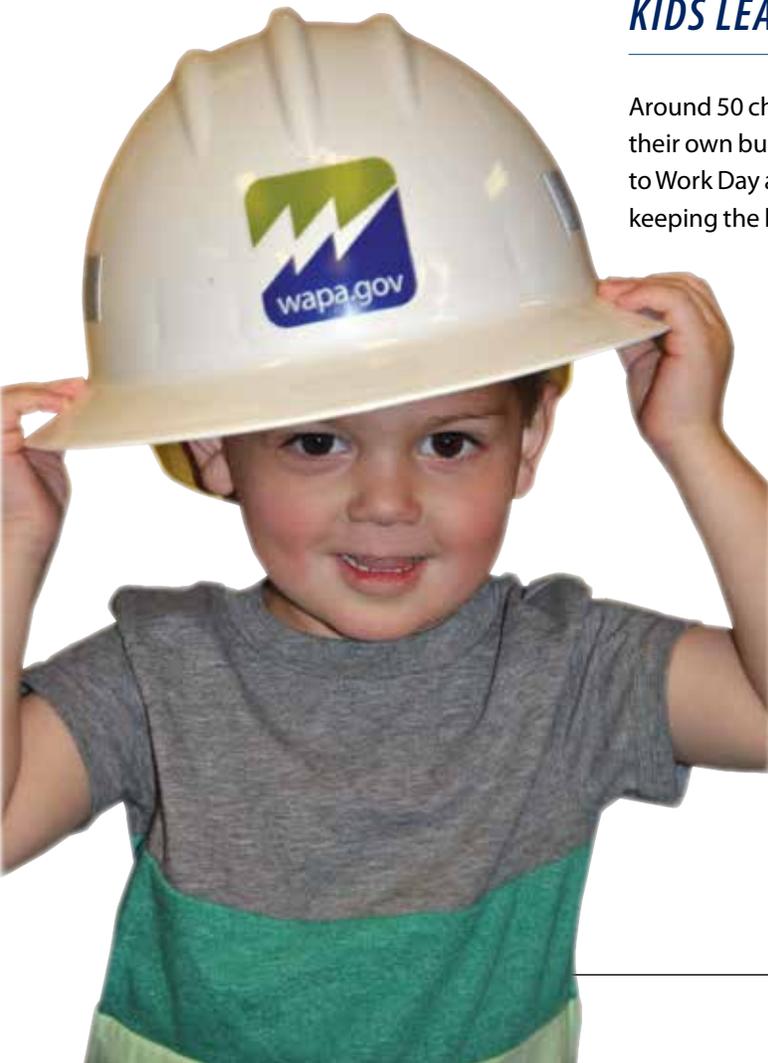
KIDS LEARN ABOUT WAPA

Around 50 children between two and 14 years of age took a break from their own busy schedules to participate in Take Our Daughters and Sons to Work Day at WAPA's Headquarters, learning about their parents' roles in keeping the lights on for more than 40 million Americans.

The event was organized by Chief of Staff Erin Green. Parents gave their children tours of their offices, introduced their coworkers and answered questions about their jobs.

Children enjoyed presentations and activities, including a scavenger hunt, media training, a photo booth, safety demonstrations and electricity lessons.

The nonprofit rescue and educational organization HawkQuest gave a presentation with live birds of prey, teaching the children about their hunting and feeding habits.





RESILIENT

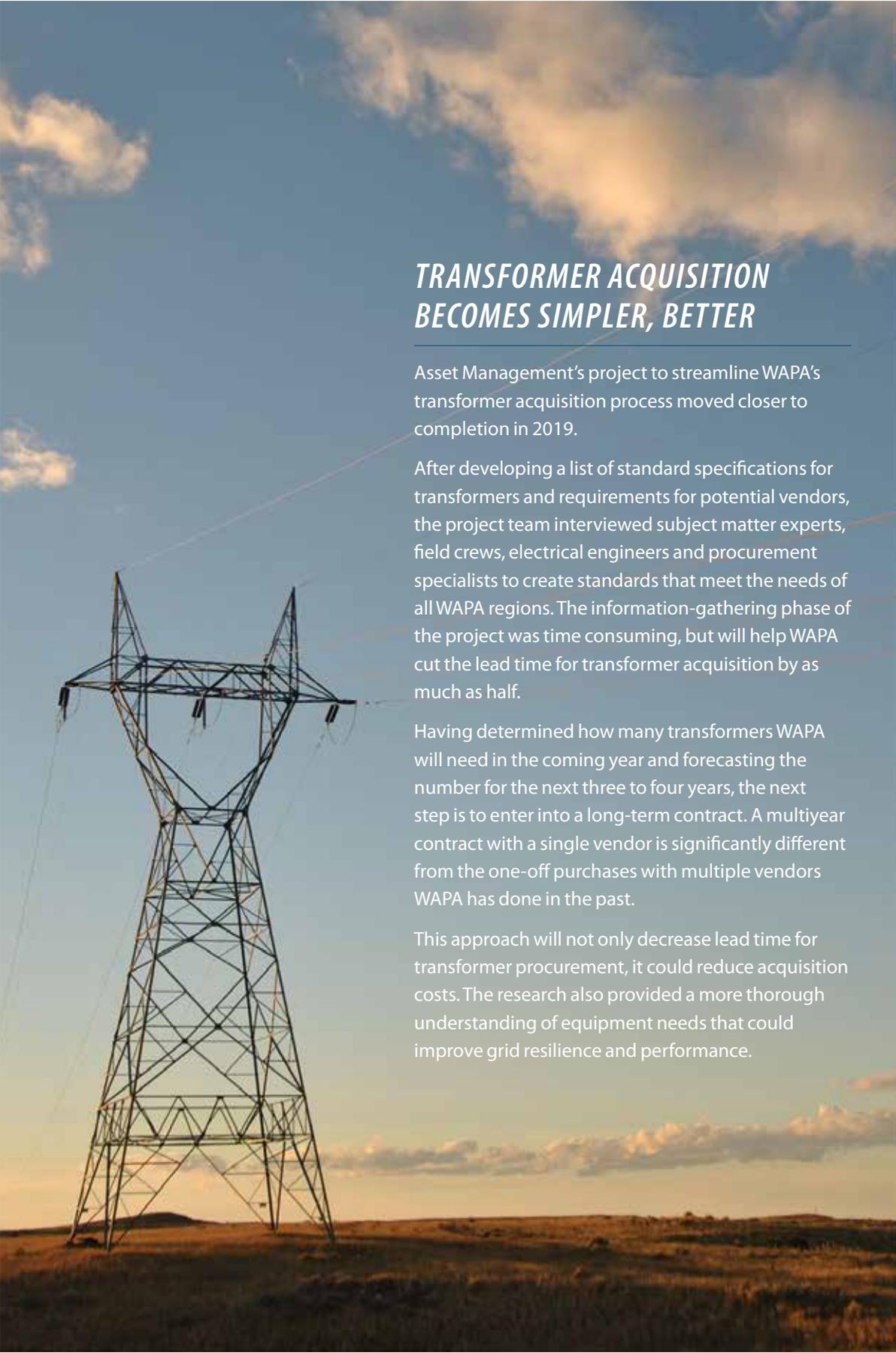
The winds of change blow strong and resilience is essential. It requires forethought, planning and an understanding of industry trends. It requires a constant readiness to evolve. It requires willingness to invest today in a stronger tomorrow.

An enormous part of resilience is literal. As cybersecurity threats evolve at alarming rates, playing catchup is not an option. It is never enough to respond to new invasion techniques; it is our responsibility to fortify ourselves in advance, remaining as many steps ahead as possible.

The nation's grid is an integral part of our lives—every day, every hour, every minute, every second. Protecting it requires constant vigilance.

WAPA's commitment to resilience is unwavering. As we journey together into a connected future, we will find our resilience tested many times over.

We will be ready.



TRANSFORMER ACQUISITION BECOMES SIMPLER, BETTER

Asset Management's project to streamline WAPA's transformer acquisition process moved closer to completion in 2019.

After developing a list of standard specifications for transformers and requirements for potential vendors, the project team interviewed subject matter experts, field crews, electrical engineers and procurement specialists to create standards that meet the needs of all WAPA regions. The information-gathering phase of the project was time consuming, but will help WAPA cut the lead time for transformer acquisition by as much as half.

Having determined how many transformers WAPA will need in the coming year and forecasting the number for the next three to four years, the next step is to enter into a long-term contract. A multiyear contract with a single vendor is significantly different from the one-off purchases with multiple vendors WAPA has done in the past.

This approach will not only decrease lead time for transformer procurement, it could reduce acquisition costs. The research also provided a more thorough understanding of equipment needs that could improve grid resilience and performance.

NEW EQUIPMENT STABILIZES VOLTAGE IN SN

In December 2018, employees energized WAPA's first-ever variable shunt reactors in two northern California substations to alleviate and stabilize potentially damaging voltage conditions along sections of Sierra Nevada's 230-kilovolt lines.

The variable shunt reactors were energized in Elverta Substation Dec. 4 and Olinda Substation Dec. 6 to absorb excess reactive power and improve control of long-distance transmission line voltage, particularly overnight.

The project was six years in the making, with SN determining how to resolve high voltages during light loading conditions without relying on the area's generation sources.

It was determined that variable shunt reactors would provide SN better voltage control than the fixed shunt reactors WAPA has traditionally used. Unlike fixed reactors, the variable reactor uses a baseline value and a range to regulate increases or decreases in voltage based on actual system conditions.

Construction began in August 2017 and was completed as scheduled in March 2018, coming in around \$4 million below the estimated cost.



ROTH LINDELL HONORED AS A TOP WOMAN IN ENERGY

Senior Vice President and Rocky Mountain Regional Manager Dawn Roth Lindell was recognized in fiscal year 2019 as one of Colorado's Top Women in Energy.

The prestigious accolade, awarded by *Denver Business Journal*, recognizes 40 risk-taking women changing the energy industry in Colorado each year. This year's recipients were honored at a reception April 23 in Denver.



WAPA TO JOIN SPP ENERGY IMBALANCE SERVICE

On Sept. 9, WAPA's Rocky Mountain and Upper Great Plains regions, along with the Colorado River Storage Project, Basin Electric Power Cooperative and Tri-State Generation and Transmission Association, announced their decision to join Southwest Power Pool's Western Energy Imbalance Service.

With a target launch date in early 2021, the WEIS will be a voluntary real-time energy market designed to reliably and cost-effectively manage differences in scheduled versus actual electricity supply and demand, also known as energy imbalance. WAPA's balancing authorities currently manage energy imbalance for customers using generation WAPA controls. However, this is becoming increasingly challenging as the industry continues to change.

Participation in the WEIS will allow WAPA and other utilities the option to bid their generation into the WEIS market. SPP will then centrally dispatch energy from the participants every five minutes—an approach that leverages the diversity of generation and demand across a broad operating footprint to enhance both system reliability and the affordability of electricity delivery to customers.



SUBSTATION REPLACEMENT SUPPORTS SOUTH DAKOTA

Brookings Substation in South Dakota was replaced this fall with a state-of-the-art facility that will improve the reliability of electric service to the area, particularly as South Dakota is prone to ice storms in the winter and severe thunderstorms in the summer. The 115-kilovolt substation, originally built in the 1950s, serves several lines belonging to WAPA, the City of Brookings and East River Electric Power Cooperative.

Among other improvements, the new yard will include improved drainage to prevent erosion and flooding. It is also more than double the size of the previous yard and includes space for East River to add a new bay as demand increases.

The new yard is a breaker-and-a-half scheme, which provides increased reliability. Brookings is the fourth-largest city in South Dakota and is home to more than 22,000 people. It is also home to South Dakota State University, the state's largest university, which adds 12,000 residents during the school year.

This project, 15 years in the making, involved the installation of temporary lift structures between the two yards, allowing the existing substation to remain energized during construction. The new substation is scheduled to be energized in early 2020.

NEW TRANSFORMER SUPPORTS RELIABILITY IN SN



On June 4, Sierra Nevada celebrated the successful energization of the new Folsom Substation transformer, on time and under budget.

The new transformer supports the reliability of the grid and Folsom Dam in northern California and also helps avoid future maintenance costs associated with the old transformer.

The previous transformer was around 35 years old. Periodic maintenance by electricians and Asset Management revealed signs of poor health in addition to the asset coming to the end of its expected service life.

SN began planning to replace the old transformer around 2015, working with WAPA's Design and Procurement offices, the Bureau of Reclamation, the Central Valley Project Governing Board and construction contractors.

PILOT ASSISTS WITH COMMUNICATION MAINTENANCE AFTER SNOWFALL

Increasingly unpredictable weather patterns result in employees often having to roll with the punches to keep the lights on for more than 40 million Americans. In May, an unexpectedly heavy snowfall around Leadville, Colorado, required some teamwork.

In order to perform preventative maintenance and to verify the status of the facility, Electronic Integrated Systems Mechanic Eric Zills enlisted the help of Helicopter Pilot Todd Slade to fly him to the snowed-in communication site on Hagerman Pass.

The accumulated snowfall was between 15 and 20 feet, meaning the site was completely covered. In fact, Zills had to dig downward through the snow in order to reach the top of the communication building. Once he did so, he was able to open a hatch in the roof and climb through.





RM CREWS REPLACE 17 STRUCTURES

In December 2018, linemen across the Rocky Mountain region worked to replace 17 wooden H-frame structures on the 115-kilovolt line between Bridgeport and Greenwood, Nebraska.

The replacements were made to meet a North American Electric Reliability Corporation reliability standard, which establishes that vehicle-to-conductor clearance must be at least 22 feet and pedestrian-to-conductor clearance must be at least 16 feet.

Conductors stretch and droop over time, and a line's clearance—measured from wire to ground—can fall below NERC standards. Transmission lines are inspected annually by ground patrol and biannually by air using aerial light detection and ranging technology to determine whether or not lines are at the correct heights.

IMPROVED RELIABILITY THROUGH IMPROVED DATA

Turning raw data into a customized decision-making tool relevant to different WAPA programs and regions has been a goal of Asset Management since the program's inception. In fiscal year 2019, Asset Management made significant improvements to the consequence process and started evaluating transmission lines based on actual condition, rather than age alone.

In this new system, an asset's health index and consequence data are used to determine its risk score. Factors such as age, maintenance history, function, design and operating capacity make up the health index, giving the program a much clearer picture of how a piece of equipment is likely to perform over time.

The scoring system can be valuable to functional groups across WAPA. This data can also be used to measure the asset's health and the risk to the organization should the asset fail.

PEOPLE AND DOLLARS

How WAPA effectively applies and manages its resources—a workforce of 1,458 federal employees and a \$1.4 billion program—is central to its success in delivering on its mission and operating safely, securely and reliably. Below is an illustration of where WAPA's people and dollars were deployed in fiscal year 2018.

Just over half of WAPA's employees supported the reliability of the electric grid, and the largest percentage of funds was attributed to the organization's marketing function, which includes purchase power and wheeling.

These figures do not include resources assigned to and paid for by the Transmission Infrastructure Program.

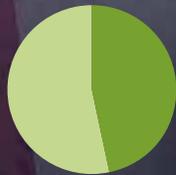
RELIABILITY

**747
people**

and

**37
percent**

of dollars invested in maintenance and related areas.



DELIVERY

**201
people**

and

**6
percent**

of dollars dedicated to power operations.



MARKETING

including purchase power and wheeling

**164
people**

and

**46
percent**

of dollars committed to power marketing areas.



COST-BASED

and related services

**346
people**

and

**11
percent**

of dollars applied to support the mission.



CUSTOMER IRP SUMMARY

WAPA's Integrated Resource Planning requirements, outlined in Section 114 of the Energy Policy Act of 1992, give customers several options to comply with the law's energy-planning clauses. Customers must submit annual progress reports and new integrated resource plans every five years, either individually or cooperatively. Customers who meet specific criteria are also allowed to choose from three additional IRP reporting options—small customer plans, minimum investment reports or energy efficiency and renewable energy reports—instead of a full IRP.

In FY 2019, WAPA received 128 IRPs from individual customers, 106 plans from cooperatives, 72 minimum investment reports, 96 small customer plans and four energy efficiency/renewable energy reports.

Top 5 demand-side management activities: Top 5 renewable energy resource choices:

- | | |
|-----------------------------|---------------|
| ● Lighting | ● Solar |
| ● Load management | ● Wind |
| ● Air conditioning upgrades | ● Geothermal |
| ● Rebates | ● Small hydro |
| ● Audits and envelopes | ● Biogas/mass |

Customer IRP accomplishments¹

Item	CRSP MC	DSW	RM	SN	UGP	Total
DSM ² savings (kW)	23,098	194,093	369,525	47,609	674,529	1,308,854
DSM savings (kWh)	82,075,206	13,745,487,173	859,269,959	366,969,819	294,377,654	15,348,179,811
DSM expenditures (\$)	20,928,752	142,229,846	27,439,300	62,225,916	30,165,181	282,988,995
DSM deviations ³ (\$)	448,570	0	10,497,865	12,785,005	-305,511	23,425,929
Renewables (kW)	663,919	1,380,773	1,545,715	1,998,041	1,704,686	7,293,134
Renewables (kWh)	1,996,971,662	3,378,232,104	6,274,640,023	11,300,133,860	6,199,108,036	29,149,085,685
Renewable expenditures (\$)	56,817,740	4,675,565	202,003,993	228,098,482	165,093,523	656,689,303
Renewable program types	Solar, wind, geothermal, hydro, biogas/mass	Solar, geothermal, hydro, wind, biomass/gas, green tags	Wind, solar, hydro, biogas/mass, green tags	Solar, hydro, biomass/gas, wind, geothermal, green tags	Solar, small hydro, biogas/mass, wind, geothermal, green tags	Solar, small hydro, geothermal, wind, biogas/mass, green tags
Top 5 most frequent DSM activities	Load management, rebates, lighting, insulation, HVAC	Lighting, rebates, AC, audits, load management	Lighting, load management, AC, audits, rebates	Lighting, AC, audits, rebates, commercial refrigeration	Commercial lighting, AC, rebates, commercial refrigeration, load management	Lighting, load management, AC, rebates, audits
Top 5 renewable energy activities	Solar, wind, geothermal, hydro, biogas/mass	Solar, geothermal, small hydro, wind, biomass/gas	Wind, solar, small hydro, biogas/mass, green tags	Solar, small hydro, biogas/mass, geothermal, green tags	Wind, solar, green tags, biogas/mass ⁴	Solar, wind, geothermal, small hydro, biogas/mass
Top 3 customer-reported trends	Not reported	Power purchase agreements, hydro ⁵	Power purchase agreements, electrification, fuel switching	Not reported	Solar, hydro, biogas	Power purchase agreements, electrification, renewables
# of IRPs from individual customers	3	18	28	12	67	128
# of IRPs from cooperatives	3 (comprised of 20 entries in total)	0	7	0	99	106
# of MIRs	0	4	5	3	60	72
# of SCPs	0	21	24	33	18	96
# of EE/RE reports	0	0	4	0	0	4

¹ The 2019 IRP filings of some customers are not represented in these numbers due to filing dates falling after the creation of this report.

² DSM refers to demand-side management activities the utility conducts to change customer energy use.

³ Deviations refer to differences from the customer's IRP.

⁴ Only four activities were reported.

⁵ Only two activities were reported.

SENIOR EXECUTIVE TEAM*

Administrator and Chief Executive Officer	MARK A. GABRIEL
Executive Vice President and Chief Operating Officer	KEVIN HOWARD
Senior Vice President and Chief Financial Officer	DENNIS SULLIVAN
Senior Vice President and Chief Information Officer (acting)	MIKE MONTOYA
Senior Vice President and Chief Administrative Officer	TRACEY LeBEAU
Senior Vice President and Assistant Administrator for Corporate Liaison	DIONNE THOMPSON
Senior Vice President and General Counsel	JOHN D. BREMER
Senior Vice President and Colorado River Storage Project Management Center Manager (acting)	RODNEY BAILEY
Senior Vice President and Desert Southwest Regional Manager (acting)	STEVE JOHNSON
Senior Vice President and Rocky Mountain Regional Manager	DAWN ROTH LINDELL
Senior Vice President and Sierra Nevada Regional Manager	SONJA ANDERSON
Senior Vice President and Upper Great Plains Regional Manager	JODY SUNDSTED
EX-OFFICIO MEMBERS	
Chief of Staff	ERIN GREEN
Chief Strategy Officer	JENNIFER RODGERS
Chief Public Affairs Officer	TERESA WAUGH
Power Marketing Administration Human Resources Shared Service Center Director	CARL DURRETT
Senior Human Resources Business Partner	NIKKI KING

* NOTE: This information reflects the Senior Executive Team as of Sept. 30.





Western Area Power Administration

WESTERN AREA POWER ADMINISTRATION

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U.S. DEPARTMENT OF
ENERGY



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