The background is a dark blue gradient with a glowing cyan line graph that fluctuates across the upper half. In the lower center, there is a white padlock icon surrounded by a complex network of white circuit lines. Faint, semi-transparent images of a power transmission tower and a pie chart are also visible in the background.

Value OF WAPA

Annual
Report
2018

Western Area
Power
Administration



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.

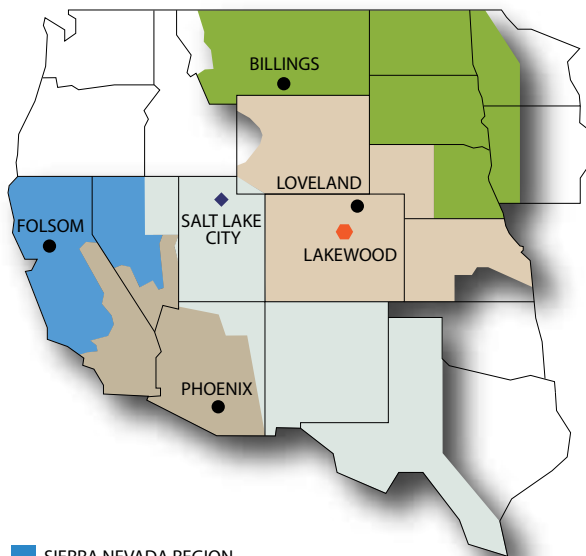
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Service and Marketing Areas

WAPA delivers power from 10 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 14 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.

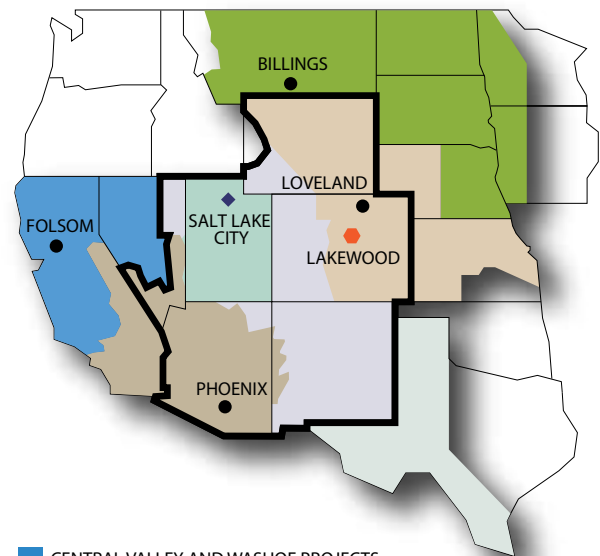
Service Areas



- 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, COLBRAN, RIO GRANDE, SEEDSKADEE AND DOLORES PROJECTS
- STATE BOUNDARY
- REGIONAL OFFICE
- HEADQUARTERS
- ◆ COLORADO RIVER STORAGE PROJECT MANAGEMENT CENTER OFFICE

Operational Summary¹

(unaudited)
(dollars in thousands)

	2018	2017	2016
Sales of electric power	\$898,708	\$915,025	\$893,663
Income transfers to generating agencies	(387,911)	(430,308)	(389,715)
Transmission and other operating revenues	546,140	531,421	464,721
Total operating expenses	838,087	794,556	726,360
Operation and maintenance	342,107	312,347	288,570
Purchased power	114,856	118,282	109,596
Purchased transmission services	189,840	179,179	149,943
Net interest expense	16,024	12,828	12,381
Net revenues	202,826	208,754	229,928
Completed utility plant	4,517,058	4,415,376	4,325,697
Payable to U.S. Treasury	692,871	646,970	594,368

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.

Administrator and CEO's Letter

At Western Area Power Administration, we are committed to delivering outstanding value to our customers and the nation. We have served the West with at-cost, federal hydroelectric power for more than 40 years. By anticipating and adapting to industry developments, reinvesting in critical infrastructure and hardening our response to cybersecurity threats, we are able to efficiently and effectively meet the energy needs of tomorrow.

Fiscal Year 2018 was a remarkable year for WAPA. Through organizational improvements and lowering rates for a majority of customers, we provided value to customers while continuing to provide safe and reliable power at some of the lowest wholesale rates in the country. Our most significant accomplishments included:

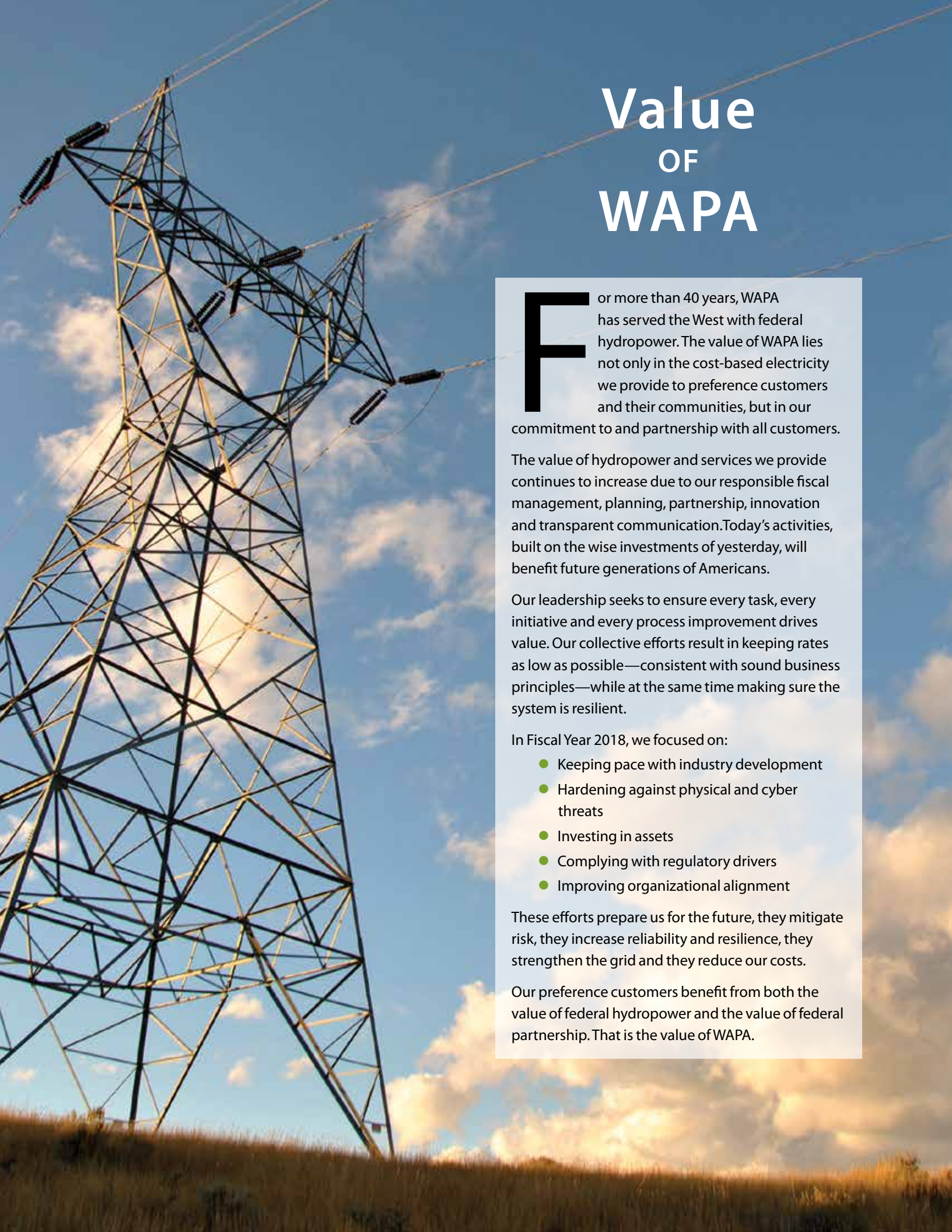
- Increasing transparency and access to operational data and financial information on The Source
- Transitioning to a new Power Repayment Study to better analyze, set rates and track repayment for 15 power systems
- Selecting new reliability coordinators for our balancing authorities and transmission operators
- Adding Olmsted Powerplant to our system—the first new generation source in decades
- Strengthening our Asset Management program by developing analytics to make more informed decisions on capital investments
- Bringing customers and thought leaders together at WAPA's Technology and Security Symposium to increase grid resilience
- Refreshing WAPA's core values for the first time in 25 years to help guide decision making and reinforce our commitment to customers and stakeholders

The world is changing at a rapid pace. To continue delivering on our mission and providing value to customers, we need to stay on top of these changes and observe what is happening around us. WAPA was built on a legacy of energizing the West. Our job is to continue to fulfill our public service mission while finding ways to increase our value to our customers, the industry and the nation. As effective stewards of our country's assets, we serve like our lights depend on it.



Mark A. Gabriel
Administrator and CEO





Value OF WAPA

For more than 40 years, WAPA has served the West with federal hydropower. The value of WAPA lies not only in the cost-based electricity we provide to preference customers and their communities, but in our commitment to and partnership with all customers.

The value of hydropower and services we provide continues to increase due to our responsible fiscal management, planning, partnership, innovation and transparent communication. Today's activities, built on the wise investments of yesterday, will benefit future generations of Americans.

Our leadership seeks to ensure every task, every initiative and every process improvement drives value. Our collective efforts result in keeping rates as low as possible—consistent with sound business principles—while at the same time making sure the system is resilient.

In Fiscal Year 2018, we focused on:

- Keeping pace with industry development
- Hardening against physical and cyber threats
- Investing in assets
- Complying with regulatory drivers
- Improving organizational alignment

These efforts prepare us for the future, they mitigate risk, they increase reliability and resilience, they strengthen the grid and they reduce our costs.

Our preference customers benefit from both the value of federal hydropower and the value of federal partnership. That is the value of WAPA.



Keeping Pace with Industry Development

The industry is experiencing change and opportunity the likes of which have not been seen in the past 50 years. WAPA's Strategic Roadmap guides the organization on a clear path as we navigate change and prepare for the future. In response to movement toward regionalized electricity markets, WAPA has engaged its customers and other stakeholders to ensure the ongoing reliability and economic efficiency of the bulk electric system. WAPA continues to provide value by delivering reliable, renewable and cost-based electricity that helps keep the economy of rural America running.

Market expansion drives operational developments in West

Organized markets, such as those offered by regional transmission organizations and the California Independent System Operator, are expected to continue to expand in the West. At the same time, new operational realities, such as renewable generation, security threats, fewer trading partners and changing customer needs have required WAPA to consider how to respond to these changes while delivering on the organization's critical mission. WAPA is committed to preserving and promoting the economic value of hydropower and services for its customers while also developing a workforce and organization capable of navigating and thriving in the dramatic changes in the energy industry. This means collaborating with customers and neighbors, working with market providers and changing internal operations to keep pace with a new energy frontier.

Taking an organizational approach to markets

Internally, WAPA is taking an organizational approach to markets and other operational changes by realigning resources, clarifying processes and streamlining systems to be as efficient as possible. This in-house implementation follows decisions made through an internal initiative in 2017 to improve WAPA operations in a variety of industry scenarios. In Fiscal Year 2018, the team began the multiyear implementation project to improve WAPA's:

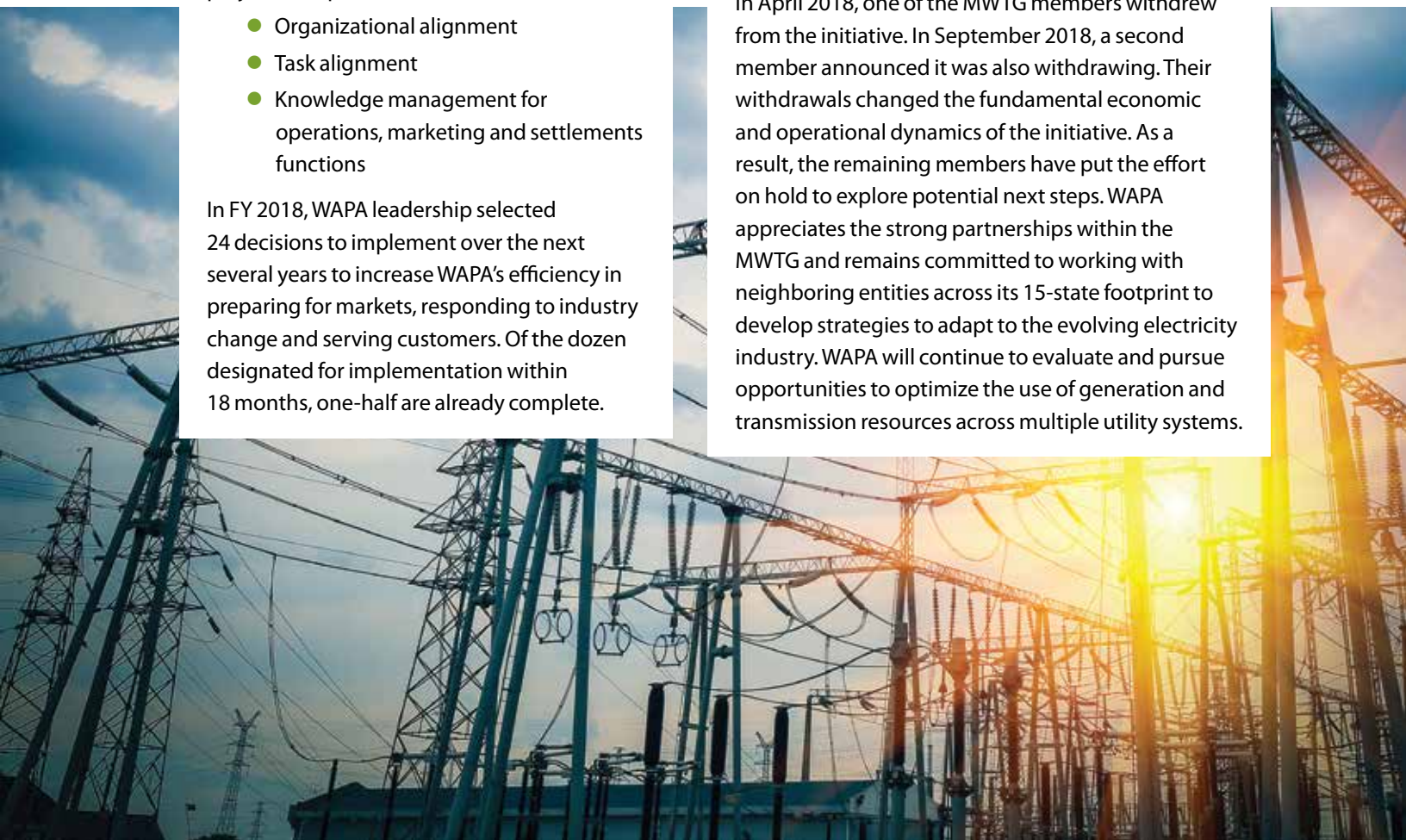
- Organizational alignment
- Task alignment
- Knowledge management for operations, marketing and settlements functions

In FY 2018, WAPA leadership selected 24 decisions to implement over the next several years to increase WAPA's efficiency in preparing for markets, responding to industry change and serving customers. Of the dozen designated for implementation within 18 months, one-half are already complete.

Mountain West Transmission Group effort put on hold

Since 2013, WAPA and six other utilities have been evaluating joining an existing regional transmission organization, or RTO, that would encompass the group's collective footprint. Known as the Mountain West Transmission Group, the participants decided in 2017 to pursue membership in the Southwest Power Pool RTO. In October 2017, WAPA published a notice in the *Federal Register*, seeking public comments on its recommendation to pursue final negotiations to join SPP.

In April 2018, one of the MWTG members withdrew from the initiative. In September 2018, a second member announced it was also withdrawing. Their withdrawals changed the fundamental economic and operational dynamics of the initiative. As a result, the remaining members have put the effort on hold to explore potential next steps. WAPA appreciates the strong partnerships within the MWTG and remains committed to working with neighboring entities across its 15-state footprint to develop strategies to adapt to the evolving electricity industry. WAPA will continue to evaluate and pursue opportunities to optimize the use of generation and transmission resources across multiple utility systems.



Hydropower brings economic benefit to California customers in CAISO

Sierra Nevada keeps an eye on enhancing its services to meet the needs of a diverse customer base within two California balancing authorities—the Balancing Authority of Northern California and the California Independent System Operator. One vehicle SN uses to deliver valuable hydropower in the CAISO is the Market Efficiency Enhancement Agreement. Since the agreement's implementation in 2016, SN and its customers have realized more than \$3.8 million in savings. Additionally, SN and the Bureau of Reclamation know that timing hydropower generation is important. Using the Max Peaking Program, Reclamation distributes a portion of the generation SN markets during optimal economic pricing time periods during the day. In FY 2018 this provided revenues of more than \$5.7 million, which reduced SN's Central Valley Project's power revenue requirement and ultimately led to lower base resource costs for customers.

Since the agreement's implementation in 2016, SN and its customers have realized more than \$3.8 million in savings.



WAPA delivers hydropower through SPP

Upper Great Plains had an exceptional year in the Southwest Power Pool market. Stronger releases throughout the summer season drove significant surplus energy sales into the market. Annual generation was about 24 percent higher than the previous year, increasing energy sales by more than 45 percent. SPP market prices were also higher than in 2017. Excellent water conditions reduced the region's purchase-power needs, resulting in about \$42 million more in net market revenues over the previous year. The cumulative result was net market revenue of more than \$48 million.

With the Federal Service Exemption, WAPA is able to minimize the financial impact of congestion and losses between its generation and load settlement locations, and UGP avoided more than \$13.5 million in costs. Being able to sell excess generation into SPP and purchase energy from the market—to meet contractual commitments—has proven beneficial to keep WAPA's costs low and its firm power rates stable.

Excellent water conditions reduced the region's purchase-power needs, resulting in about \$42 million more in net revenues over the previous year.

WAPA selects new reliability coordinators

On Sept. 4, WAPA announced the selection of new reliability coordinators, or RCs, for its balancing authorities and transmission operators once Peak Reliability ceases operations by late 2019.

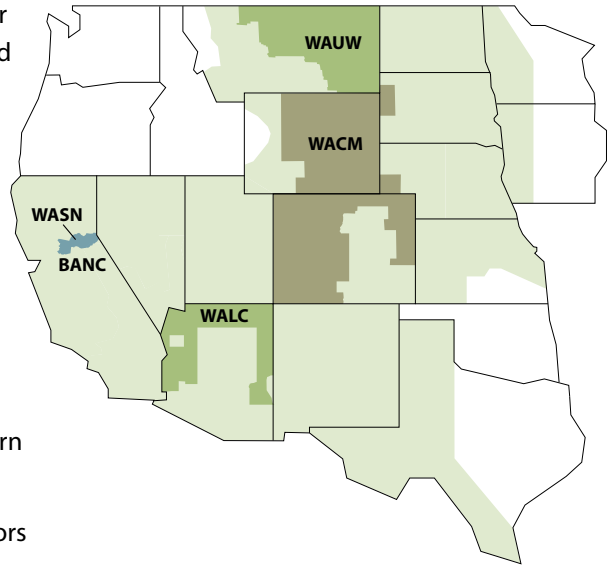
Southwest Power Pool was selected as the future RC for WAPA's Western Area Upper Great Plains - West, referred to as WAUW, Western Area Colorado Missouri and Western Area Lower Colorado balancing authorities and their associated transmission operators. The Sierra Nevada region, a transmission operator within the Balancing Authority of Northern California, will accept RC services from the California Independent System Operator following BANC's schedule, which is expected to be in mid- to late-2019.

The transition to the new RCs is contingent on SPP and CAISO becoming certified as RC providers in the Western Interconnection.

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

WAPA began exploring new providers in early 2018 when it submitted notices of withdrawal to Peak RC. The reasoning behind selecting SPP as RC for the majority of balancing authorities is both strategic and tactical. From a tactical perspective, WACM and WALC have integrated their functional elements, tools, processes and procedures, which means they operate as a single power operations organization and provide redundant back-up services in case of contingencies. Transitioning to the same RC will support the continued safety, security and reliability of the bulk electric system operations within the BAs. Strategically, WAPA anticipates organized electricity markets developing in the West. Upper Great Plains' eastern interconnection facilities already receive SPP RC services. Joining the same RC made sense for WAUW, while accepting SPP's RC services for WACM and WALC preserves and facilitates options for the potential development of a future organized electricity market in the West.

SN, as a transmission operator within a BA that selected CAISO as its future RC provider, is required by NERC to have only one RC. To comply with the NERC requirements, SN must follow its BA's selection.



The RC oversees transmission operations and potential areas of congestion or instability across multiple BAs or transmission operators within a geographic region.

Electric Power Training Center trains people who keep lights on

WAPA's Electric Power Training Center is known in the industry as a one-of-a-kind facility dedicated to providing high-quality training on the principles and operation of power generation and transmission systems. Classroom presentations are coupled with hands-on training to prepare students for situations and challenges they will face on the job.

The value of this comprehensive training is evident to an electric utility industry facing short- and long-term challenges. This is reflected not only in the number of students who attend classes, but in the organizations partnering with EPTC to present tailored courses and meetings.

The EPTC also adds value to WAPA by working with Denver Public Schools to introduce students to possible careers in the electricity industry.

The EPTC purchased a new lab volt system in 2018, which provides comprehensive, hands-on instruction in AC and DC fundamentals, magnetism and electromagnetism, and motor/generator theory. Equipped with computer-based data acquisition, the lab volt system is designed to deliver training that a skilled workforce needs to keep power flowing in the West.

In FY 2018 the EPTC
presented
35 classes
reaching
422 students
and hosted
94 meetings
adding
\$146,000
in value



A night-time photograph of the Hoover Dam, showing its massive concrete structure and two prominent cylindrical towers illuminated from within. The dam is set against a dark, rocky canyon backdrop, with some lights visible on the upper levels and surrounding infrastructure.

Hoover hydro reaches new customers

As of Oct. 2, 2017, 58 new electric service allottees started reaping the benefits of Hoover Dam's federal hydropower. The new allottees, 23 of which are Native American tribes, join 15 existing customers who have been receiving power from Hoover Dam for the past eight decades. The new 50-year contracts widen the reach of hydroelectric power generated from Hoover Dam to a total of 73 allottees. For more than 80 years, the Boulder Canyon Project has delivered hydropower from Hoover Dam to customers in southern Nevada, Arizona and Southern California. WAPA's Desert Southwest region markets and transmits the power generated from Hoover Dam. This nine-year remarketing effort was made possible by the collaborative work of many WAPA employees from programs such as Power Marketing, Settlements, Energy Management and Marketing, Transmission, Information Technology, Cyber Security, Operations, Finance, General Counsel and more.



Hardening Against Physical and Cyber Threats

One of the most significant challenges facing the energy industry is the targeting of electrical infrastructure by those wishing to disrupt the economy and society. WAPA continues to focus on safeguarding its valuable assets and mitigating risk to the entire system by working closely with its industry counterparts to collaborate on threat information, response and recovery planning and threat mitigation strategies. WAPA and its partners will continue to work together to identify leading practices, efficient deployment of security resources and, where possible, share in the costs of safeguarding the grid.

Pursuing cybersecurity excellence protects IT assets

The need for sophisticated measures to protect information technology infrastructure has never been greater. In 2018, federal partners verified more than 20,000 threats to the government and industry that required research by WAPA's Cyber Security staff. WAPA's Security Information and Event Management, or SIEM, tools generated more than 10,000 events of interest—suspicious activity on WAPA's system—that Cyber Security had to investigate. With the help of a 2018 upgrade to the SIEM tools, more than 97 percent of these events were closed in only two days.

Noteworthy accomplishments include:

- Installing a new tool to capture and analyze security control data, which enabled Cyber Security to perform continuous diagnostics and mitigation on the systems
- Partnering with the Department of Energy on programs such as the DOE-wide Integrated Joint Cybersecurity Coordination Center, which allows WAPA to leverage federal resources
- Participating in cybersecurity assessments conducted by the DOE Offices of Enterprise Assessment and Inspector General

Keeping the system reliable and secure while meeting federal standards is integral to the service WAPA provides to its customers. WAPA continues to take the path of due diligence, investing in and refining its cybersecurity capabilities.

Keeping
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Securing a strong nation through reliable, redundant power supply

One key factor in national security is safeguarding the energy supply of military installations, national laboratories and other critical facilities. Through long-term, at-cost power contracts, WAPA provides a steady stream of reliable and renewable energy to these facilities. Its extensive transmission system is capable of withstanding multiple line outages without major interruptions in service. In addition to maintaining its existing assets, WAPA has embarked on a number of projects to improve redundancy and resilience in its territory. The proposed five-mile Beale Air Force Base Interconnection Line project in northern California will add infrastructure to deliver power to Beale AFB, improving reliable, redundant and resilient power delivery to this critical installation. In Fiscal Year 2018, WAPA completed project scoping for the three route alternatives under the National Environmental Policy Act.

Preparation protects critical infrastructure

The Office of Security and Emergency Management is a mission enabler for WAPA, providing security and emergency management, operational support and program management. By integrating regional efforts and emphasizing a culture of compliance and risk-based solutions, WAPA's security program continues to make significant strides in these areas.

Working with regional stakeholders, WAPA has implemented security countermeasures across the organization, from fence repairs and signage to security surveillance systems. In Fiscal Year 2018, OSEM completed 75 assessments on substations, including reoccurring assessments of WAPA's Critical Infrastructure Protection-014 sites. WAPA also awarded a security integration contract to assist with security upgrade projects. Some of the upgrades include video surveillance, access control and intrusion detection.

Insider threats pose a serious risk to government agencies due to the insider's specialized knowledge of organizational processes and access to critical assets. WAPA has taken several actions to help mitigate potential harm to employees and damage to assets. Human Resources' robust screening process for all new hires helps ensure applicants are suitable for federal employment.

Emergency Management continues to train WAPA staff to prepare and respond to emergencies and disasters. In FY 2018, they completed an after-action report and a corrective-action plan for the active shooter drill performed at Headquarters in 2017. During the Carr Fire in Redding, California, they stood up the Headquarters and Folsom Emergency Operations Centers to provide support to state personnel.

WAPA awarded a security integration contract to assist with security upgrade projects including video surveillance, access control and intrusion detection.



GridEx helps WAPA prepare for the worst

On Nov. 15 and 16, 2017, WAPA participated in GridEx IV, a North American Electric Reliability Corporation initiative involving utilities and other industry organizations across the country.

GridEx is a biennial, unclassified public-private exercise designed to simulate coordinated cyber and physical attacks with operational impact on electric and other critical infrastructures across North America to improve security, resilience and reliability. This exercise is conducted in a no-fault environment, meaning there is no regulatory or compliance risk to participants.

Participants faced simulations of malware infestations, physical attacks on regional facilities and a hostage situation at Headquarters. Administrator and CEO Mark A. Gabriel participated in a tabletop discussion for industry executives and senior government officials in Washington, D.C., where he was able to observe WAPA's response.

Participants took part in the event from their regular work locations, responding to the simulated crises over the course of two consecutive days. WAPA's standard day-to-day operations continued around them as GridEx participants handled a stream of issues, obstacles and complications.

GridEx is designed to provide an opportunity for organizations to learn how prepared they are to respond to and recover from attacks. Custom news reports, simulated social media posts and calls from actors posing as members of the media allowed participants to practice fielding responses through many channels at once.

GridEx provided a valuable experience, allowing WAPA to identify and address any potential weaknesses and further harden itself against any kind of threat.

GridEx is designed to provide an opportunity for organizations to learn how prepared they are to respond to and recover from threats.

Technology Symposium explores cyber, physical issues

Knowing that the security of the nation's transmission infrastructure is of concern to every power provider, WAPA hosted the Technology and Security Symposium for customers at its Lakewood, Colorado, Headquarters, Aug. 21.

The daylong event gave WAPA power customers the opportunity to hear from industry leaders about issues surrounding cyber and physical threats to the grid. Attendees came from 23 utilities, national laboratories and other government organizations, industry associations and security technology companies.

The agenda was divided into three sections—asset management, protecting physical assets and protecting cyber assets—with panelists representing WAPA, the utility industry and the security industry.

WAPA managers focused on steps the organization is taking to protect its physical and cyber infrastructure and the role asset management plays in meeting the challenge. Subject matter experts from the Department of Energy, the Electric Power Research Institute and cybersecurity firm Dragos Inc. detailed potential threats to the grid and suggested leading practices utilities could adopt to deal with them. WAPA customers Basin Electric Power Cooperative and Nebraska Public Power District shared lessons learned as well as their approaches to threat assessment and hardening assets.

The strongest theme that emerged from the event is that information sharing between all stakeholders is critical to security efforts.



DOE dignitaries tour WAPA, exchange IT info

A number of high-ranking representatives from the Department of Energy took time out of their busy schedules to visit and tour WAPA facilities.

On Oct. 4, 2017, DOE Deputy Secretary Dan Brouillette joined WAPA employees for a special All-Employee Meeting.

The centerpiece of the meeting was an extended question-and-answer session, during which Brouillette fielded questions from WAPA employees. Topics included the future of the energy industry and the need for vigilant cybersecurity.

On Dec. 15, 2017, WAPA welcomed DOE Office of Electricity Assistant Secretary Bruce J. Walker and Chief Information Officer Max Everett. This was an opportunity for WAPA and DOE staff to discuss information technology-related matters and initiatives. Topics included technology priorities, the Federal Information Technology Acquisition Reform Act, the Federal Information Security Management Act, privacy, records management, cybersecurity and more.





Investing in Assets

With more than 177,000 structures and 300 substations, it is imperative WAPA makes the right investments, at the right times and in the right places to amplify the value of its maintenance and capital efforts. In Fiscal Year 2018, WAPA focused on further leveraging available information to make data-driven decisions and maximize the value of the enterprise's assets. Consistent with this administration's emphasis on the importance and value of public-private partnerships to revitalizing the nation's infrastructure, WAPA has engaged in such partnerships to strengthen and modernize the grid. These efforts result in increased reliability and resilience.

Regions come together to replace 160 structures

Between Jan. 29 and Feb. 16, more than 40 linemen from the Desert Southwest, Rocky Mountain and Upper Great Plains regions replaced about 160 structures along the 22-mile Goldmine Tap-to-Knob 161-kilovolt transmission line segment outside Yuma, Arizona.

The line had reached the end of its useful service life and needed to be replaced. Crews will replace an additional 40 miles of the Blythe-to-Knob 161-kV line over the course of the next several years.

Unique to this job was the inclusion of UGP's self-contained, self-loading pole haulers, which are vehicles that require only two people to distribute and collect poles instead of five. The pole hauler has a grapple-arm crane, which saves a good deal of manual labor and speeds up the process significantly.

This massive job was completed on time and with zero injuries.

40
linemen
from
3
regions
replaced
160
structures



Asset Management makes right investments at right time

WAPA continued its investment in Asset Management through Fiscal Year 2018 and is now focusing on what needs to be done in terms of maintenance, managing assets and ensuring the right investments are made at the right time.

A critical component of the effort is making sure WAPA has the right tools to capture necessary asset data, down to individual components on equipment such as circuit breakers. To this end, WAPA completed an upgrade of Maximo, the primary tool used to capture transmission asset health and condition.

The upgrade brings improved usability and flexibility, and was completed under budget. More than 50 employees from 19 offices assisted with the upgrade.

The Asset Management effort also involves the development of a transformer-sparing strategy in anticipation of potential high-impact, low-frequency events, such as widespread disaster or targeted attacks. WAPA drafted a transformer-sparing strategy to mitigate the effects of these events and kicked off the effort Aug. 22.

More than
50
employees from
19
offices assisted
with the upgrade.

IT, Maintenance partner for asset inventory

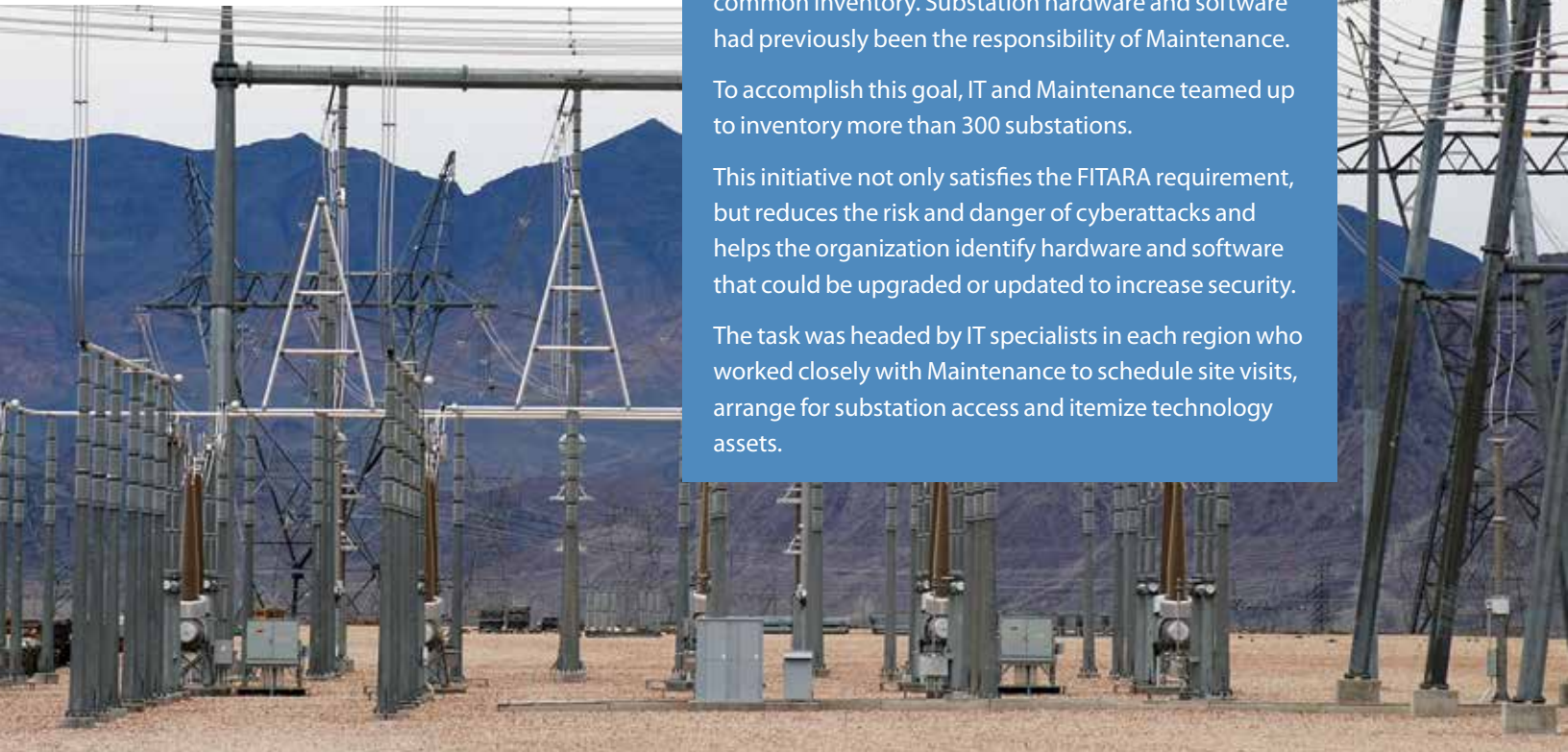
Beginning in 2017, Information Technology and Maintenance teamed up to complete an extensive inventory of substation assets in WAPA's 15-state service territory.

The Federal IT Acquisition Reform Act of 2014 placed the responsibility for these assets under the purview of the chief information officer, which meant there was an opportunity to unify WAPA's technology under a common inventory. Substation hardware and software had previously been the responsibility of Maintenance.

To accomplish this goal, IT and Maintenance teamed up to inventory more than 300 substations.

This initiative not only satisfies the FITARA requirement, but reduces the risk and danger of cyberattacks and helps the organization identify hardware and software that could be upgraded or updated to increase security.

The task was headed by IT specialists in each region who worked closely with Maintenance to schedule site visits, arrange for substation access and itemize technology assets.



Asset Management calculates health of 100 percent of transmission lines

The Asset Management team has determined the health index of all transmission lines at 100-kilovolts and higher. This effort involved documenting data points for more than 101,000 structures across WAPA's territory. Before this initiative, the health index of the lines was based on age alone.

In total, the health indices of 500 of 511 transmission lines have been finished and the task is considered 100 percent complete. The 11 remaining lines do not have data available.

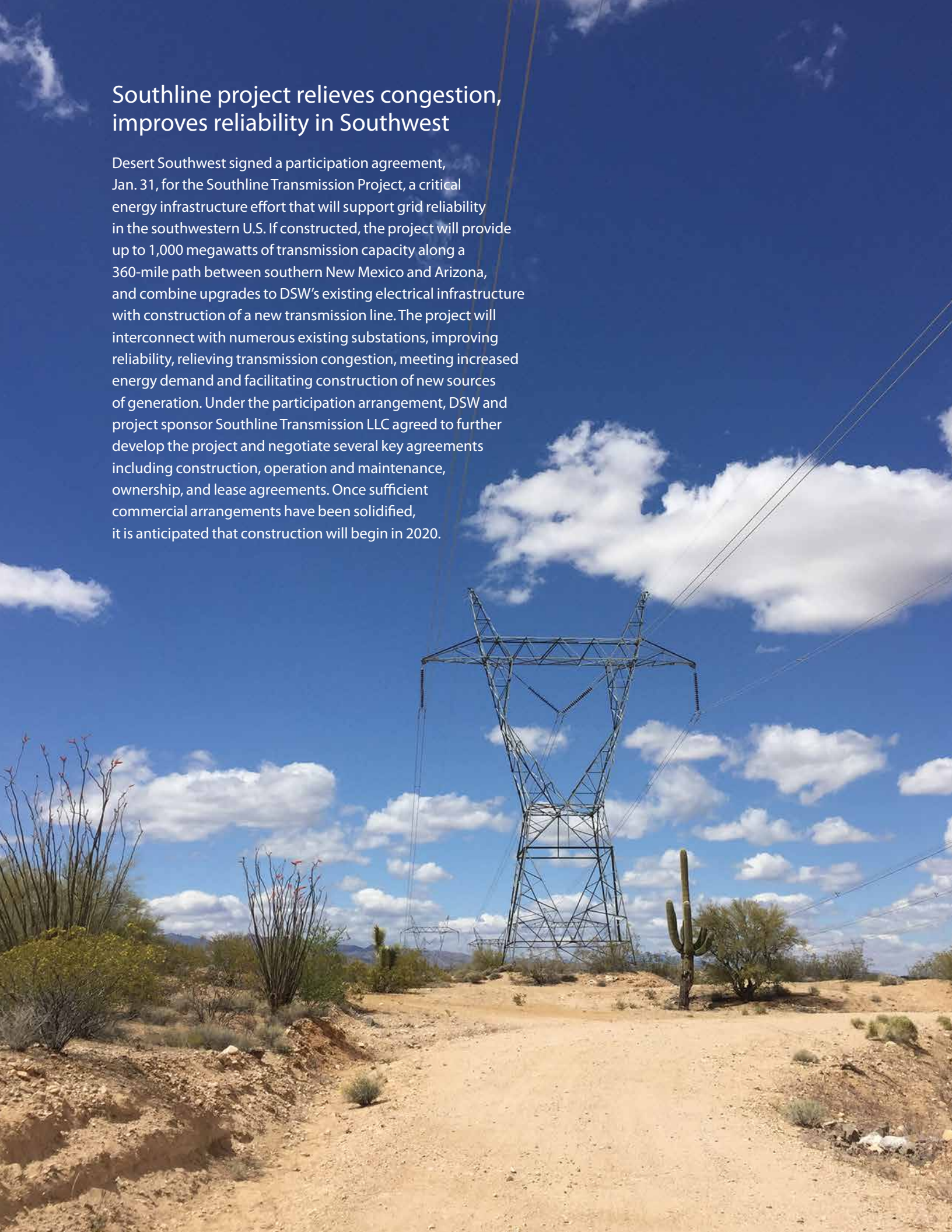
The project was completed nine months ahead of schedule. Its success was aided by close collaboration between Asset Management, Information Technology, Geographic Information Systems, Engineering and Maintenance, who worked together to keep the project on track and running as smoothly as possible.

Using actual line condition factors in assessing line health, WAPA will be able to make better-informed decisions regarding lifecycle maintenance, replacement strategies and use of funding.



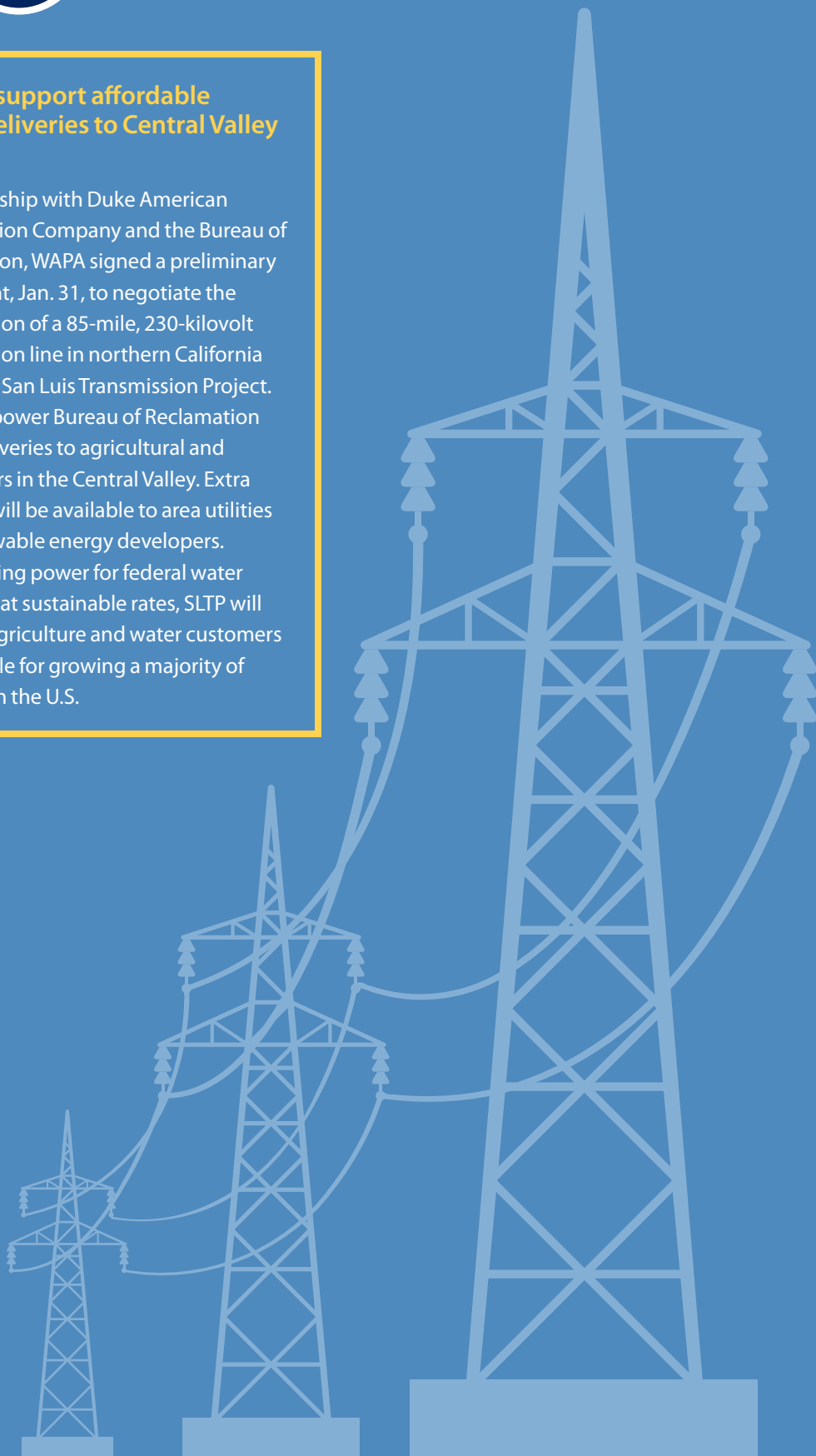
Southline project relieves congestion, improves reliability in Southwest

Desert Southwest signed a participation agreement, Jan. 31, for the Southline Transmission Project, a critical energy infrastructure effort that will support grid reliability in the southwestern U.S. If constructed, the project will provide up to 1,000 megawatts of transmission capacity along a 360-mile path between southern New Mexico and Arizona, and combine upgrades to DSW's existing electrical infrastructure with construction of a new transmission line. The project will interconnect with numerous existing substations, improving reliability, relieving transmission congestion, meeting increased energy demand and facilitating construction of new sources of generation. Under the participation arrangement, DSW and project sponsor Southline Transmission LLC agreed to further develop the project and negotiate several key agreements including construction, operation and maintenance, ownership, and lease agreements. Once sufficient commercial arrangements have been solidified, it is anticipated that construction will begin in 2020.



SLTP to support affordable water deliveries to Central Valley farmers

In partnership with Duke American Transmission Company and the Bureau of Reclamation, WAPA signed a preliminary agreement, Jan. 31, to negotiate the construction of a 85-mile, 230-kilovolt transmission line in northern California called the San Luis Transmission Project. SLTP will power Bureau of Reclamation water deliveries to agricultural and water users in the Central Valley. Extra capacity will be available to area utilities and renewable energy developers. By supplying power for federal water deliveries at sustainable rates, SLTP will support agriculture and water customers responsible for growing a majority of produce in the U.S.





Complying with Regulatory Drivers

As both a government organization and a utility, WAPA faces many regulatory requirements. At WAPA, being compliant is not just an exercise in dotting the Is and crossing the Ts. The organization strives to cultivate a culture of compliance—one that recognizes the spirit of compliance. WAPA's collective compliance efforts ensure it is strengthening the grid. Some of it may seem tedious and much of it requires investment, but all of it is required and important. WAPA will continue to incorporate leading practices and lessons learned to ensure every dollar spent is appropriate and creates value for customers.

Benefitting business by coordinating technology

In FY 2018, WAPA continued working with the Department of Energy to implement the Federal Information Technology Acquisition Reform Act to improve the effectiveness of its procurements. Passed in 2014, FITARA requires organizations to develop a streamlined plan for information technology acquisitions.

To inventory this technology, WAPA's Operations and Maintenance team collaborated with regional maintenance personnel. The team inventoried IT equipment in 146 substations in FY 2018.

WAPA has developed procurement strategies and processes over the years to ensure staff and facilities have the technology they need to do their jobs while maintaining standards and avoiding duplication. Processes like the Technology Acquisition Justification also help DOE meet FITARA requirements by providing transparency and visibility. The TAJ identifies what technology is needed and how it will be connected to the WAPA network. It is vetted by management and the Cyber Security team. This information helps WAPA avoid duplicating technology buys and is also critical to managing supply-chain risk.

Beyond the mandates, FITARA efforts support better business decisions for managing technology in an organized fashion. WAPA continues to seek improvements that facilitate effective maintenance and operation of hardware and software in its data centers, control centers and remote facilities.



In FY 2018,
Information
Technology
received and
processed

727

Technology
Acquisition
Justifications.

Long live the mighty Colorado River

The staff at the Colorado River Storage Project Management Center has been working diligently for decades with dozens of agencies, organizations, recreationalists and scientists to protect and improve the populations of four endangered fish species living in the Colorado River Basin. The humpback chub, razorback sucker, bonytail and Colorado pikeminnow are not found anywhere else in the world outside the basin, which provides essential water and power to communities as well as tourist hotspots for nature lovers, anglers, boaters and more.

Recovery of endangered fish species is an important goal for WAPA for two reasons:

- Respecting the environment is echoed in WAPA's core value to "Respect self, others and the environment."
- Conservation activities limit hydropower operations.

Historically and through the end of Fiscal Year 2018, power revenues collected from the sale of CRSP hydropower have been transferred to the Bureau of Reclamation to fund nearly 100 percent of multiple fish recovery programs, including the Upper Colorado River Endangered Fish Recovery Program, San Juan Recovery Implementation Program and Glen Canyon Dam Adaptive Management Work Group. WAPA's fish biologists and leadership take a proactive role in the recovery programs and experiments to preserve both the value of WAPA's hydropower and the Colorado River ecosystem for the enjoyment of generations to come.

Fish swims away from endangered status

In April, the Fish and Wildlife Service announced that the humpback chub may find



its classification downlisted from endangered to threatened within the next year. A member of the original endangered species list in 1967, the humpback chub demonstrates that progress can be made in recovering endangered species when different stakeholders commit to working together for a common goal.

Bugging out for fish

CRSP MC and the Glen Canyon Adaptive Management Work Group also embarked on the first experiment to be conducted under the Long-Term Experimental and Management Plan Environmental Impact Statement. The experiment, which took place between May and August, was designed to increase the aquatic food supply for fish. Nicknamed "bug flows," Glen Canyon Dam releases were kept steady on weekends during the summer to help stabilize nearshore habitats for bugs. These flows are intended help insects complete their lifecycles and reach maturity in greater numbers, providing lots of food for fish.

If successful, scientists should find greater insect populations and diversity, which should lead to plumper, healthier fish. CRSP MC and preference power customers actively worked with other members of the Glen Canyon Dam AMWG to develop a bug-flow experiment with limited impact to hydropower. These bug flows cost WAPA about \$335,000 in purchase power costs, which is far less than alternative bug-flow designs that were proposed during the development of the experiment.

Rocky Mountain region prepares to show compliance

Every three years, each of WAPA's regions undergoes a Western Electric Coordinating Council audit to determine how it is complying with North American Electric Reliability Corporation Reliability Standards. WAPA's Rocky Mountain region was scheduled for its audit in 2018. To prepare for the event, the office conducted a mock audit six months before.

Although there is no guarantee the audit team will investigate the same standards as the mock team, the exercise helps participants identify areas that could create problems during the WECC audit—such as missing evidence, difficult-to-produce reports, difficult interview questions—and focuses on improving them.

The audit of the Rocky Mountain region went smoothly, due in no small part to careful preparation. WECC auditors identified seven issues, including two that were uncovered in the mock audit. WAPA addressed those issues and continues to monitor them, demonstrating its ongoing commitment to a culture of compliance.

MOCK AUDIT TEAM

issued
62
data requests and
24
interview requests
and conducted
3
tours

WECC AUDIT

issued
53
data requests and
18
interview requests
and conducted
2
tours

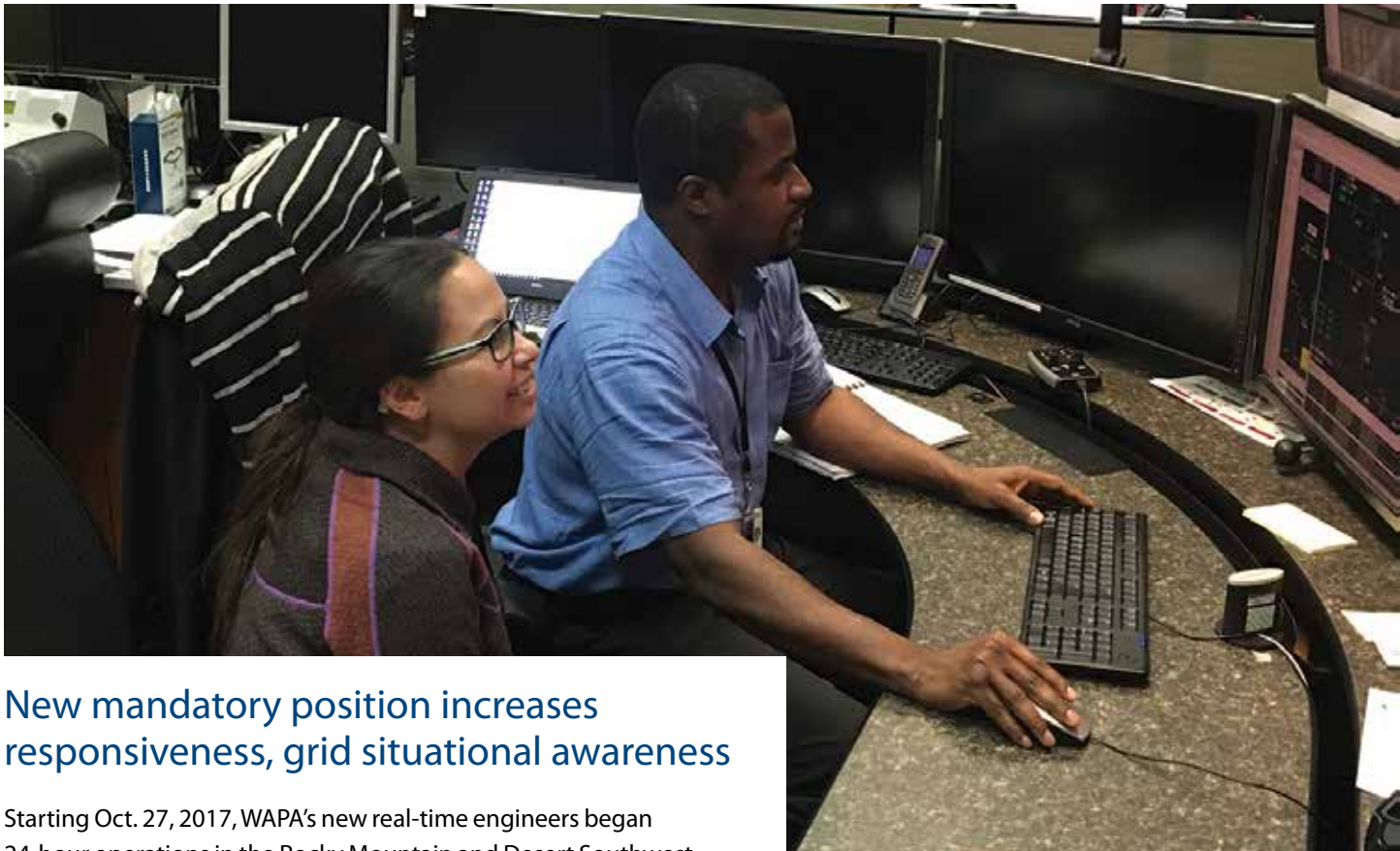
The new
system will
facilitate
improved
consistency in
the labeling
and retention
of records.

WAPA makes strides toward digital future

WAPA, like all executive branch organizations, must comply with the National Archives and Records Administration mandate to implement electronic records management systems, or ERMS, by Dec. 31, 2019.

WAPA procured its ERMS, Sept. 24, paving the way to eventually retire three existing systems. The new system will facilitate improved consistency in the labeling and retention of records. Implementing the new system not only meets several target areas of WAPA's Strategic Roadmap, but demonstrates the organization's commitment to innovation and keeping pace with industry advancements.

Beyond compliance, WAPA recognizes the value the ERMS will add by further streamlining processes and improving the efficiency of retrieving information across all areas of the enterprise.



New mandatory position increases responsiveness, grid situational awareness

Starting Oct. 27, 2017, WAPA's new real-time engineers began 24-hour operations in the Rocky Mountain and Desert Southwest power system operations centers, the result of a North American Electric Reliability Corporation reliability standard that required a real-time assessment of the power system every 30 minutes.

To assure situational awareness, the nation's power system operations centers are required to predict and prepare for a spectrum of contingencies in the bulk electric system every half hour. Under NERC reliability standards, the grid must be able to withstand any contingency without exceeding system operating limits.

In the two years between NERC issuing the standard and its effective date, WAPA needed to hire and train the real-time engineers. As there were not many existing people with the appropriate qualifications, WAPA decided to train experienced electrical engineers to fill the role.

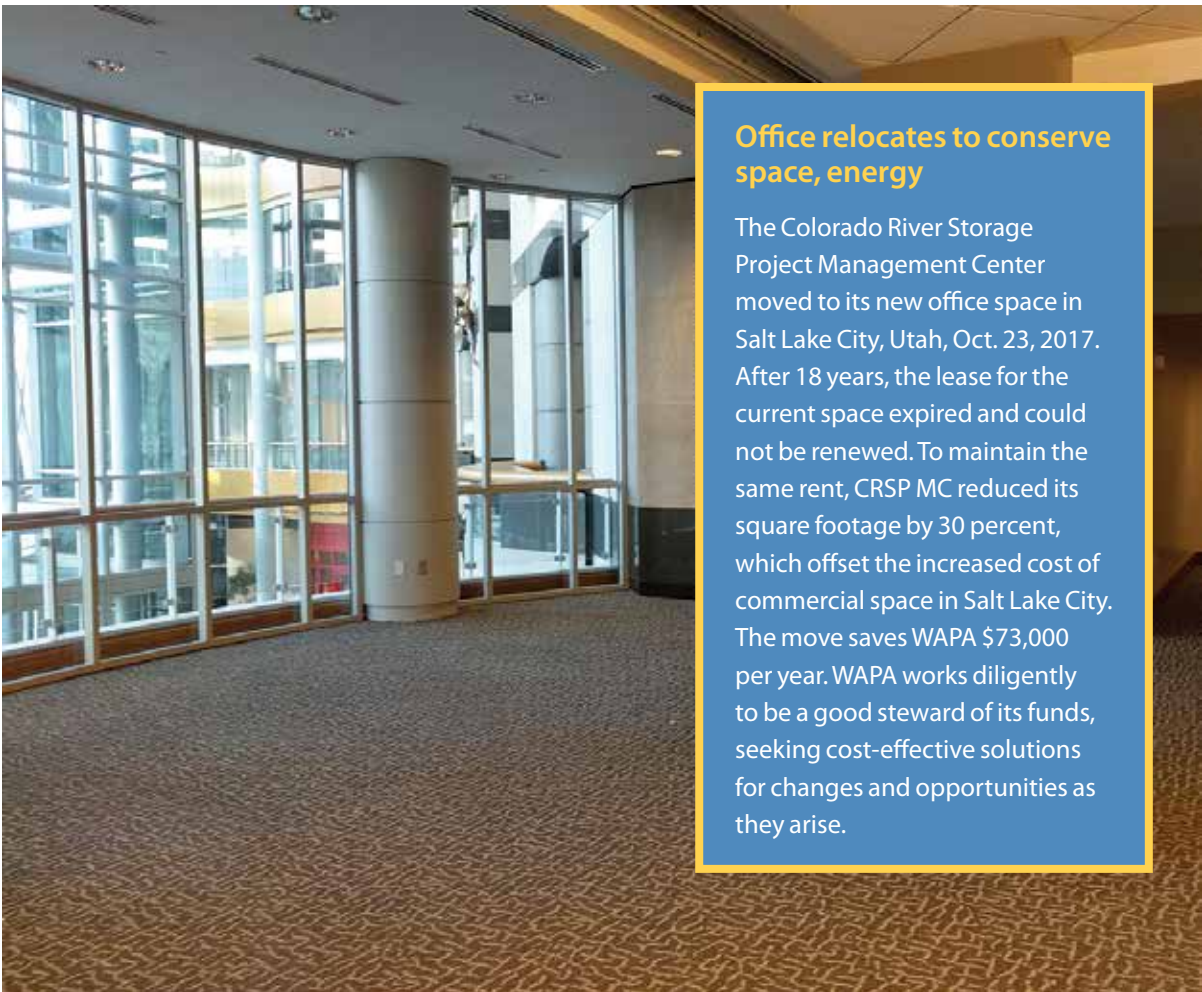
In addition to performing real-time analysis, the engineers also needed to be skilled in current-day and next-day studies and be certified as NERC Reliability Coordinator System Operators, which took more than 3,000 hours of on-the-job and classroom training per engineer.

WAPA is fully compliant with the standard, and the two operations centers provide full backup support for each other, improving the resilience and redundancy of WAPA's grid operations in the central and Western U.S.

Added value

Beyond compliance, WAPA is exploring additional opportunities to leverage real-time engineers. In Fiscal Year 2018, they began administering the Unscheduled Flow Mitigation plan for WAPA, which increased system reliability and brought cost savings. They have also been able to more accurately identify the need for and minimize the impacts of transmission sales curtailment, phase shifter movements and generation re-dispatch. This work resulted in significantly reduced use of WAPA and customer equipment.

SPOTLIGHT ON VALUE



Office relocates to conserve space, energy

The Colorado River Storage Project Management Center moved to its new office space in Salt Lake City, Utah, Oct. 23, 2017. After 18 years, the lease for the current space expired and could not be renewed. To maintain the same rent, CRSP MC reduced its square footage by 30 percent, which offset the increased cost of commercial space in Salt Lake City. The move saves WAPA \$73,000 per year. WAPA works diligently to be a good steward of its funds, seeking cost-effective solutions for changes and opportunities as they arise.



Improving Organizational Alignment

WAPA recognizes the gravity of executing its critical mission. To ensure the organization is increasing efficiency and reducing costs wherever possible, WAPA has multiple programs dedicated to monitoring, evaluating and improving its processes and activities. WAPA leverages leading practices and lessons learned to ensure every dollar spent creates value. Even in light of new regulations and requirements, WAPA works to contain both costs and staffing levels. This is possible largely due to the organization's culture of innovation, which is lauded in the core value "Be curious, learn more, do better."

Single tool automates repayments, rates for 15 power systems

After two years of hard work and collaboration by multiple groups, WAPA completed the Power Repayment Study project on time and within budget and scope in Fiscal Year 2018. The PRS project consolidated two legacy platforms into one commercial off-the-shelf software solution that will assist WAPA with transparency and streamline efforts to complete regulatory filings, congressional briefing papers and Department of Energy reporting.

Transitioning to a single solution that is reliable, available and easily maintained will allow staff to focus on analyzing repayment options to keep rates low and is consistent with sound business principles.

WAPA uses the PRS platform to capture and forecast multiagency financial and operational information for 15 separate power systems. The PRS contains studies for each power system that calculate rates and track WAPA's repayment obligations to the Treasury and other nonfederal entities.

The software solution accommodates nearly 400 requirements for multiple and complex repayment and rate methodologies used in WAPA's projects.



New office adopts WAPA's administrative operations, programs

Following industry leading practices, WAPA proposed splitting the programs and activities within the large and complex Office of Chief Operating Officer in two, creating the Office of the Chief Administrative Officer. WAPA's first CAO, Tracey LeBeau, was selected to manage the new office, April 15. LeBeau is responsible for WAPA's internal administrative operations and managing administrative programs functionally critical to WAPA's mission, most of which were formerly in the OCOO.

The Department of Energy approved transitioning Natural Resources, Procurement, Human Resources, Records Management, Facilities Management, the Transmission Infrastructure Program and the Office of Economic Impact and Diversity into the OCAO in September. These changes will take effect in early Fiscal Year 2019.

I2T Summit spotlights culture of innovation

WAPA held its third annual Inclusion, Innovation and Technology Summit, July 17, at the Rocky Mountain regional office in Loveland, Colorado. Its theme, “Creating a Culture of Innovation,” is of paramount importance to WAPA and its leadership.

The focus was on encouraging and sustaining a larger atmosphere of innovation within the organization.

Speakers included Department of Energy Office of Electricity Assistant Secretary Bruce J. Walker, who discussed his deep commitment to inclusion, and American Public Power Association President and CEO Sue Kelly, who spoke about the crucial nature of innovation in an evolving industry.

Attendees also broke into teams and participated in an innovation challenge, during which they worked together to propose innovative solutions to real-world issues facing WAPA. These multidisciplinary teams served as prime examples of WAPA’s organizational alignment, working together across programs to move forward and discover innovative approaches to solving actual problems.

These multidisciplinary teams served as prime examples of WAPA’s organizational alignment, working together across programs to move forward and discover innovative approaches to solving actual problems.



Program assessment shows strength, room for improvement

WAPA formed a cross-functional Assessment Team in 2017 to evaluate various programs with the goal of improving business processes and appropriately allocating resources for current and future priorities.

The team examined programs for results, cost effectiveness and whether they continued to meet the needs of the organization. WAPA's Energy Services program, Equipment Loan Program and the Continuous Process Improvement program were evaluated. The Assessment Team interviewed employees and surveyed WAPA senior leaders and other stakeholders to determine the effectiveness of these efforts in fulfilling WAPA's mission and meeting customers' needs.

The team observed that the Equipment Loan Program had served its purpose and recommended closing the program. The decision to phase out the program avoids about \$177,000 in costs.

The CPI program is being continued. Unrelated to the assessment, but to further organizational alignment, it moved from the Office of the Chief Financial Officer to WAPA's Strategy Office in October 2017.

The Assessment Team explored components of the Energy Services program, including the *Energy Services Bulletin*, Integrated Resource Plan program and technical support, along with the Renewable Resources Program. The final recommendations are expected in the first quarter of 2019.

Ongoing self-evaluation through efforts like the CPI program and the Assessment Team encourage organizational excellence by ensuring new and existing WAPA programs deliver value to customers.

The decision
to phase
out the
Equipment
Loan Program
avoids about
\$177,000
in costs.



DOE reorganization puts WAPA in good company

Under Executive Order Comprehensive Plan for Reorganizing the Executive Branch, Secretary of Energy Rick Perry announced a change in the reporting structure of the power marketing administrations, May 3.

The realignment placed WAPA, Bonneville Power Administration, Southwestern Power Administration and Southeastern Power Administration within DOE's Office of Electricity. Historically, WAPA has reported directly to the Deputy Secretary of Energy.

Overseen by Assistant Secretary Bruce J. Walker, OE provides leadership to ensure the nation's energy delivery system is secure, resilient and reliable, which mirrors the missions of the power marketing administrations, or PMAs.

The transition has had little effect on day-to-day business at WAPA. However, in terms of ongoing efforts to protect and modernize the grid, WAPA now benefits from the support of an office with a deep understanding of the utility industry.

OE works to develop new technologies to improve the electricity infrastructure through research, partnerships, facilitation, modeling and analytics. Working within the office provides WAPA and the other PMAs ready access to these resources as they strive to address the challenges of operating within a rapidly changing industry.

WAPA now
benefits from
the support
of an office
with a deep
understanding
of the utility
industry.



Continuing Culture of Improvement

WAPA continues to maximize the value of the services it provides through its Continuous Process Improvement program, which was launched in 2014. Through three different types of projects, employees identify cost-avoidance strategies and streamline operations.

To date, the CPI program has reached a milestone of more than \$70 million in saved or avoided costs. WAPA has certified 22 employees as Green Belts in the Lean Six Sigma methodology.

In Fiscal Year 2018, the CPI program initiated and completed six process mapping workshops. These one-day programs teach the basics of process mapping, document a single process and identify gaps or areas for potential improvements. Additionally, workshops are designed to empower employees to conduct further process mapping activities in their functional areas.

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.

Formal CPI projects completed in FY 2018 span all regions and many functions:

- Maintenance Budget Development
- Monthly Information Technology Spend Plan
- Maintenance Project Prerequisites
- Power System Change Management
- New Time and Attendance Implementation
- Government Purchase Card Invoicing
- Environmental *Federal Register* notices
- Vegetation Management



CPI results for FY 2018

7
Green Belts certified

16
Projects completed

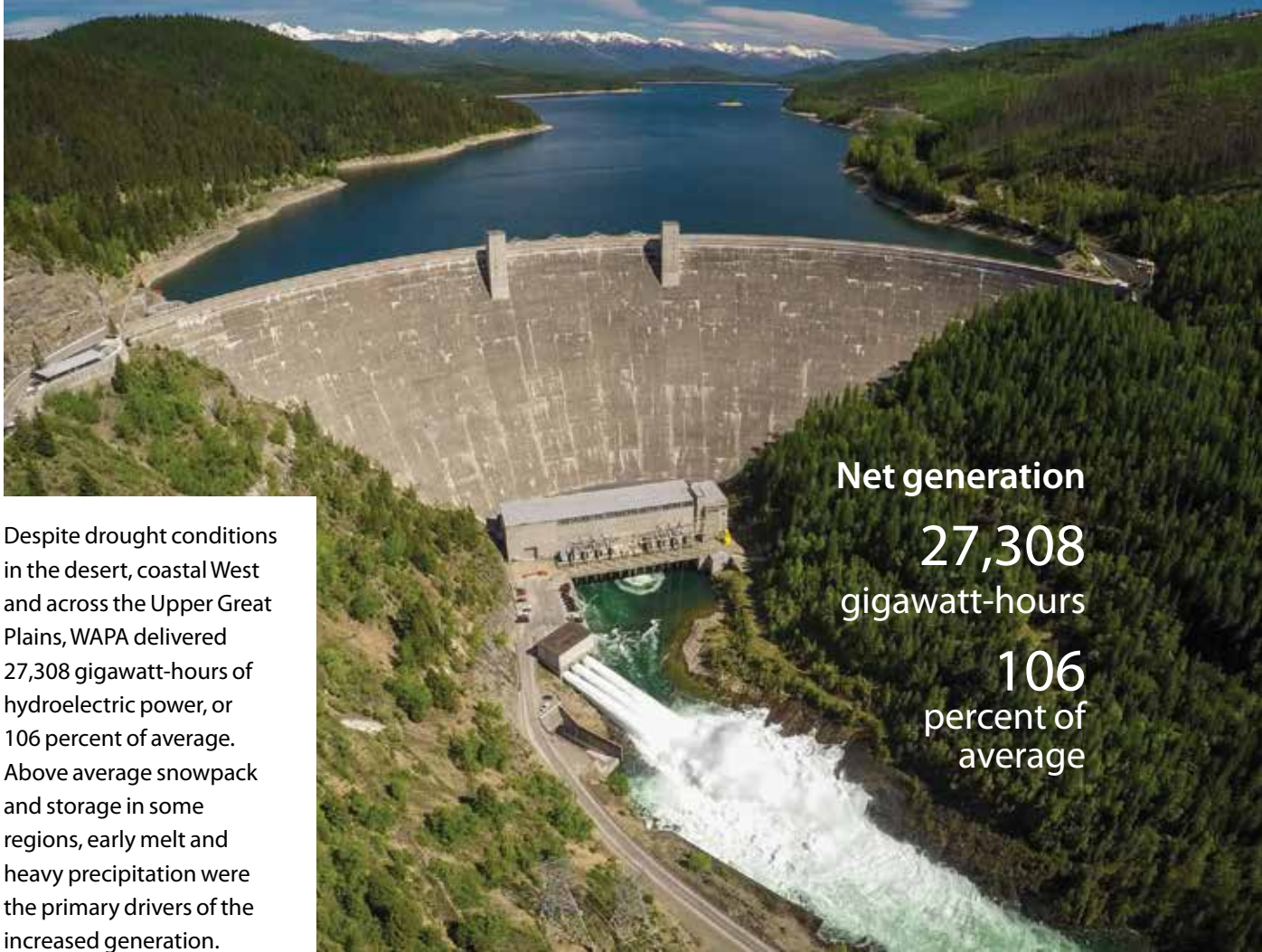
Cost savings
or avoidance
\$17+ million



Value of WAPA

Because of WAPA's focus on keeping pace with industry developments, complying with regulatory drivers, investing in assets, hardening against threats and improving organizational alignment, the organization is not only positioned to continue successfully delivering on its mission, but has the capacity to share its technical expertise and support other utilities in times of crisis. The hydropower WAPA markets and the infrastructure that delivers it provide unparalleled value to customers and citizens. When customers partner with WAPA, they know they will benefit from the value of federal hydropower, but many may not realize the benefits they will reap from the value of federal partnership as well.

Value of federal hydropower



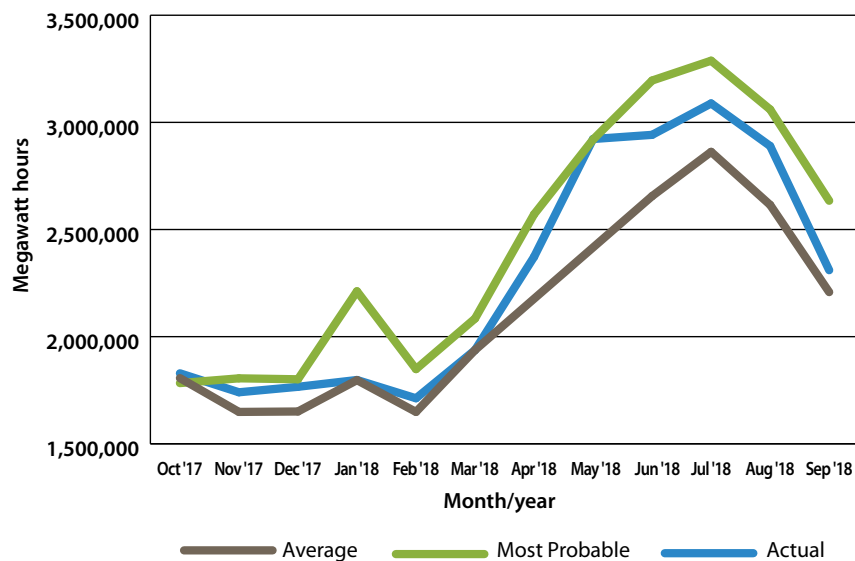
Despite drought conditions in the desert, coastal West and across the Upper Great Plains, WAPA delivered 27,308 gigawatt-hours of hydroelectric power, or 106 percent of average. Above average snowpack and storage in some regions, early melt and heavy precipitation were the primary drivers of the increased generation.

Net generation

27,308
gigawatt-hours

106
percent of
average

Water Year 2018
Hydropower Generation
Average vs. Most probable vs. Actual



80 percent of customers experience lower, stable power rates

In Fiscal Year 2018, nearly 80 percent of WAPA's customers experienced stable or decreased rates.

Starting Jan. 1, WAPA's Pick-Sloan Missouri River Basin Program—Eastern Division experienced a 15-percent decrease in its composite rate, and customers with Loveland Area Projects contracts saw a 14-percent decrease. This was the second consecutive year that rates dropped for the two projects, which make up nearly 50 percent of WAPA's customers across nine states. These customers are expected to save \$40 million annually due to the rate decrease.

The Salt Lake City Area/Integrated Projects maintained its current rate for the ninth straight year, helping 20 percent of WAPA's customers keep their wholesale costs low for consumers.

In Sierra Nevada, the Bureau of Reclamation applied a \$10 million credit to Central Valley Project repayment from the CVP Improvement Act environmental costs. SN applied this credit directly to the CVP revenue requirement in April, resulting in a decreased derived power rate that was estimated at 25 percent below the annual average market price and 13 percent lower than the existing rate for CVP hydropower.

Finally, litigation surrounding the 2000-2001 California Energy Crisis was settled in FY 2018. WAPA received a final settlement of about \$16 million to resolve all outstanding claims related to energy transactions in the California Independent System Operator and California Power Exchange markets. WAPA returned the money, including interest, to affected SN customers through a prorata distribution. Money owed to the Colorado River Storage Project was deposited into the Basin Fund. For 17 years WAPA's Office of General Counsel worked to resolve this litigation and worked closely with Bonneville Power Administration and the Department of Justice to develop a legally sufficient and advantageous settlement agreement with the plaintiffs.



Crews restore power during historic blaze

The sixth-most-destructive wildfire in California's history began July 23 when a trailer's rim scraped the asphalt, sending sparks into a patch of dry brush. It grew into the Carr Fire, which was declared a national disaster Aug. 4. The blaze rapidly threatened many transmission lines and customers in the Sierra Nevada region.

In total, 15 WAPA customer transmission lines were taken out of service, an unprecedented amount in SN history. Craft, technical and support personnel across the organization participated in the response efforts.

Responders took action in a number of ways. The Dispatch team in Folsom de-energized transmission lines, allowing firefighters and crews to work safely.

Electricians traveled to various substations to perform manual switching after remote access was lost. Crews transported a diesel generator from Maxwell Substation to Weaverville, a four-hour journey, to provide service to a customer.

Much of this work and more was done in conjunction with the Bureau of Reclamation. WAPA also worked with the City of Redding Electric on vegetation management, which was successful in slowing the progress of the fire and allowing residents more time to evacuate.

Many of WAPA's responders have been affected directly by the tragedy, with a number of them being evacuated and even losing their homes to the blaze.



Acres affected
229,651
Damages
\$1.6 billion
Homes destroyed
1,000+



Employees deploy for volcano relief

Three of WAPA's Emergency Support Function #12 employees deployed to assist in disaster relief and power restoration after Hawaii's volcano Kilauea began a massive series of eruptions that discharged more than 30 billion gallons of lava, destroying around 700 homes in addition to businesses and property in the path of the flow.

The tragedy began May 3. A number of towns and other areas lost power due to lava flows and melting transmission lines, and the 38-megawatt Puna Geothermal Facility Venture had to be taken entirely offline. Diesel-fueled generators helped offset the generation shortfall.

Two of the ESF-12 employees traveled to the island to work with state and federal emergency support as well as officials from the Hawaiian Electric Company. They also worked with the Federal Emergency Management Agency's National Incident Management Assistance Team, the Department of Homeland Security's Protective Security Advisors and the Hawaii County Civil Defense. The third employee deployed to FEMA's office in Oakland, California, to monitor the situation.

People told to evacuate
2,000

Square miles affected
9.2

Acres of new land created
260



WAPA helps restore power after hurricanes

In September 2017, Category 5 Hurricane Irma and Category 4 Hurricane Maria struck the U.S. Virgin Islands and Puerto Rico. WAPA's response, which happened with an immediacy that drew praise from Department of Energy Secretary Rick Perry, continued well into this fiscal year.

Around 50 employees deployed for WAPA's first assignment outside the continental U.S., and crews worked closely with Federal Emergency Management Agency, the DOE and the entire federal family to help the Virgin Islands Water and Power Authority restore power.

Funded through a mission assignment from FEMA, WAPA crews worked seven days a week, from sunrise to sunset, giving priority to restoring power to vital services such as hospitals and other urgent facilities.

The responders reached an important milestone in their restoration efforts, Oct. 20, when they finished restringing the conductor on the 34.5-kilovolt transmission line between the TuTu and East End substations. This made it possible for the 34.5-kV submarine line, which transmits power from the St. Thomas powerplant to St. John, to be re-energized.

On Oct. 24, WAPA dispatched five engineers to Puerto Rico to support FEMA and the Army Corps of Engineers in their relief efforts. The engineers assessed substations and participated in coordination and planning meetings to help these organizations understand construction practices and power system equipment and materials.

WAPA's line workers completed their deployment Nov. 29 with 40 percent of the power system restored, energizing more than 20,000 residents who had been without power for around three months.

WAPA hosted a lessons-learned and recognition event Jan. 25, 2018, spotlighting the dedicated employees who assisted in power restoration.



FY 2018 Operational Highlights

The value of WAPA shows up in the service it provides to customers, in the reliability and resilience of its operations, and in its organizational agility. WAPA's mission, Strategic Roadmap and core values drive day-to-day decisions, which lead to progress across the organization and results for customers. Through streamlined processes, increased transparency, continued collaboration, investment in its people, and innovation, WAPA saw great accomplishments in Fiscal Year 2018. The following are just a few of the ways WAPA delivered on its mission and provided value this past year.

WAPA refreshes core values

In the year leading up to its 40th anniversary, WAPA refreshed its core values, which had been in place since 1993. Although the values had served the organization well, a new generation of employees prompted WAPA to take a closer look and allow employees across the organization an opportunity to influence the update. As the organization continues to navigate unprecedented change, the refreshed core values help drive business decisions and customer service. These core values confirm WAPA's commitment to its customers, stakeholders, partners and the public.

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. Active listening is the first step in effective communication. Communications must be honest, transparent and consistent.

Seek. Share. Partner.

We value partnership and actively engage others in the seeking and sharing of ideas. We share 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 our dealings with all things.

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 the progress we make in order 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 do not take our service for granted and we work hard to ensure other Americans know and understand the importance of our mission.



Potential impact of
unplanned outages
on WAPA's power
marketing activities
\$1,000,000 per day

Cost of solution
\$56,000

Biologists solve substation birdemic

For more than 13 years, as many as 10,000 invasive European starlings roosted overnight between October and April in Maxwell Substation's capacitor banks, causing dozens of outages and creating a health hazard.

Rain washed their droppings into the insulators, increasing the potential for damage. Annually, WAPA performs planned outages to clean the equipment, posing a health hazard as employees are exposed to the bird excrement.

In 2012, about 400 starlings were killed when their droppings caused a flashover that destroyed equipment and resulted in an unplanned outage.

Sierra Nevada biologists tried several different methods of repelling the starlings and ultimately discovered methyl anthranilate, a food-grade, FDA-approved chemical derivative that is safe for people, animals and equipment. Its grape-like scent is unpleasant to the starlings.

In 2017, misters sprayed the chemical on the substation equipment. The starlings were expected arrive in October, but the fog repelled them. As a result, there were zero bird-related outages in the winter, and the equipment did not require power washing to remove the feces.

The solution came in under budget, avoids lost revenue through potential outages, increases the safety of personnel and reinforces system reliability.



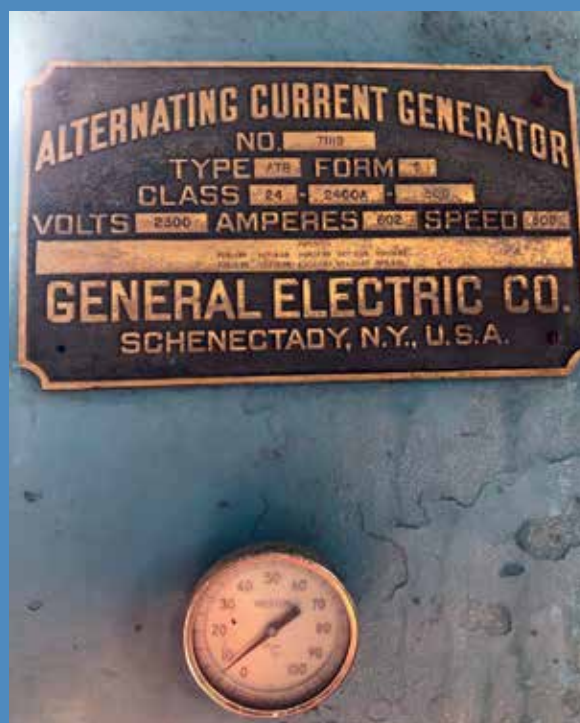


WAPA welcomes 57th hydroelectric powerplant

At a dedication ceremony Sept. 19, WAPA officially welcomed Olmsted Powerplant in Orem, Utah, as the 57th hydropower plant in its system. Olmsted is expected to produce more than 27 million kilowatt-hours of clean, renewable hydropower a year, which is enough to power more than 2,500 homes.

The CRSP Management Center embarked on a public process in 2016 to develop a power marketing plan and power contracts for the new plant that serves seven west Utah counties where more than 2.3 million people live. The project is a “take-all, pay-all” project, which means customers receive a percentage of the generation and are responsible for paying for the same percentage of annual and capital costs.

On Sept. 5, the CRSP MC published its final allocations of power in the *Federal Register*. The Central Utah Water Conservancy District, as operator and financier of the new powerplant, will receive 30 percent of the plant’s output as will Utah Municipal Power Agency in consideration for its efforts in securing the necessary arrangements to deliver the power. The remaining 40 percent was split equally among four existing CRSP MC customers who receive less than 10 percent of their electrical needs from federal hydropower: Lehi, Kaysville, Springville and the Weber Basin Water Conservancy District.





Employee women's group develops professional, interpersonal skills

A new employee organization in Sierra Nevada strives to foster equality and encouragement by providing professional development and personal growth opportunities.

The Women's Employee Resource Group held its inaugural event, Feb. 1, to promote interest and engagement both within the region and across WAPA. The group holds professional and social networking events every other month. WERG's objectives are to:

- Build a culture that fosters innovation, camaraderie and networking
- Offer employees access to leadership and career development opportunities and resources
- Establish programs and activities aligned with the mission of WAPA and SN, including mentorship
- Provide employees opportunities to develop and grow, and provide managers opportunities to access innovative concepts and unique solutions to challenges faced by WAPA and SN



Knowledge Management provides quick training

Knowledge of policies, procedures, processes and institutional history can be lost when experienced employees leave, when resources are not dedicated to documenting information or when employees don't consider the critical details of their work.

WAPA's Knowledge Management project is an effort to address that "brain drain." Launched in 2017, the Knowledge Management Resource Center has grown steadily and now contains 130 assets—including videos, documents, PowerPoint presentations and Excel tables—to transmit the maximum amount of information in the simplest format appropriate. Assets are organized into 20 "paths" that cover topics from administrative and personnel processes to safety and security issues to engineering.

In May, the program reached a milestone when more than 1,400 employees accessed the site to train on the use of the Automated Time Attendance and Production System.

As the Knowledge Management effort unfolds, it will demonstrate how WAPA employees learn, share, strengthen and refine both training and professional development.

Videos produced
77

Videos requested
200+

Participating departments
20

Average monthly hits
818

Upper Great Plains taps South Sioux City for Administrator's Award

Administrator and CEO Mark A. Gabriel presented WAPA's prestigious Administrator's Award to South Sioux City, Nebraska, Oct. 18, 2017.

Despite its small size—a population just over 13,000—South Sioux City has consistently delivered innovation along with affordable, reliable power year after year. South Sioux City is known among its peers for being exceptionally forward thinking and tenacious at finding win-win partnerships.

The city's clean, low-carbon electricity comes from a unique mix of projects. In addition to its hydropower allotment from WAPA, the portfolio includes a 2.3-megawatt photovoltaic array and a methane digester that uses food processing waste.

South Sioux City's collective approach to innovation, partnerships, governance and trust would be impressive in a city many times its size. In a small municipality, it deserves recognition: WAPA is proud to have honored South Sioux City with the Administrator's Award.



THE SOURCE



ANNUAL
REPORTS



BUDGET
ALLOCATION



CUSTOMER
NEWS



FINANCIAL
TRANSPARENCY



KEY
TOPICS



PRESENTATIONS
& SPEECHES

WAPA continues to expand transparency efforts

In Fiscal Year 2018, WAPA expanded its website, named The Source, to include a decade's worth of financial information related to organizational operations and activities. The new information consists of data from Oct. 1, 2007, through Sept. 30, 2017, and includes:

- Rates and sales data by power system
- Federal full-time equivalents
- Regional and Headquarters expenditures
- Capital investments by project

The site will be updated annually and also includes WAPA's unobligated reserve balance strategy for fiscal years 2016 through 2020. A how-to guide and narrative are also available to increase value by helping visitors find, understand and interpret the data.

WAPA partnered with customers to determine data elements and information that would best help them understand cost drivers and expenditures.





Communication, training make employees safer

Through regular and ongoing site visits, facility inspections, training weeks, policy updates and special projects, WAPA furthered its zero-incident safety culture in 2018.

WAPA refreshed its Safety Incentive Program, in which 989 WAPA employees were recognized for their advanced safety behaviors.

Safety and Occupational Health introduced “Learning Summaries” to share detailed accounts of incidents, creating a consistent approach to event accountability and prevention of recurring incidents. This increased trust, as indicated by the increase in near-miss reports.

For the first time, WAPA offered confined space training in 2018. Confined space incidents are one of the top five threats that could result in fatality. Training included practical, hands-on sessions for workers who may participate in rescue activities in confined spaces.

These initiatives, combined with a daily focus on leading safety practices, contributed to WAPA’s incident rate being significantly lower than Bureau of Labor Statistics’ safety incident rates for utility work.

FY 2018 Safety accomplishments

- Created 18 Learning Summaries and two Incident Root-Cause Reports
- Received 20 Near-Miss Reports
- Produced 13 articles and three computer background safety messages
- Conducted six Confined Space Safety training sessions in four regions, reaching about 170 WAPA participants
- Maintained safety incident rate of 1.0 compared to Bureau of Labor Statistics rate of 3.2



Looking back on 40 years of service

Dec. 21, 2017, marked WAPA's 40th year of powering the West. WAPA celebrated the milestone by showcasing the creativity and dedication of its people and its customers through a 40 People in 40 Weeks campaign, which featured profiles of employees and stakeholders; a video series; a haiku challenge; and a photography contest.

The 40 People in 40 Weeks project kicked off March 15 and wrapped up on the Dec. 21 anniversary. The employees, customers, business and congressional partners spotlighted in the series reflected the diversity of the people who have supported WAPA's mission. The profiles proved to be a rallying call, demonstrating value in WAPA's most important assets.

The video series highlighted WAPA's mission and partnerships and demonstrated the value of public power. Two of the videos were recognized by the American Public Power Association.

The haiku and photography challenges gave WAPA employees a chance to display their artistic sides. Employees submitted more than 100 haiku and 140 photographs, capturing WAPA's mission and values in words and images. WAPA shared the entries on its social media accounts and website, and the winning photo appeared on the cover of the year-end issue of the *Closed Circuit*.

A year of celebration culminated at the Nov. 1 All-Employee Meeting, a celebration of its own featuring a number of surprises. A local high school marching band—the Green Mountain High School Marching Rams—donated their time to perform for the appreciative, and quite surprised, crowd.

WAPA's 40th anniversary provided the organization an opportunity to reflect upon and honor its history, as well as envision its future.



People and Dollars

How WAPA effectively applies and manages its resources—a workforce of 1,441 federal employees and a \$1 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 2017.

Almost half of WAPA's employees supported the reliability of the electric grid, and the largest percentage of funds was attributed to the agency'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

**651
people**

and

**28
percent**

of dollars invested
in maintenance
and related areas



DELIVERY

**334
people**

and

**22
percent**

of dollars dedicated
to power operations
and engineering areas



MARKETING

including purchase power and wheeling

**158
people**

and

**42
percent**

of dollars committed
to power marketing areas



COST-BASED

and related services

**298
people**

and

**8
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. Under these requirements, 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. All firm electric power customers have submitted one of these options.

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

- Lighting
- Air conditioning upgrades
- Audits
- Rebates
- Refrigerator/freezer
- Solar
- Wind
- Small hydro
- Biogas/mass
- Geothermal

Customer IRP Accomplishments¹

Item	CRSP MC	DSW	RM	SN	UGP	Totals
DSM ² savings (kW)	22,205	160,613	362,380	40,566	1,143,776	1,729,540
DSM savings (kWh)	85,251,434	788,511,671	837,375,612	253,238,778	526,682,037	2,491,059,532
DSM expenditures (\$)	20,423,032	85,871,007	27,861,204	37,755,634	39,802,590	211,713,467
DSM deviations ³ (\$)	440,902	-5,362,964	1,550,446	9,062,282	8,705,207	14,395,873
Renewables (kW)	663,327	861,770	1,342,893	1,799,003	2,494,756	7,161,749
Renewables (kWh)	1,993,622,387	3,652,012,833	5,369,062,551	11,084,690,890	9,662,380,993	31,761,769,654
Renewable expenditures (\$)	56,815,853	101,813,547	185,400,205	269,430,929	164,812,437	778,272,971
Renewable program types	Wind, hydro, waste heat, biogas	Solar, geothermal, hydro, wind, biomass/gas, green tags	Wind, solar, hydro, biogas/mass, green tags	Solar, hydro, biogas/mass, wind, geothermal, green tags, fuel cells	Wind, solar, biogas, green tags	Wind, solar, hydro, biogas/mass, green tags
Top 5 most frequent DSM activities	AC, lighting, refrigerator/freezer, rebates, water heating	AC, lighting, refrigerator/freezer, audits, motors/ASD	Lighting, motors, rebates, load management, AC	Commercial lighting and AC, residential refrigerator/freezer, residential rebates, residential AC	Motors/ASD, Heating, ventilation, audits, refrigerator/freezer	Lighting, AC, audits, rebates, refrigerator/freezer
Top 5 renewable energy activities	Solar, biogas/mass, wind, hydro, geothermal	solar, geothermal, small hydro, wind, biomass/biogas	Wind, solar, hydro, biogas/mass, green tags	Solar, hydro, biogas, wind, geothermal	Wind, solar, biogas, green tags ⁴	Solar, wind, hydro, biogas/mass, geothermal
# of IRPs from customers	12	18	22	13	24	89
# of IRPs from cooperatives	3 (comprised of 20 entries in total)	0	0	0	12 (comprised of 201 entries total)	221
# of MIRs	0	2	3	3	24	32
# of SCPs	0	14	21	32	25	92
# of EE/RE reports	0	0	0	0	0	0

¹ The 2018 IRP filings of some customers are not represented in these numbers due to filing dates that fall after the creation of this report.

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

³ Deviations are any difference from the customer's integrated resource plan.

⁴ Only four activities were reported.

Senior Executive Team*

Administrator and Chief Executive Officer	MARK A. GABRIEL
Executive Vice President and Chief Operating Officer	KEVIN HOWARD
SVP and Chief Financial Officer	DENNIS SULLIVAN
SVP and Chief Information Officer (acting)	MIKE MONTOYA
SVP and Chief Administrative Officer	TRACEY LeBEAU
SVP and Assistant Administrator for Corporate Liaison	DIONNE THOMPSON
SVP and General Counsel	JOHN B. BREMER
SVP and Colorado River Storage Project Management Center Manager	STEVE JOHNSON
SVP and Desert Southwest Regional Manager	RON MOULTON
SVP and Rocky Mountain Regional Manager	MIKE McELHANY
SVP and Sierra Nevada Regional Manager (acting)	DAWN ROTH LINDELL
SVP and Upper Great Plains Regional Manager	JODY SUNDSTED
EX-OFFICIO MEMBERS	
Power Marketing Advisor	RODNEY BAILEY
Chief of Staff	ERIN GREEN
Chief Strategy Officer	JENNIFER RODGERS
Chief Public Affairs Officer	TERESA WAUGH

* NOTE: This information reflects the Senior Executive Team as of Sept. 30, 2018.

Contact WAPA

Call or write your local WAPA office or Public Affairs in Lakewood, Colorado, to share your comments or to find out more about WAPA.

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Western Area Power Administration

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