

Sequestration
preparation

Turkey vulture
troubles

Top Women
in Energy

Heat
exhaustion

CLOSED Circuit

WESTERN AREA POWER ADMINISTRATION

JULY 2020

**Do what
is right.
Do what
is safe.**





CLOSED Circuit

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A safe return is the only return

Many of us, myself included, are anxious to get back to our routines, back to our offices and back to some sense of normalcy. Others are deeply concerned about the pandemic and worry that they will be forced back to the office too soon and risk infection.

Images in the media showing people in the streets, at parties, beaches and going about their lives—including many without masks—give the appearance that all is back to normal. In truth, there is a rising number of COVID-19 cases in at least 41 states. What's more, hospitals within our own service territory—in Arizona and Utah, for example—are reporting that their intensive care units are full.

The risk remains high in many localities. Much of our 1.4-million square mile service territory is rural, and that provides a false sense of security and protection. It should not.

At WAPA, we are continuing to carefully follow our Responsible Workplace Re-entry Plan and monitoring county by county. We will not rush to come back into the facilities; we need to protect all of our people, particularly those in mission-critical positions.

I do understand the desire to get back to business as usual, but I will always put your safety and the safety of those around us first. We have a great plan in place and have developed a WAPA Facility Dashboard that will allow us to make decisions focused on local conditions.

We have a top-notch Emergency Operations Center team which, combined with the Senior Leadership Team, is focused on making sure we come back at the proper time, with the proper tools and the proper social distancing.

In your personal lives, I urge you to be diligent in social distancing, wearing masks and washing your hands. I know some people view the wearing of masks as a freedom issue. I do not. I view the wearing of masks as the sign of a social conscience to protect many of us in the high-risk category.

I wear a mask not for myself, but for someone's grandfather, grandmother, favorite uncle or aunt, mentor or child with a compromised immune system. I wear a mask out of a concern for others.

I am proud of all you are continuing to accomplish for our customers and for the nation. Thank you for all of your terrific work at WAPA. Thank you for following the rules of social distancing and wearing masks. Thank you for your dedication to our mission.



Listen-In features personal stories of COVID-19

WAPA's organizationwide Listen-In opportunities allow employees to call in to the first 60 minutes of senior team meetings. Originally it was introduced in response to Federal Employee Viewpoint Survey feedback as a way for employees to stay more directly abreast of senior topics and discussions. It also serves as a way for the senior team to bring a wider attention to specific issues or subjects.

On June 29, it provided an opportunity to turn the organization's attention to the still-unfolding COVID-19 pandemic.

Administrator and CEO **Mark A. Gabriel** emphasized the importance of the topic, in particular as it relates to WAPA's strong culture of safety.

He discussed the necessity of

Visit *myWAPA*, COVID-19 updates for the latest official WAPA guidance.



adhering to safe work practices, such as wearing masks, respecting social distancing and traveling with only one person to each vehicle.

"Our number one priority is and will continue to be safety," Gabriel said. "Wearing masks is the new normal."

Safety and Occupational Health Manager **Ed Crowson** discussed a number of safety concerns associated with the pandemic, including those related to quarantine and isolation. Senior Vice President and Desert Southwest Regional Manager **Tracey LeBeau** provided a COVID-19 update from DSW.

The centerpiece of the call, though, consisted of testimonials from two employees with direct experience of opposite sides of the pandemic.

First, participants heard from Power System Dispatcher **Steven Anners**,

who participated in a recent test sequestration in Sierra Nevada.

The test sequestration was intended to reveal any unforeseen difficulties should the region be required to sequester mission-essential employees at their worksite.

Anners discussed his experience getting tested – twice – for COVID-19 and preparing to be isolated in an RV for an extended period.

He was part of the first group of employees to participate and was only scheduled to be sequestered for four full days, but he packed enough food and other items to last for 14 days. His reasoning was that someone in the second group could have ended up testing positive for COVID-19, requiring him to stay on site instead of being relieved as planned.

"I also made sure my wife had enough food to be okay at home for two weeks," he said. "She has a breathing issue and I didn't want her to have to go shopping."

Anners said he expected to feel isolated during the sequestration, but it hit harder than he had anticipated.

For more information about the test sequestration, see full story on Page 4.



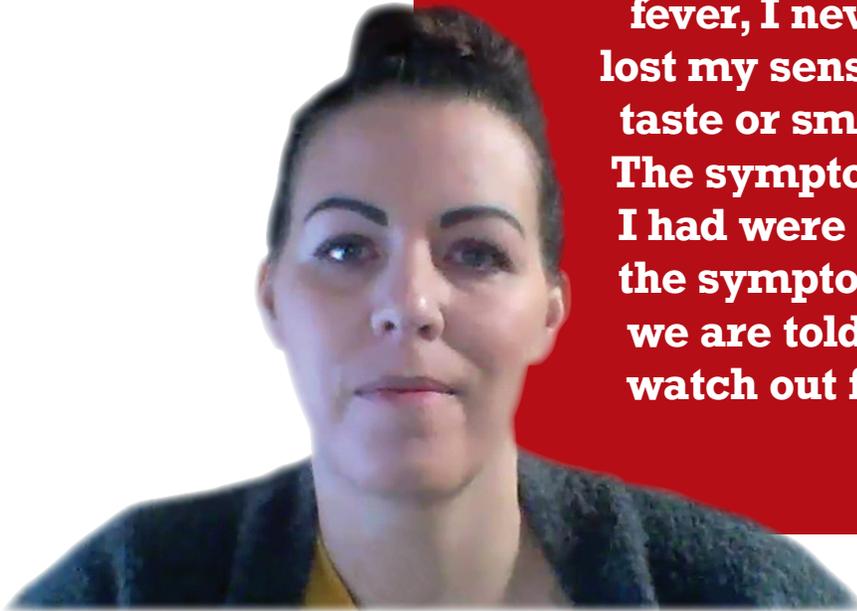
"It's even more isolating than it already felt with just the pandemic," he said. "You're away from your family for a while, and that means it's isolating for them, also."

His experience did result in a handful of important observations. For example, Anners wondered whether or not the RVs' cooling systems could cope with summertime heat. Should the pandemic continue into the winter – bringing its threat of sequestration with it – heating would then become a concern as well.

"I wouldn't want to stay for more than about a week, for two reasons," he concluded. "First, it's hard on the family, the isolation in the middle of a pandemic. It's a little weird to me, leaving the family behind. And second, if the next set of people get tested and turn out to have COVID, you could end up staying for another week. You'd be looking at a two-week duration."

The participants then heard from Financial Program Analyst **Lisa O'Brien**, who gave an emotional presentation on her experience as a victim of COVID-19.

O'Brien spoke about being a "long hauler" when it comes to the virus. It was a phrase many attendees might not have heard before, but there are thousands of COVID-19 patients



“

I never had a fever, I never lost my sense of taste or smell. The symptoms I had were not the symptoms we are told to watch out for.

”

around the world who are not getting better.

As of the Listen-In, O'Brien had been suffering for nearly four months.

She said that she first started to feel ill March 11, just after a vacation to Hawaii. Her flight had a layover at Los Angeles International Airport, which was later identified as a coronavirus "hot spot." Unfortunately for her, the U.S. did not begin shutting down or restricting travel until after she returned from her trip.

O'Brien provided a bit of biographical information at the outset. She explained that she is 42 years old and lives an active lifestyle. She was taking no medications and had always been generally healthy. For COVID-19 to have hit her as hard, as thoroughly and as unrelentingly as it had made clear just how dangerous the virus can be.

One early complication O'Brien faced was a negative test result for COVID-19. Though she had the presence of mind to get tested once she began experiencing symptoms, testing negative for the virus meant that doctors she'd see afterward would dismiss or misdiagnose her issue.

"Testing is imperfect," she said, going on to explain that, depending upon the type of test, the rate of accuracy can be as low as 60%. Due to this, she was diagnosed several times with

other maladies, including autoimmune deficiency and anxiety.

The lack of support and understanding from doctors posed a serious problem for O'Brien, who continued to accumulate and cycle through symptoms.

Her symptoms included losing 25 pounds in five weeks, malaise, sore throat, extreme fatigue, intestinal issues, chills, burning lungs, shortness of breath, intense body aches, tremors and severe fluctuations in heart rate. She also developed blood clots in her arm and lung.

Making her situation even more confusing to doctors, those are not the standard symptoms one expects COVID-19 victims to suffer.

"I never had a fever," she said. "I never lost my sense of taste or smell. The symptoms I had were not the symptoms we are told to watch out for."

Fortunately, she was able to find support through a group online, where she met other COVID long haulers. Together they were able to discuss their situations with those who would understand them.

"Some symptoms disappear, old ones continue, new ones constantly show up," she explained. "You never know what your day will look like. Some days it feels like you're coming

through it, and then it hits you again. In our group we call these waves or relapses."

As of now, there is no consensus or understanding as to why some sufferers recover as expected and others do not. O'Brien did explain that around 10% of those who contract COVID-19 will suffer prolonged post-viral effects.

"The difference between us and others who've had COVID," she said, "is that we didn't end up on ventilators and we didn't get better."

She reminded employees and managers that the virus does not discriminate and, contrary to popular belief, does not always go away in a few weeks.

"This is so new and doctors are still learning what the virus can do," said O'Brien. "COVID is not like the flu; it is systemic and can attack anywhere in your body. Do whatever you can to not get this. It has been terrible."

She ended by emphasizing the importance of taking the virus seriously, with the hopes that she could prevent other employees from having to experience what she has.

"Take this seriously," she concluded. "I see people posting all the time that it's just like the flu, or all of this political stuff, but this is real. This has been the worst experience of my life." □



SN prepares for potential sequestration

The COVID-19 pandemic has resulted in a change of workplace for a number of WAPA employees, with many working from home to protect them from viral circulation in the office. What about the reverse situation, however? What happens if employees were instead to be sequestered at work?

It's a real possibility for those who cannot perform their mission-critical work remotely, such as dispatchers. Sierra Nevada, understanding that this was a question that needed to be answered in advance, chose two weeks in April and May to test their sequestration processes and procedures for power system dispatchers.

Planning

The processes and procedures were developed by a small group organized March 24 by Power System Dispatcher Training Coordinator **Jeff Sundvick**, who also serves as SN's Emergency Operations Center manager.

The team included Power System Dispatcher Outage Coordinator **Alan Blanding**, Power System Dispatcher Technical Writer **Cory Danson** and Supervisory Power System Dispatcher **Christine Henry**. Their goal was to intensively plan and execute tasks for the protection of Dispatch and associated personnel.

One of their earliest tasks involved making sure sequestered employees would have the necessary resources to stay on site for extended periods. This required the purchase and installation of beds, washing machines, dryers and chest freezers, as well as arranging food availability. They also procured and contracted nine RVs to serve as living quarters.

“The goal in sequestering the power system dispatchers, or having them live at the worksite, is to protect these essential workers from exposure to COVID-19 and ensure SN is capable of providing reliable electricity to its customers and the communities we serve during this pandemic.”

March 24 ended up being, coincidentally, the day the Department of Energy transitioned to maximum telework. The possibility of sequestration became even more realistic.

Preparing

It was decided that two groups of dispatchers would participate in the sequestration exercise, consisting of eight volunteers: four automatic generation control dispatchers and four transmission system operator dispatchers.

One group's sequestration would take place April 27 through May 1 and the second group's sequestration would happen May 1 through May 5. Each sequestration would run for 24 hours each day, with participants working as normal and retiring to their RVs instead of returning home.

“The goal in sequestering the power system dispatchers, or having them live at the worksite, is to protect these essential workers from exposure to COVID-19 and ensure SN is capable of providing reliable electricity to its customers and the communities we serve during this pandemic,” said Sundvick. “The lessons learned from the test sequestration would provide valuable information for all of WAPA and the DOE.”

Before sequestering, all participants were tested for COVID-19. This revealed a hurdle that was not anticipated.

“The vendor hired to conduct the COVID-19 tests needed a doctor's order from a California-licensed doctor,” explained Sundvick. “It was assumed that the WAPA doctor's order would suffice, but the individual is licensed in Colorado. California requires a California-licensed doctor to issue

the orders. This almost prevented the power system dispatchers from being tested prior to sequestration.”

Ultimately Safety and Occupational Health worked with the contracted doctor who SN uses for personnel physicals and was able to obtain the order. The tests were conducted successfully and there were no positive results.

Dispatch control center janitorial services were stopped to ensure that the participating dispatchers were completely sequestered from outside influences that could expose them to COVID-19.

SN management met with the American Federation of Government Employees union president to notify him of the planned sequestration test periods and resolve any outstanding concerns.

The experiment was ready to begin.

Practicing

During the test sequestration, more unforeseen problems were revealed.

For instance, it was noted that if one of the participants had tested positive for COVID-19, the janitorial contractor did not possess the electrostatic equipment that would have been necessary for properly cleaning the work area.

In one of the RVs, the occupants reported problems with the refrigerator and the television, raising the question of how to have such units repaired while adhering to total sequestration. In this case, the employees contacted the vendor technician, who walked them through the steps necessary to get the units working correctly again.

Across the RVs, participants reported missing toilet paper and kitchen items. It was also determined that the schedule for cleaning the RVs and

removing the wastewater was disruptive to employee sleep schedules.

Of course, this is exactly why tests such as these are performed. Resolving the problems during testing results in much cleaner execution should a need for actual sequestration arise.

The hurdles encountered did not significantly impact the participants' experiences. After the experiment, participants completed a survey, indicating that the average job satisfaction was 4.32 out of a possible 5. They also reported a feeling of appropriate support from WAPA (4.72 out of 5) and an assurance that they felt well prepared to fulfill their work responsibilities during sequestration (4.84 out of 5).

Precis

Overall, Sundvick described the experiment as “a success.”

“The dispatchers ultimately felt safe and supported, and the mission continued without incident,” he said.

This meant sequestration could be a genuine solution for WAPA to keep the lights on for more than 40 million Americans if necessary.

SN's COVID-19 response is a collaborative effort, including the region's Emergency Operations Center, Maintenance, Procurement, Safety, Operations, Logistics and Public Affairs. Multiregional coordination was essential to the successful outcome of this initial undertaking.

Sundvick also spoke positively about how well any unforeseen difficulties were addressed.

“Their logistical concerns were resolved quickly,” he said, “and those granular details will be monitored with the contractor moving forward to prevent recurrence, should the need for sequestration arise.” □

Lingle upgrades mitigate wildlife issues



In January, construction began at Lingle Substation in Goshen County, Wyoming. The work continued through May. It was a job involving a local construction contractor, several upgrades and structural replacements, all of which stemmed from one unwelcome visitor: the turkey vulture.

“There had been several extended station outages due to turkey vultures breaking the minimum approach distance and causing faults on the main bus,” said Electrical Engineer **Brian Bucks**.

This was obviously bad news for the turkey vultures as well as WAPA’s customers.

“When faults occurred due to the turkey vultures, the old post insulators were usually damaged,” Bucks continued. “These old insulators are a challenge to find replacements for.”

“We had several customer outages in the Lingle area and to the west,” confirmed Field Maintenance Manager **William Weber**. “These were all caused by wildlife getting into places they should not have been.”

The main work at Lingle, Weber explained, consisted of moving the 34.5-kilovolt bus and switches so that they would be farther apart, preventing the outages turkey vultures and other critters could cause.

Doing this also presented an opportunity to make other improvements, however.

“We wanted to replace all of the oil breakers in the sub with SF6 gas breakers,” Weber continued. “This substation sits very close to the Platte River as well as other small bodies of water.”

Additionally, the insulators were replaced, which would mitigate the outages caused by wildlife and thereby improve reliability.

“We could see where they were contacted by turkey vultures,” said Bucks. “We could see the arc marks on the copper bus-work as well.”

Bucks went on to explain that the existing 115-kV brown post insulators were nearing the end of their lives.

SF6 breakers vs. oil breakers

Sulfur hexafluoride circuit breakers use sulfur hexafluoride gas to cool and quench the arc on opening a circuit. Initially developed in the 1950s, SF6 breakers are used in electrical grids at transmission voltages up to 800 kilovolts as generator circuit breakers, and in distribution systems at voltages up to 35 kV. Advantages over other media include lower noise, no emission of hot gases and relatively low maintenance needs.

Oil-filled breakers contain mineral oil which, if discharged during a failure, will pose a fire hazard. Oil is also toxic to water systems and leakages must be carefully contained. SF6 breakers avoid these potential issues.

“We replaced those with new Epoxilator station post insulators on May 14,” Weber said. “Some of the brown glass had cracks and may well have separated soon. This was a good chance to replace them before they caused any further problems down the line.”

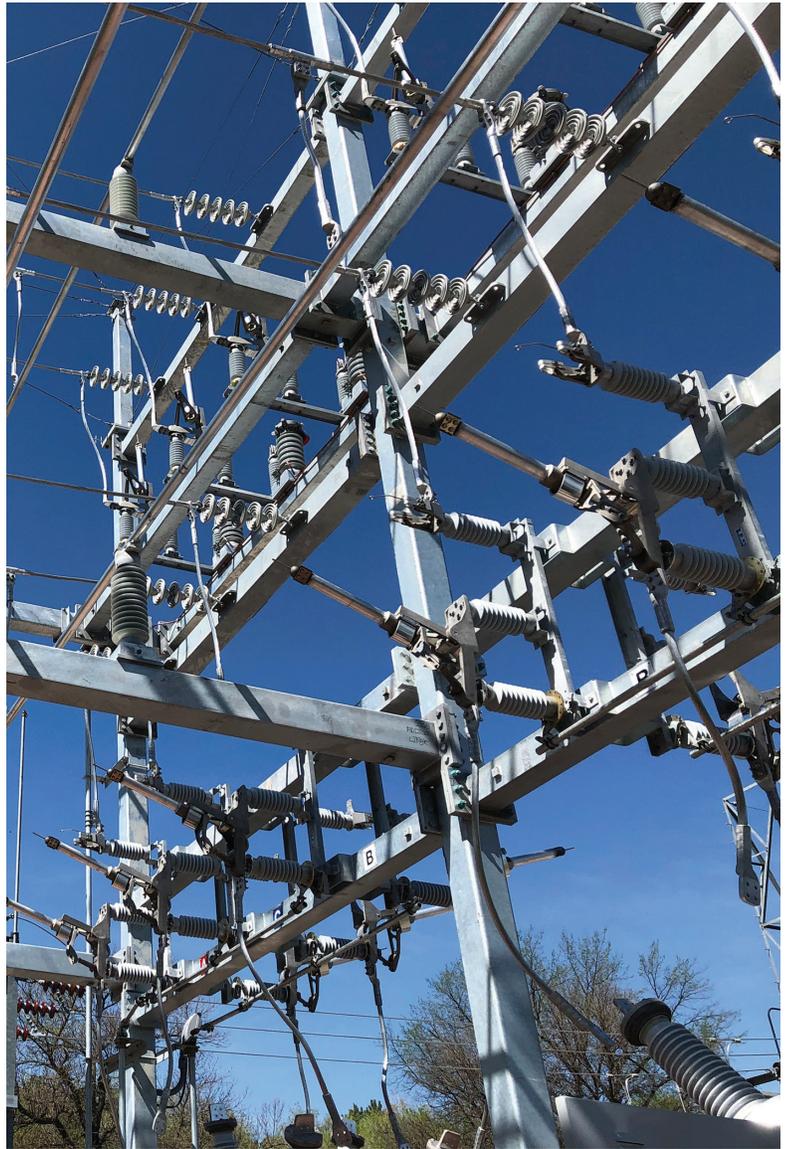
“We were also able to remove oil-filled equipment from a Spill Prevention, Control, and Countermeasure site,” Bucks continued.

Lingle Substation is located near a decommissioned Bureau of Reclamation powerplant that dates back to the 1920s and was originally tied to that

facility. As a result, the original foundations had degraded and a number of the structures – built through the 1930s and 1940s – were reworked and replaced as part of the upgrades. This includes the entire structure for the 34.5-kV breakers.

On May 19, a number of the craft employees who worked on the project came together at the substation for a construction closeout site visit. This included Foreman II Electrician **Dale Beaudette**, Supervisory Civil Engineer **Scott Esplin**, Civil Engineer **Adam Haun**, Engineering and Construction Manager **Mike Korhonen** and the contractor, who provided a one-year warranty on the company’s workmanship.

“It was a big job, and it might seem silly that all of this came from a problem with turkey vultures, but nothing is silly when it comes to reliability for the customers who depend on this substation,” said Weber. “It’s a good feeling when you’re not only keeping the power reliable, but making it more reliable.” □



Lingle Substation faced a potential threat to its reliability in the form of the turkey vulture. Ultimately, the upgrades made as a result benefit both the customers and the birds. (Photo by Brian Bucks)

What is a turkey vulture?

Common name: turkey vulture

Scientific name: *Cathartes aura*

Type: Bird

Size: 27" length, 69" wingspan

Population: stable

The most widespread vulture in North America, the turkey vulture is often called a buzzard. A turkey vulture standing on the ground can, at a distance, resemble a wild turkey. It is unique among North American vultures in that it finds carrion by smell as well as by sight. When threatened, it defends itself by vomiting powerful stomach acids.

Source: National Geographic



LeBeau honored as a top woman in energy

Senior Vice President and Desert Southwest Regional Manager **Tracey LeBeau** was recognized in April as one of the *Denver Business Journal's* Top Women in Energy for 2020.

The magazine selected and spotlighted 44 influential women in the energy industry. *Closed Circuit* sat down with LeBeau to discuss the accolade.

How does it feel to receive such prestigious recognition?

It's gratifying. This is a group of proven, formidable leaders committed to advancing energy innovation and leadership.

To what would you most attribute your success?

Hands down, intellectual curiosity. It helps to prevent intimidation of the unknown. It can propel you to understand the core of issues and ask all of the whys. And it naturally invites diversity of thought which, in my experience, can be its own benefit.

How did you plan your career?

I am not a rigid planner. I have always gravitated toward the new and complex, to position on the leading edge and to avoid boredom.

As energy deregulated, I moved into energy marketing. As renewables started becoming commercially viable, I moved from gas to wind development.

I have also always kept one toe in totally separate fields. For instance, I have been teaching at Stanford University this year.

What is one piece of advice you have for WAPA employees wishing to grow and develop as leaders?

Do not be shy about volunteering for difficult assignments and asking for advice. And, importantly, listen to it. I would rather be known for taking a chance than not being known.

Of what accomplishment are you most proud?

As corny as it sounds, the next one.

I have a lot to be proud of, in and out of the business of energy, so it's hard to summarize. I've done some extremely gratifying cultural repatriation work and have done some acknowledged academic writing. Teaching at my alma mater this year was pretty cool, too.



How is the landscape changing for women in the industry?

Sadly, it feels like two steps forward and one step back. Corporate board representation is incredibly low, and representation in executive suites is still rare.

Diversity is good business and is a proven good return on investment. It's getting better since we can now obviously quantify it, but we still have a long way to go. I'm cautiously optimistic.

Did you have a mentor?

Not so much. Even better, I had sponsors. Sponsors who made key introductions and important connections. Of course, the key was that I had to back it up and leverage those opportunities.

My experience has been that you don't need to know everyone, just the right people who believe in you and who will vouch for you. □



Application cleanup enhances manageability

By Leah Shapiro

Near the end of May, a small team of Information Technology professionals wrapped up almost seven months of work reducing thousands of unnecessary reports, which has resulted in a more-manageable, more-supportable and better-performing financial reporting system for WAPA.

Business Objects Explorer is WAPA's comprehensive reporting tool for financial and asset information. BOE is used by financial system administrators, budget analysts, financial managers, financial analysts, accountants and Asset Management program support analysts at WAPA.

Over a period of many years, more than 18,000 reports had accumulated in the BOE repository due to changing financial-reporting requirements and report-structure needs. Many of the reports were obsolete, created and saved as duplicates, and were no longer needed.

Due to a culture of retaining copies of reports for personal use, users were likely to be using reports that were not fixed for inaccuracies or performance issues.

Information Technology Specialists **Debra O'Rourke** and **Gwen Aragon** took a three-pronged approach to reducing the report repository to a manageable size.

First, they identified and deleted obsolete reports that had not been run or refreshed in the past 13 months. Next, they consolidated and standardized reports that were critical to business, looking at those that had most frequently been run in the past 13 months. Then they eliminated duplicates and educated users regarding proper report management.

There are no off-the-shelf tools for identifying inactive reports, which the team defined as reports that had not been run or refreshed in the past 13 months. To accomplish this task, the IT BOE team developed a custom script to identify inactive reports and move

the report to a hidden archive, which would facilitate easy restoration of the documents if needed.

Due to the large number of reports that would be archived, the team assumed that users would request to restore documents. The team wanted to ensure it could support those requests as quickly and efficiently as possible.

The process of creating, testing and implementing the script was completed in four months. The script, which ultimately performed an automated cleanup, eliminated more than 8,000 reports, reducing the report repository to half of its original size.

Cleanup will continue weekly to keep repository growth in check.

Concurrent with the cleanup effort, the team also wanted to identify, consolidate and standardize the most-frequently run reports and those that meet critical business needs.

One of the drivers for this effort was an upcoming Financial Information Management System upgrade. The upgrade process will require testing and validating all reports that are critical for WAPA business. Reducing the number of reports tested will have a significant, positive impact on the cost and timeline of this upgrade.

A team of representatives from all regions, Headquarters Finance staff and the IT BOE Team tackled this effort. The IT BOE Team identified the most-frequently run reports. From that list, the regional representatives identified critical reports and consolidated duplicate reports.



The team identified about 400 reports that will be considered WAPA's Financial Information Management System standard reports. Moving forward, WAPA can now focus on supporting these 400 reports rather than the thousands that were in the repository.

The final aspect of this effort was training and communication. It was imperative to clearly communicate with users regarding the cleanup effort because thousands of reports would be removed from the repository overnight.

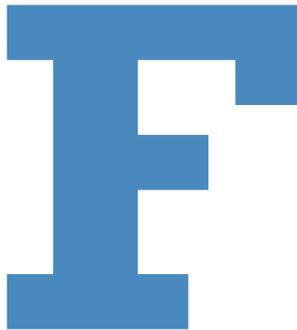
The IT BOE Team developed comprehensive training that consisted of email, a new BOE workspace, a slide presentation, articles in the Service Portal Knowledge Base and WebEx training sessions. The training included leading practices for managing and organizing reports moving forward.

This effort demonstrates the team's commitment to ensure the BOE system is sustainable for future support and growth. Improved reporting practices will allow users to easily find supported reports that are neither out of date nor prone to error. □

Note: Shapiro is a management and program analyst.

The model with the interesting name

By Clayton Palmer



For two decades, the Colorado River Storage Project Management Center Marketing office has sponsored the development of a model with an interesting name: Generation and Transmission Maximization, or the GTMax.

Starting with monthly water volumes, the GTMax optimizes the hourly electrical power generation of the four large CRSP dams simultaneously for as many months or years as is useful.

This model is used to develop the CRSP preschedule, to test improvements in power optimization, to consider the power impact of drought and other externally derived conditions, to forecast the cost of firming purchases and to aid CRSP customers, federal agencies and others to better understand how WAPA works.

In December 2010, the secretary of the interior announced that the department would propose to change the operation of Glen Canyon Dam and begin the preparation of an environmental impact statement, or EIS.

CRSP MC soon sought status as a cooperating agency, declaring that it deserved this position because WAPA's legal authorities included the transport and marketing of electrical power from Glen Canyon Dam and because it had the experience and expertise to perform the hydropower analysis that would be necessary for the EIS.

Also, it had the GTMax and the experienced technical staff that could use it.

In the beginning

In the late 1980s, WAPA was ordered by a federal court to prepare an EIS on WAPA's marketing of CRSP power.

CRSP MC worked with Argonne National Laboratory to develop a simple spreadsheet model to simulate the hydropower operation of the CRSP dams. The essence of an EIS, and the order from the court, was to evaluate and compare a broad set of alternative marketing schemes and operations of the CRSP dams for power production.

Some sort of model was required that could evaluate the effect of the alternative hourly production patterns of hydropower and water release from CRSP dams.

On WAPA's behalf, Argonne invented a simple spreadsheet model: the Hydro LP. The model has since grown in sophistication and precision; it now models all CRSP units simultaneously. It's not limited to linear solutions and it runs very quickly.

Argonne copyrighted the GTMax model and sells it commercially. WAPA's CRSP office uses a souped-up version of the model: the GTMax Superlite. Two CRSP MC employees are GTMax Superlite modelers and

several analysts at Argonne are experts in the model and available to write new code and modify the model as new needs and challenges present themselves.

Beyond simulating the operation of the CRSP dams, the GTMax model can be used to optimize, within constraints, the hydropower production at the CRSP power units.

CRSP MC's Operations office in Montrose, Colorado, uses the output of the model to create the daily preschedule of dam operations. The model maximizes power output to meet scheduled load from firm electric service customers within the operational constraints and water availability of the CRSP dams.

"This model has made our analysis much easier for preparing the CRSP operations schedule we send to Reclamation, and also for preparing our seasonal purchase analysis," said Supervisory Public Utilities Specialist **Crystal Dean**. "We plug into GTMax the water volume that Reclamation needs us to release for the month and, within a few seconds, we have an hourly release schedule for the month or months we are interested in."

Tricky situations

CRSP MC uses the GTMax model in tricky environmental situations. In 2006, fishing guides working on Green River below Flaming Gorge worried that WAPA's winter-season schedule – following changes in electrical demand during the day – was destroying the sport fishery. Reclamation's Upper Colorado regional director even sent a letter instructing WAPA not to use Flaming Gorge to follow electrical load until things could get worked out.

CRSP MC Environment staff began meeting with the Green River fishing guides group and fish biologists from the State of Utah.

They used the GTMax model to develop example release patterns to demonstrate to state biologists and fishing guides alternative release patterns that would meet electrical demand and be accommodating to sport fish. This allowed WAPA to satisfy the state and the fishing guides that the organization's release pattern was not hurting the fish, and it resulted in saving or avoiding an estimated \$2 million in costs.

"Flaming Gorge is tricky to plan," said Dean. "I prepare releases from Flaming Gorge Dam for power purposes, but we also have to make sure those releases fit within the requirements of gage restrictions 108 miles downstream from the dam. Given the complexities of tracking flowing water downstream, there is no way we could accomplish it. But GTMax does."

CRSP MC's Rates and Finances offices use the GTMax Superlite to estimate future purchase power expenses.

The GTMax model takes information on sets of alternative hydrological scenarios from a Reclamation water-routing model and calculates years, months and hours in which CRSP generation will be short of customers' firm electrical obligations. It then calculates a cost of market purchases to meet shortages.

This is done for as many years as the Rates office needs to conduct its power repayment study.

"The GTMax model gives us realistic and credible estimates of firming purchase expense over whatever time period we need," said Public Utilities Specialist **Thomas Hackett**. "Because of the credibility of the model, our expense numbers are easy to defend and we keep our firm power rate as low as possible knowing that we're not just guessing about the future."

In addition, these firming purchase expenses are given to the CRSP MC Finance office, which uses them to estimate the balance of funds in the CRSP Basin Fund.

"The Basin Fund is the operating funds for CRSP," said Financial Officer **Tyler Nelson**. "We don't receive appropriations. We have to make sure our Basin Fund balance is sufficient to pay our salaries and operating expenses every year."

Wider benefits

CRSP customers are also familiar with the GTMax model and take advantage of WAPA's ability to study how they will fare in certain circumstances.

"We've worried about the Colorado River drought that started in 2000," said Leslie James, executive director of the Colorado River Energy Distributors Association. "It's been 20 years of hydrological conditions that have not been wet enough to refill Lake Powell. CRSP MC staff has used the GTMax model to estimate the cost of firming power and the subsequent effect on the rate that would occur if the drought continues. That's really helpful for our planning for worst-case conditions."

Reclamation, which sponsored the development of a sophisticated water-routing model for the Colorado River System, can only estimate hydropower production by month. This model, widely used by Reclamation

and considered critical by western water districts and others who have an interest in the analysis Reclamation produces, is the Colorado River System Simulation model.

"The monthly water releases produced by the CRSS model are what we use as inputs to the GTMax model," said Management Analyst **Jerry Wilhite**. "From there, our model estimates hourly electrical production for each month, for each of the CRSP powerplants for all of the years we need to have estimates for."

Because GTMax makes use of Reclamation's CRSS model, it can be run over a wide range of hydrological scenarios. CRSP MC staff can estimate hydropower production as easily for a series of droughts as for a string of years of average water.

Reclamation also believes that the GTMax model is the way to get a credible measure of CRSP hydropower production.

To date, the GTMax has been used by CRSP MC and by Reclamation to evaluate the hydropower energy production and value for the set of alternatives in environmental impact statements for the operation of Flaming Gorge Dam, the set of Aspinall Dams, the joint operation of Lake Powell and Lake Mead and, most recently, the operation of Glen Canyon Dam.

"An accurate and credible CRSP power simulation model is key to understanding our power system, getting the most out of it and opening the door to other federal agencies who can affect how Reclamation operates the CRSP dams," said Administrative and Technical Services Manager **Brian Sadler**. "The market and environmental conditions are always in flux. Fortunately, we have solid access to the people who wrote this program and we can constantly make changes to it to meet our current needs." □

Note: Palmer is an environmental protection specialist.

Beat the heat stress

By Paul Robbins



Heat Stroke Prevention Day is July 31, and the best way to prevent this serious type of heat stress is to stop its causes. Whether you are working in the field or simply enjoying summer in the sun, the hazards of heat stress are important to understand.

47%
of electric utility workers exceed
100.4
degrees.

21%
exceed
102.2
degrees.

Source: University of Ottawa

A few degrees of increase from a resting body core temperature of 98.6 degrees to 102.2 degrees is all it takes to feel the effects of heat stress. At 100.4 degrees, our bodies can cross from mild heat stress symptoms, such as fatigue and cramps, to severe illness, such as heat exhaustion and heat stroke.

Heat increase during physical exertion can be 15 to 20 times greater than when our bodies are at rest, with the body's core temperature being able to increase one degree in five minutes without heat regulation. Individual factors also affect heat gain, including age, gender, personal health and the number of days worked in a row.

The roots of heat gain

There are two primary sources of heat gain. The first is the external

environment, including temperature, humidity and exposure to sunlight. The second is internal muscle activity, related to physical exertion. High temperature and increased physical activity lead to heat stress.

Heat stress is also connected to dehydration. The body cools itself by evaporating sweat. Dehydration can slow this process and even cause serious health effects such as kidney damage.

It is easier to stay ahead of hydration than to catch up to it. The Centers for Disease Control and Prevention suggests drinking 32 ounces of water every hour during moderate work activities.

85%

of electric utility workers finish their shift dehydrated.

Source: University of Ottawa

Recognize and respond

Whether throwing a frisbee, hiking a trail or working in a substation yard, you are increasing muscle activity and physical exertion.

More than 35% of electric utility jobs are categorized as “heavy to very heavy work intensity” because of repeated days of work and other stressors.

For example, it could be a 95-degree day and a job must be completed. You’re sweating, working hard under the sun and have not taken a break. Several levels of heat stress may follow.



The Occupational Safety and Health Administration suggests scheduling physically active jobs during cooler morning hours and breaking up the day by rotating strenuous tasks among crewmembers.

If cramps occur, stop work, get in the shade, stretch and massage affected muscles and hydrate. The legs and abdomen can begin to cramp after only a few hours of physical exertion.

Heat exhaustion

symptoms include cool and clammy skin, headache, weakness, nausea and dizziness. Treatment includes hydrating, loosening clothing, resting in the shade and pouring water over the head. If symptoms do not improve within 60 minutes, stop work for the day and seek medical attention.

The most serious form of heat stress is heat stroke and rapid response is vital. Symptoms include quick and shallow breathing, high temperature, irritability, confusion, agitation, faintness, staggering, rapid and weak pulse and red, hot, dry skin. Those suffering from heat stroke may also hallucinate or lose the desire to drink fluids.

If someone demonstrates these symptoms, move them into the shade, remove unnecessary clothing and apply water, wet towels or ice to

the neck, armpits and groin area to accelerate cooling. Get immediate medical attention.

Water, rest, shade

Regulating body temperature is important when preventing heat stress. The strategy is easy: water, rest and shade.

Go to bed hydrated and begin drinking fluids soon after you wake up. Drink at least 32 ounces of water every hour. If you are sweating a lot, drink fluids with balanced electrolytes such as sports drinks. Avoid highly caffeinated or sugary drinks, which compound dehydration.

Make a goal to drink a certain amount of water every time you take a break or use the bathroom. During that bathroom break, check your urine color. The darker it is, the more you must drink to stay hydrated.

Physical activity in direct sunlight increases skin temperature and is linked to reduced mental reasoning and body performance.

The risks while working under the sun are much different from the risks associated with performing similar work indoors. In the sun, the chances of experiencing dizziness rise by 340%, bodily weakness by 220% and other heat stress symptoms by 140%.

These impacts are linked to direct sun exposure alone, not to core body temperature changes. All it takes is rest and shade to lower skin temperature.

While some may believe that more breaks results in lost labor hours, according to the University of Ottawa the opposite is true. Moderate-to-heavy work productiv-

ity in the heat is improved by taking short, frequent breaks in the shade. These breaks reduce bodily stress and allow for prolonged work at safe core temperature levels.

Personal protective equipment helps as well. In the field it includes brimmed hats, long sleeves and sunscreen rated 30 SPF. On vacation, it might include a beach umbrella, a cooler or a small battery-operated fan.

Heat stress can happen fast during the hot summer months. Whether at work or at play, remember to keep cool and prevent heat stress with water, rest and shade. □

Note: Robbins is a technical writer who works under the Cherokee Nation Strategic Programs contract.

Download the Heat Safety App at [osha.gov/heat](https://www.osha.gov/heat) to calculate your worksite heat index and get risk-level reminders and other information.



COVID-19 threat increases heat stress hazards in the field

Personal protective equipment can amplify heat stress, which is important to keep in mind with the increased use of face covers, masks, respirators and rubber gloves due to COVID-19.

Because many COVID-19 symptoms are the same as those of heat stress, be especially vigilant in protecting yourself from heat-related illness.

Similar heat stress and COVID-19 symptoms:

- Shaking chills.
- Severe fatigue.
- Unusual muscle aches or pain.
- Sore throat.
- Gastrointestinal upset (such as nausea, vomiting or diarrhea).

Monitor yourself before going to work using the Self-Observation and Screening Questionnaire available at [myWAPA](https://myWAPA.org), [COVID-19 updates](#) and continue self-monitoring while at work.

Rapid Recaps

Monthly Download welcomes special guest

The Power Marketing Administration Human Resources Shared Service Center welcomed a special guest to its June Monthly Download: Department of Energy Director of Talent Management and Chief Learning Officer John Walsh.

One of Walsh's main duties is to support DOE employees as they develop and sharpen skills necessary for their jobs, and to help them target the jobs they want in the future.

Walsh guided attendees through Learning Nucleus, discussing how to find mandatory training, mentorship matching, how to make training requests and more. He also revealed that Learning Nucleus had processed more than 20,000 training requests in only 10 months.

The Monthly Download is a monthly, interactive webinar open to all WAPA employees and contractors, produced and hosted by Lead Human Resources Specialist **Joe Hose** and Human Resources Specialist **Cody Mitchell**.



MONTHLY DOWNLOAD SPECIAL GUEST

John Walsh
DOE Director of Talent Management
Chief Learning Officer

View the complete recording of this and previous Monthly Downloads at **myWAPA, Departments, Training, Monthly Download Recording Library**



Brief Transmissions

Add mobile device number to Outlook profile

Information Technology reminds all WAPA employees to ensure the numbers for their WAPA-issued mobile phones are listed in their Outlook profiles.

If employees do not have a WAPA-issued phone, they may choose to add their personal cellphone number in its place.

Visit the I2T KM page

The Knowledge Management section of *myWAPA* is now home to a dedicated Inclusion, Innovation and Technology page.

The page features videos and articles spotlighting just a few of the innovations WAPA employees have introduced and implemented over the years. More content will be added as the page evolves.

Be sure to check out the page and mark your calendar for the Nov. 19 I2T Summit.

The I2T Knowledge Management page is accessible at **myWAPA, Programs, Knowledge Management, All Knowledge Management Assets, ..., I2T Activities**



Caregiver excused absence authority extended

Excused absence for federal employees who are teleworking and have caregiving responsibilities has been extended to Sept. 11.

Supervisors may continue to grant up to 20 hours of excused absence per pay period to teleworking employees caring for or providing educational instruction to children as a result of school, daycare and camp closures due to COVID-19.

This applies also to teleworking employees who may have to care for other family members, such as elderly parents or adult dependents with special needs, whose care facilities are closed due to COVID-19.



Contact your Human Resources Business Partner with questions or for assistance.

