

Hydro Leader

VOLUME 7 ISSUE 1

JANUARY 2026

**Katie Bartojay
of Reclamation's
Technical Service Center:
Keeping the Nation's
Second-Largest
Hydropower Fleet
Running**



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**Katie Bartojay
of Reclamation's
Technical Service
Center: Keeping the
Nation's Second-
Largest Hydropower
Fleet Running**

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STAFF:

Kris Polly, *Editor-in-Chief*
Joshua Dill, *Managing Editor*
William Polly, *Editorial Assistant and
Advertising Coordinator*
Amanda Schultz, *Editorial Assistant*
Stephen Beers, *Copyeditor*
Amy Justice, *Copyeditor*
Elaine Robbins, *Copyeditor*
Sunflower Services LLC, *Copyediting*
Capital Copyediting LLC, *Proofreading*
Stephanie Biddle, *Graphic Designer*
Patricia Bown, *Media Assistant*
Eve Giordano, *Media Assistant*
Sara Miller, *Media Assistant*
Catherine Gladbach, *Legislative and Media Intern*
The Polly Agency, *Social Media*

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COVER PHOTO:

Katie Bartojay, Director, Technical Service Center, Bureau of Reclamation. Photo courtesy of the Bureau of Reclamation.

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In This Issue:

The Energy Economy of the Future

In our cover story this month, we interview Katie Bartojay, the director of the Bureau of Reclamation's Denver-based Technical Service Center. We hear about the center's unique capabilities, expansive remit, and recent work—as well as its mission to help Reclamation “stay competitive in the future energy economy” through innovation, excellence, and the tactical use of resources.

Next, we speak with Matt Feier of the Gunnison County Electric Association, a rural Colorado electric cooperative. The association recently installed a small-scale hydro project at a remote and remarkably challenging dam site in the Rockies—a triumph of both renewable energy and site-specific planning.

Greg Taylor is the Willamette Valley supervisory fisheries biologist for the U.S. Army Corps of Engineers. In our conversation with him, we hear about the Army Corps' water management and fish protection work, including the new fish collection facility at Foster Dam, and learn about how hydropower—perhaps surprisingly—is “a key tool for managing fish populations.”

Then, we speak with Bree Wilson, the vice president of development at Rye Development, about plans for the Lewis Ridge Pumped Storage Project, which will occupy the site of a former mine in eastern Kentucky, providing energy storage and an anchor for economic redevelopment in the area.

After that, we turn to a fascinating and unexpected use case for hydropower: bitcoin mining and other data center applications. Andrew Webber, the CEO of Digital Power Optimization, explains how such applications can help preserve the profitability of small hydro facilities and keep power generation capacity online, ready to kick in whenever the grid is under stress.

Public safety is of paramount importance at hydropower facilities and other waterside installations. Glasdon's Guardian life ring cabinets are one good way for facility owners to ensure that safety equipment is kept ready at hand and in good condition. We speak with J.D. Villegas, the vice president of sales at Glasdon Inc., about this and other product lines.

Finally, we speak with Lisa Jacobson, the president of the Business Council for Sustainable Energy, about the organization's work informing energy policy at the federal level and its long-standing partnership with hydropower.

This month's stories show how hydro is adapting to the energy economy of the future by deploying to unusual sites and serving purposes that go beyond simply generating for the grid. By powering nonpowered dams, providing fish management benefits, redeveloping brownfield sites in industrial areas, or integrating with data centers, the industry is becoming more nimble and responsive to the changes in society around it. 

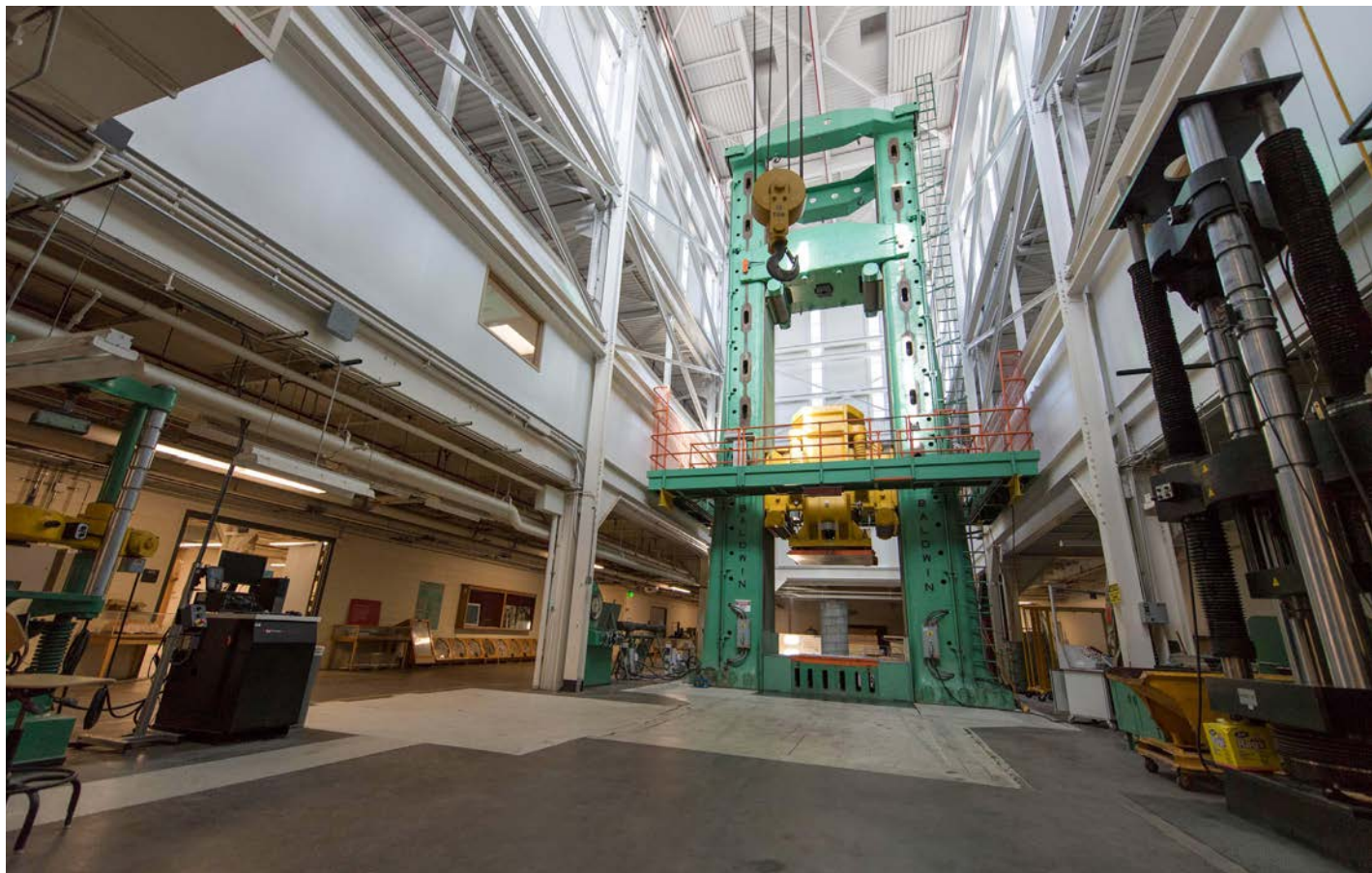
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Katie Bartojay of Reclamation's Technical Service Center: Keeping the Nation's Second-Largest Hydropower Fleet Running



The TSC's 5-million-pound Universal Testing Machine in the Concrete and Structural Laboratory in Denver, Colorado.

Katie Bartojay, P.E., leads a team of nearly 600 scientists, engineers, and other professionals at the Bureau of Reclamation's Technical Service Center (TSC) in Denver, Colorado. The center works on about 1,800 projects a year at federal dams, hydropower plants, and other facilities. In this interview, Ms. Bartojay talks with Hydro Leader about the center's industry-leading experts and its new initiatives to operate units for peak efficiency and optimize the way it prioritizes its workload.

Hydro Leader: Please tell us about your background and how you came to be in your current position.

Katie Bartojay: When I was a kid, I was intrigued by building things. My grandfather was a carpenter, and I watched him help my parents build the house I grew up in. In high school, I loved the wood shop, metal shops, and architectural drafting classes. That led me to study civil engineering at the University of Pittsburgh with an

emphasis in structural design. I interned for 3 years at US Airways (known as USAir at the time), where I worked on airframes and spent time in the engine shop. In 1999, after college, I moved to Denver and worked for a private engineering company, where I was exposed to a wide variety of large civil-works engineering projects and got my Colorado Professional Engineer's license. I was recruited by Reclamation through a colleague I had met through the Rocky Mountain Chapter of the American Concrete Institute in 2005. I found a connection with the agency's mission to promote water and power in the West. I was fortunate to work on projects in all five of our regions, visit truly unique parts of the West, lead design teams for several power plant modifications, and be responsible for other critical pieces of major designs. I was honored with Reclamation's 2011 Engineer of the Year award as a result of some of my major project contributions and later transitioned into leadership. I supervised the Concrete and Structural Laboratory and then our Client Support

PHOTO COURTESY OF THE BUREAU OF RECLAMATION

Services Office, which includes our budget staff and senior project managers who work on designs for Reclamation's most critical infrastructure. I've spent 20 years getting to know all facets of Reclamation. Last year, I was selected to be the director of the TSC. I feel like I've found the perfect place for me right now.

Hydro Leader: Please introduce the TSC.

Katie Bartojay: The TSC is Reclamation's world-class engineering and science business unit. Since 1994, we've been delivering top-notch technical expertise to ensure the safe and reliable delivery of water and power. We provide design and construction support for Reclamation facilities and ensure that they don't present unreasonable risks to people, property, or the environment. Beyond that, we extend our technical support to federal agencies, states, and private organizations and even share our expertise globally to help other countries develop their water resources. We are unusual in the government in that we are a fee-for-service organization, and we are proud to be a lean, mean, and innovative unit, always ready to tackle new challenges and lead the way in water resource management.

Reclamation is the second-largest producer of hydropower in the United States, generating an impressive 37 billion kilowatt-hours annually at its 53 plants. The TSC is the engineering and science heart of this operation, tackling about 1,800 projects a year at federal dams, hydropower plants, canals, pipelines, pumping plants, and water passage facilities. Our project scope is quite diverse, focusing on ensuring dam safety, improving efficiency, maximizing power generation, and rightsizing our maintenance. Particularly as our hydropower fleet ages, there's been an increased focus on component life and reducing operations-and-maintenance (O&M) costs. We're embracing new technologies and integrating data and analytics into our O&M practices to stay ahead. We're always examining and evaluating improvements to our designs and to the manufacturing processes that we use for some of the components we put in our power plants. Reclamation is always in the process of rehabilitating several of its hydropower plants.

Hydro Leader: Would you describe your six service divisions?

Katie Bartojay: The TSC's six technical divisions are Civil Engineering (two divisions), Water Resources, Geotechnical, Electrical & Mechanical, and Engineering & Laboratory Services. Most of our experts are within two buildings here in our Denver headquarters, which allows for a strong internal network of teams that deliver our technical solutions in a timely way. We also do rapid emergency response out of this office. We provide



Bobbi Jo Merten and intern Nathan Kral perform final inspection and dry film thickness testing in the lower section of Glen Canyon Dam river outlet works pipe.

specialized on-call field services to help with water delivery and reducing hydroelectric outages. In-house engineers in the TSC's Electrical & Mechanical Division have a lot of hands-on experience with things such as setting relays, designing governor controls, and doing SCADA programming. Because we've been focused on maintaining reliability, our in-house engineers play an important role. They are highly trained and skilled in these specialized areas and can be deployed to facilities across the West on short notice.

In addition, the TSC has several other technical specialties. Our team of water conveyance experts is dedicated to designing and supporting the construction of pumping plants, pipelines, canals, and other water infrastructure. We aim to bring water to farmers, businesses, municipalities, and rural areas. Recently, we've made significant advances in water treatment that are crucial for providing clean drinking water to areas with compromised



The installation of a rotor at Spring Creek Dam, California, 2024.

water quality.

We use cutting-edge technology and our extensive knowledge of western water systems to conduct hydraulic and hydrologic studies. These studies help ensure public safety, optimize reservoir operations and power generation, and assess how changing needs affect water and power supply and demand.

Additionally, the TSC boasts extensive laboratory services. Our labs are equipped with specialized equipment and staffed by industry-leading experts who conduct testing and analysis related to concrete, soil, rock, coatings and corrosion, hydraulic modeling, water treatment, invasive species, and hydropower.

Hydro Leader: What role does the TSC play in ensuring



The Nathaniel "Nat" Washington Powerhouse at Reclamation's Grand Coulee Dam.

the safety and reliability of Reclamation's infrastructure?

Katie Bartojay: The TSC has nationally recognized technical experts in a lot of different water and related resources disciplines, several of whom lead or contribute to professional technical standards committees. Currently, we are also engaged in studying, designing, or modifying 12 dams to reduce their risk to the U.S. public. As the primary technical service provider for executing Reclamation's Dam Safety Program, we play a crucial role in safeguarding our critical infrastructure. To ensure power plant reliability, we conduct power system studies, relay reviews, arc-flash studies, staged salt testing, and other services to ensure grid stability. We also have premier laboratories with decades of design solutions that we can rely on to help us protect the public and lower our operating and capital costs.

Hydro Leader: Would you highlight some recent projects or initiatives that showcase TSC's value?

Katie Bartojay: Reclamation just completed relining Glen Canyon Dam's river outlet works. The outlets—four steel pipes that move water from Lake Powell into the Colorado River, bypassing the hydropower generating units—had coal-tar enamel lining that was 60 years old. TSC engineers supported the project to recoat the interior of those pipes by providing the construction specifications and completing the final inspection.

TSC is also partnering with Reclamation's Power Resource Office on a maintenance improvement initiative. We've developed a maintenance approach that is based on performance rather than on time-dependent maintenance intervals. With this approach, we'll focus on what a facility needs, what its available resources are, and how critical the equipment is for ensuring the overall reliability of the power grid in order to determine maintenance priorities.

Maintenance tasks require a lot of time and equipment



The spillway at Shasta Dam in California.

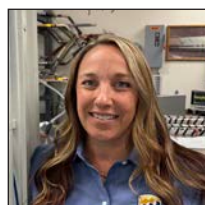
outages. When equipment is offline, it can't generate electrical power, leading to a loss of revenue. If we can be more efficient and only schedule maintenance when it's needed, we can keep equipment online more of the time. Conversely, if maintenance is neglected and there are unplanned outages, those can take months or longer to resolve. By refining these intervals and integrating real-time monitoring and analysis, we're working to lower our maintenance costs.

Reclamation is committed to optimizing our hydropower generators, including by enhancing turbine efficiency and upgrading generators. To advance toward that goal, we've been working on our new Hydropower Optimization System (Hydro OS). The TSC has installed Hydro OS at several of our facilities. It provides recommendations on how units should be operated for peak efficiency. By using advanced algorithms, the system recommends optimal unit loading levels to our plant operators so that they can most efficiently produce the power requested at any given moment. It maximizes power output based on water inputs and unit characteristics. It also boosts the overall output of existing equipment by ensuring that each unit operates as effectively as possible. By maximizing energy production for every drop of water, our efficiency has improved 1.75 percent on average, which equates to over 300,000 megawatt-hours of increased generation fleet-wide, or a savings of about \$9 million in

value for our power customers.

Hydro Leader: What is your vision for the future?

Katie Bartojay: For Reclamation to stay competitive in the future energy economy. At the TSC, this means investing in innovation and enhancing data-driven decisionmaking through improved monitoring and data use. To do this, the TSC must maintain excellence in design and operations and keep the bar high despite reduced staffing. This has become a strategic initiative of mine, and we've been implementing changes—for instance, becoming more agile in how we assign our resources to projects and how we plan for future workload. We've always been a lean and mean business unit, and we are not just prepared to lead through change but are excited to embrace it, turning challenges into opportunities and securing a bright future for



Katie Bartojay is the director of the Bureau of Reclamation's Technical Service Center. For more on the TSC, visit www.usbr.gov/tsc/.



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Matt Feier of the Gunnison County Electric Association: Local Power and Long-Term Vision

Matt Feier, the strategy, execution, technology, and member experience manager at the Gunnison County Electric Association (GCEA), has led the charge on one of the most notable small-scale hydro projects in Colorado. The Taylor River Hydro Project features a 500-kilowatt (kW) single-phase hydroelectric facility that came online in late 2024 after years of conceptualization, permitting, and engineering. Developed in partnership with the Uncompahgre Valley Water Users Association (UVWUA), the project brings long-term renewable energy to GCEA's rural cooperative members and demonstrates the power of local collaboration and site-specific hydropower. In this interview, Mr. Feier tells Hydro Leader about the vision behind the project and the process of bringing a source of long-lasting energy generation to fruition.

Hydro Leader: Please tell us about your background and how you came to be in your current position.

Matt Feier: I am the strategy, execution, technology, and member experience manager at GCEA. I have been with GCEA for about 5½ years. I spent the previous 18 years in the ski industry, not the electric industry, most recently doing planning and project management for Crested Butte Mountain Resort. It was a natural fit to transition to the electric industry and develop new projects.

Hydro Leader: Please introduce GCEA.

Matt Feier: GCEA is a small rural electric cooperative in western Colorado, located in the mountains. We were founded in 1938. The communities we serve include Crested Butte, Mount Crested Butte, Lake City, and Pitkin. The rest of our service territory is quite rural, with many ranches, second homes, and residential subdivisions. We are known for our cold climate and winter snowfall. Like other cooperatives, we focus on reliability, resiliency, safety, and keeping costs stable and affordable. GCEA is a member of the Tri-State Generation and Transmission Association, and our wholesale energy is provided by Tri-State. GCEA is one of the smallest Colorado members of Tri-State in terms of kilowatt-hour (kWh) sales because



The Taylor River Hydro Project.

our service area has limited industry and many seasonal residences. Over 90 percent of our services are residential, and approximately 50 percent of those residential properties are second homes, so we do not sell many kWh overall.

Hydro Leader: What is the generation mix of your purchased energy portfolio?

Matt Feier: Before we developed the Taylor River Hydro Project, we were buying almost all our energy from Tri-State. Tri-State has aimed to reach 50 percent renewable energy by the end of 2025, with around 39 percent of that renewable energy coming from wind, around 36 percent from hydro, and around 19 percent from solar. The other 50 percent of its power comes from natural gas and coal. Today, the Taylor River Hydro Project supplies roughly 3.1 percent of our members' load. It is not huge, but it is significant, and we are excited to have the facility operational. We have a contract with Tri-State that currently caps self-generation at 20 percent

PHOTO COURTESY OF GCEA

of our load. We are also working on two 1-megawatt solar projects, which should be up and running by the end of 2025. This will increase our local generation to about 6 percent. I do not expect us to go much beyond that locally, as small-scale renewable projects are generally not as cost effective for our membership. Also, Tri-State is planning to bring multiple large-scale renewable projects (mostly solar and batteries) online in the coming years. We would love to find another local hydro project, but they are very site specific. Whether we pursue another one depends on many factors.

Hydro Leader: Please give us an overview of the Taylor River Hydro Project and its significance.

Matt Feier: Taylor Park Dam, built in 1937 by the Bureau of Reclamation, stores irrigation water for downstream users and provides flood control. The dam was initially built with the idea that it could someday generate hydropower. Reclamation owns the dam, but it is operated by the UVWUA, which holds water rights for waters stored in the reservoir.

GCEA had been exploring the possibility of a hydro facility at the dam since the 1980s. Since UVWUA has water rights and operates the dam, it was our

natural partner. In 2021, we signed a memorandum of understanding with UVWUA for this project. In 2022, we formed a partnership organization, Taylor River Hydro LLC. The Taylor River Hydro Project is a 50/50 partnership between GCEA and UVWUA. Groundbreaking on the new facility occurred in May 2023.

The Taylor River Hydro Project has a 500 kW single-phase generator, which is not huge, but it was the largest we could build given the existing electric infrastructure at the dam. The facility is connected to the outflow of Taylor Park Dam. GCEA owns and operates the electric infrastructure that connects to the hydro facility and has agreed to buy all the energy the hydro facility produces. GCEA purchases the energy from Taylor River Hydro LLC, and Taylor River Hydro LLC then splits the net revenues 50/50 between GCEA and UVWUA.

The dam could potentially produce more energy with a larger turbine and generator. However, GCEA only has single-phase electric infrastructure up Taylor Canyon to the dam. Upgrading to a larger-capacity turbine and generator would require the installation of 16 miles of three-phase underground electric infrastructure, which is not currently feasible for GCEA. Our feasibility studies showed that 500 kW is the maximum we can generate on the existing single-phase line servicing the dam



Gunnison County is one of the coldest parts of the country, and in winter, temperatures at the base of Taylor Park Dam can drop to negative 30° or 40° Fahrenheit.

PHOTO BY DON EMMERT.

without incurring costly electric infrastructure upgrades. As such, our single-phase hydroelectric generator might be the largest single-phase hydroelectric generator in the United States, based on our best research and design conversations.

Hydro Leader: Please tell us about the location of the facility and the source of the water it uses.

Matt Feier: Gunnison County tends to be one of the coldest areas in the country, and often, the coldest spot within Gunnison County is at the base of Taylor Park Dam. In winter, temperatures can drop to negative 30° or 40° Fahrenheit. We needed to plan the site and design for this cold climate. The facility has a robust heating system, and we buried the penstock to lessen the possibility of freezing. There were challenges during construction: We aimed to complete as much outdoor work in the summer season as possible but were not able to do all we intended. Our hardy construction crews had to deal with cold, snowy, windy, icy, and generally inclement weather, but they were able to finish the job, and the new facility is now running well.

The Taylor River Hydro Project is a run-of-river facility, and we do not adjust dam flows to match energy needs. We simply take what the river provides. The facility is designed to operate 24/7 year-round, except during maintenance and repairs. The dam's flow rate varies seasonally. Winter flows can be as low as 60–65 cubic feet per second (cfs) in drought years; to accommodate this, the hydro facility operates at 60–65 cfs year round. We do not fully use the higher flows during the spring and summer, when the river can run at 350 cfs or more. As such, there is some loss of potential energy production. If it should become financially practical, GCEA could potentially extend our three-phase infrastructure up the canyon, which would allow us to partner with UVWUA to install another turbine and generator and take fuller advantage of the higher flows at Taylor Park Dam. Adding another turbine and generator would complement the existing hydro facility and better use the river at various flow rates.

Hydro Leader: Would you outline the project timeline from its initial concept to its current status? When did it come online?

Matt Feier: We spent about a year defining the project's design parameters, designing the project, securing funding, and attaining approvals and permits. The facility is at a Reclamation site and on federal land, so our design needed to undergo Reclamation's Dam Safety Assessment Team review process as well as a National Environmental Policy



The Taylor River Hydro Project turbine and generator.

Act (NEPA) review, for which it received a categorical exclusion. Additionally, we obtained an administrative review permit and a building permit from Gunnison County. The permitting process, covering NEPA, county, and Reclamation requirements, was lengthy and involved multiple design iterations.

We started construction in May 2023, completed construction in September 2024, and commissioned the new facility that same month. The new facility came online commercially on October 31, 2024. Between the

PHOTOS COURTESY OF GCEA.

commissioning and the start of commercial operation, we cleaned up the construction site and outfitted the new facility. As with any new facility, there have been hiccups and necessary adjustments, but for the most part, the new facility has been running smoothly.

I will once again highlight the rarity of a 500 kW single-phase hydroelectric generator. Almost all hydroelectric facilities are three phase, and our generator had to be custom built. The generator came from Kato Engineering in Mankato, Minnesota. The hydroelectric turbine, which was also custom built, came from Canyon Hydro in Deming, Washington. We used a Colorado-based civil contractor, Mueller Construction, to develop the site.

Hydro Leader: What were some of the key milestones or challenges in the permitting process?

Matt Feier: Below Taylor Park Dam, there is a gold-medal catch-and-release fishery, so maintaining consistent flows and water conditions and not altering temperature or oxygen levels was crucial to the design. To codify this, we worked closely with the Upper Gunnison River Water Conservancy District (UGRWCD) during the initial planning phase. GCEA, Reclamation, UGRWCD, and UVWUA signed a four-party agreement stating that the Taylor River Hydro Project would be operated as a run-of-river facility and that its operations would not affect water flows or water quality. Because the Taylor River is considered a navigable waterway, we also had to get approval from the U.S. Army Corps of Engineers, attesting that this facility would not negatively affect the Taylor River waterway.

Hydro Leader: Who will the new facility supply power to? How else will it affect the region?

Matt Feier: The new facility is expected to generate about 3.8 million kWh of energy annually, supporting the energy needs of 450–500 Gunnison County homes. Our system has approximately 11,700 meters, over 90 percent of which are residential meters. We expect the Taylor River Hydro Project to be a long-term asset. Solar panels and wind turbines have a commercial lifespan of approximately 30 years, but hydro can last many more decades with regular care and maintenance. We are definitely approaching this project with a long-term perspective. The hydro system operates 24/7, including at night and during peak hours. GCEA incurs a peak demand charge from Tri-State for energy used between 5:00 p.m. and 9:00 p.m. Taylor River Hydro production offsets our peak energy demand, saving us money on our Tri-State bill. This saving can be quite significant and is passed on to our members. The Taylor River

Hydro Project is more cost effective than our other local renewable energy projects.

Taylor River Hydro LLC could not directly benefit from the Internal Revenue Service's renewable energy tax credit program because the organization is structured as a partnership, and partnerships have been excluded from that program. Instead, Taylor River Hydro LLC was able to sell the value of our available renewable energy tax credit through a third party, helping us recoup almost 25 percent of the project's costs.

Hydro Leader: Is there anything you would like to add?

Matt Feier: Building the Taylor River Hydro Project has been a significant achievement for GCEA. This is something we have discussed and pursued for decades. Seeing it come to fruition was a boost for GCEA and our members. We are very pleased with the outcome, and it has been great to work with UVWUA. Most notably, we are simply happy to have a smoothly running local facility generating renewable energy year-round, 24 hours a day, on peak, with no effect on our members' rates.

Hydro Leader: What is your vision for the future?

Matt Feier: GCEA aims to provide our members with 80 percent renewable energy with a 90 percent reduction in carbon emissions compared to our 2015 baseline by 2030. To achieve these goals, GCEA is always looking for more economically feasible opportunities to expand renewable generation. The Taylor River Hydro Project has been GCEA's first significant local renewable energy endeavor and is GCEA's largest local renewable energy development to date. We are also in the process of constructing two 1-megawatt local solar arrays. Once these arrays are completed, GCEA intends to collaborate with Tri-State and other area cooperatives on larger regional renewable energy developments that will help GCEA reach our renewable energy and carbon-reduction goals. It is a great challenge to bring new renewable energy resources online functionally and cost effectively. However, engaging in this challenge is vital for the growth of the electric industry and the betterment of the member communities we serve. 



Matt Feier is the strategy, execution, technology, and member experience manager at the Gunnison County Electric Association. He can be contacted at mfeier@gcea.coop.



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Dustin Till

dustin.till@troutman.com

Elizabeth J. McCormick

elizabeth.mccormick@troutman.com

Charles Sensiba

charles.sensiba@troutman.com

troutman
pepper locke

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Greg Taylor of the U.S. Army Corps of Engineers: Operating Oregon Dams for Fish and Power



Water flows through the 1,081-foot fish ladder at the Army Corps' John Day Dam, spanning the Columbia River between Washington and Oregon.

In western Oregon's hydro operations, power generation and aquatic wildlife preservation go hand in hand, improving the survival and reproduction rates for endangered fish species such as the Chinook salmon. In this interview, Greg Taylor, the long-time supervisory fisheries biologist for the U.S. Army Corps of Engineers, explains how dam operations are integrated with the life cycles of migratory fish on the Willamette River and gives us a close-up view of facilities at Foster Dam.

Hydro Leader: Please tell us about your background and how you came to be in your current position.

Greg Taylor: I am a fish biologist for the Army Corps, working at the Willamette Valley and Rogue River Basin Projects in Oregon. The Willamette basin in Oregon includes 13 dams and reservoirs. The Army Corps also has two dams and reservoirs in the Rogue River basin, in southern Oregon, that I work at as well. For 24 years, I have overseen the Army Corps' fisheries program. Before

that, I worked for a state agency, the Oregon Department of Fish and Wildlife, also in the Willamette basin, so my whole career has focused on fish in the Willamette basin.

Hydro Leader: Please give us an overview of the dams in the Willamette Valley Project.

Greg Taylor: The dams were built primarily to reduce the effects of flooding, but the Army Corps was authorized to operate them for many additional purposes, including the provision of flows for fish and wildlife, hydropower, recreation, and municipal and industrial water supply; there's also a navigation authorization we don't use anymore. All that said, the critical pass/fail mission for us is still flood damage reduction. That is the purpose for which we exist, and that's the authorized purpose we don't compromise. At each of these dams, we're balancing all those authorized purposes. Their operations can result in benefits for multiple purposes, but their authorized

purposes can also be in tension. Our job is to manage the dams for all the authorized purposes and get maximum value for the public.

Hydro Leader: What role does the Army Corps play in managing both ecological goals and power production across the dams?

Greg Taylor: Water management at these dams has evolved substantially over time, often driven by the Endangered Species Act (ESA). We still prioritize flood damage reduction, but we also strive to improve conditions for ESA-listed fish species. Our hydro program is integrated with operations to support fish populations in ways that aren't immediately obvious. The units are a key component in successful upstream fish passage. For instance, we use outflow from our hydro units to attract fish to the entrance of fish ladders. The turbine units are also an important tool for managing water quality. They can help us meet important water quality targets for temperature and total dissolved gas (TDG). For example, we mix cold water from our generating units with warm surface water from the spillway gates to meet temperature targets downstream. The hydro units are critical to accomplishing that mixing. Further, if we spill too much water at once, we can generate too much TDG, which can be harmful to fish. We're able to combine spill with water from the generating unit to keep TDG levels low.

We do not have full fish ladders at these locations, unlike at dams in the Columbia River basin. In the Willamette basin, fish passage over the dams occurs using trap-and-haul facilities. Fish migrating upstream ascend a ladder that leads to a large holding pool. From the holding pool, they travel down a flume into an anesthetic tank. After they are anesthetized, biologists collect data on them. Then they are loaded onto trucks, transported, and released upstream. It's pretty hands on, but that's actually the easier part. The harder part is getting freshly spawned salmon and steelhead juveniles back through the dams safely. There are a variety of ways to do that. A big focus for the next 30 years will be improving downstream passage.

Hydro Leader: What was the motivation behind developing the Foster Dam Fish Collection Facility? What was its timeline?

Greg Taylor: Both upstream and downstream fish passage structures were built into the original structures of Foster and Green Peter Dams. As we operated these facilities over time, we learned a lot. Some features didn't work well, and management practices evolved over time, eventually leading to the upgrade of the adult facility at Foster Dam in 2014. We made a number of improvements to the collection, holding, sorting, and transport features. The original facility was really simple. It just had a small ladder, and all the fish were loaded into a hopper. They were picked up, put in the



The Fall Creek Adult Fish Facility collects Chinook salmon at Fall Creek Dam in Oregon so biologists can record data about their overall health before returning them upstream to spawn. More than 800 spring chinook salmon returned in 2025, which is more than double the 10-year average of around 350 fish and higher than the pre-dam estimate of 600 fish for this subbasin.

reservoir, and away they went. There's beauty in simplicity, but things are more complicated. We've added features that allow us to manage multiple species of fish and multiple destinations. The new designs eliminate physical handling to the greatest extent possible, trying to minimize the stress on the fish and maximize the survival rate. The new features improve operations for fish and people.

Hydro Leader: How does this collection facility integrate with the hydropower plant?

Greg Taylor: At Foster Dam, upstream fish passage and power production are highly integrated, probably more than you'd expect. The water supply that feeds the ladder and the entire adult fish collection facility comes from



Chinook salmon eggs for brood year 2021 sit in an incubation at the hatch house at the Army Corps' Cole M. Rivers Hatchery, November 2021.



Adult summer steelhead.



Biologist Brian Wooley releases fish into pipes at Fall Creek Dam that connect to transfer pools where they are then loaded into trucks and safely released back into the wild.

the penstock of the generating unit. In addition, water discharged from the generating unit provides the primary attraction at the fish ladder entrance. That was done intentionally. In fact, if we're not running that hydro unit, then we're spilling water, which creates a false attraction to the fish. The units at Foster, as at other facilities, are used to control the temperature and TDG of the water, so they're integrated in that way as well.

Hydro Leader: Would you tell us about the practical details of fish collection at Foster Dam?

Greg Taylor: The old facilities were simple. There is something to be said for that. You generally want water to be supplied to fish facilities by gravity to avoid pumping. We retained a gravity water supply at Foster, which is great, while adding many features that were not present in the old facility. At the old facility, all the fish were loaded into a hopper and released into the reservoir. Now, fish ascend a ladder into a trap. That way, we keep our hands off them. We introduce a stream of water into the trap, which cues the fish to swim upstream. They jump up into that stream of water, then slide down a flume and end up in an anesthetic tank. We anesthetize them so that we can minimize their stress while we're handling them.

We record all kinds of information on these fish. We take a small piece of tissue from the Chinook salmon to conduct a genetic analysis. As fish return in future years, we try to assign the genetic samples collected from the fish that previously spawned above the dam. By doing that, we can tell how many fish have actually replaced themselves over time. It's a good way to track our performance.

The new facilities operate primarily by computer and are more complex than old facilities. The same folks who maintain the hydropower units handle the fish facility maintenance. Those are complementary skill sets.

Hydro Leader: What are some of the biological challenges here?

Greg Taylor: Improving the status of ESA-listed fish species. The best way to improve the status of those species is to reestablish them in historic habitats located above the dams. We have a long, successful history of collecting the fish at the dam and transporting them upstream, but that is just step 1. The fish need to complete their entire life cycle. We also need to help the juveniles get back downstream through the dams so that they can return as adults and repeat the cycle.

Getting the juvenile fish back down through the dams is the next most challenging step, and improving downstream fish passage will be our biggest focus going forward. A variety of techniques are available for that, both operational and structural. An operational change would

be using existing infrastructure but operating it a little bit differently. Perhaps we run generating units during the day, then do some spill at night, when we know most of our juvenile fish are passing downstream. We get the benefit of using the generating unit but also improve fish passage survival. We're also planning to build downstream passage facilities with large pumps in the reservoir that attract and collect fish like a large vacuum. Once the juvenile fish are collected, they can be transported safely downstream, so they don't have to pass through the dam.

Hydro Leader: Please tell us about the hatchery program connected to this facility.

Greg Taylor: Most dams with fish passage facilities also had a hatchery sited near or just upstream of the dam. Those hatcheries have played a critical role. Historically, there was a recognition that some fish production in the basin was lost after the dams were constructed. The role of the hatcheries, historically, was to offset those losses.

Fish returning to the dams were collected and used to produce hatchery fish for future years. The fish produced in the mitigation hatchery programs have resulted in popular sport fisheries in the reservoirs and stretches of river downstream of the dams.

That Army Corps hatchery program has evolved to play a role in conservation. We're using hatchery fish to help reestablish Chinook salmon and steelhead populations above the dam. It is critical to have sufficient numbers of fish to do that, while at the same time still providing popular sport fisheries. We run those facilities under contract with the Oregon Department of Fish and Wildlife, and that's worked really well.

Hydro Leader: Is there anything you would like to add?

Greg Taylor: Hydropower is a key tool for managing fish populations. I know that's not what's in a lot of people's heads, but it is true. We've been asked by Congress to look at revising our hydropower program. It's important that people understand the critical role hydropower plays for fish passage and water quality in the current system. To the extent that we make changes in the hydropower program, we want to replace that tool.

Hydro Leader: How do you see the role of fish passage evolving as hydrology and power demands shift? What's your vision for the future?

Greg Taylor: We are here to serve the public, to get the best benefits from facilities that are operated for multiple authorized purposes, including flood damage reduction, power generation, recreation, and flows for fish and wildlife. Our management should align with what the public wants it to



Army Corps contractors monitor screw traps downstream of Big Cliff Dam, May 2021. The traps collect juvenile salmon after they pass through Lookout Point, Cougar, and Big Cliff Dams, giving insight into the results of operational changes at the dams.

be. As society evolves and changes, our management of these dams should as well. There are strong opinions out there. We talk to everybody, and we will manage these facilities in the manner the public ultimately wants.

With endangered fish species, our goal is to reestablish populations in the historic habitat above the dams. We get adult fish up there safely and let them spawn; then, the juveniles must do two things: find their way out of our dams and pass safely downstream so they can ultimately go out to the ocean and then return to begin the cycle again. That will sustain the populations above the dam and improve the status of these species. That's my vision for where we go.

The biological opinion is a document outlining our ESA compliance. That document contemplates work for the next 30 years. It could cost billions of dollars to ultimately accomplish all the work necessary to improve the status of the species. It is a huge challenge for this region to try to balance the needs of fish and people.

The bottom line is that operations must be safe and legal. Human life and safety will always be the first priority, but we will ensure that we meet all our legal requirements as well. Those two things will drive the overall operations. Then, the actual management will look, I hope, the way the public wants it to look. 



Greg Taylor is the Willamette Valley supervisory fisheries biologist for the U.S. Army Corps of Engineers. For more on this topic, please contact dll-cenwp-media-desk@usace.army.mil.

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Repurposing Former Coal Mine Land for Clean Energy: Bree Wilson on Rye Development's Lewis Ridge Pumped Storage Project

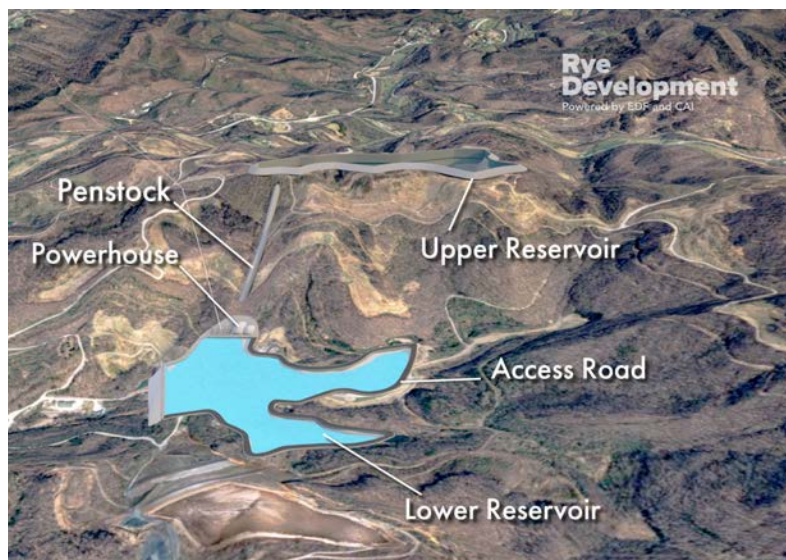
As demand for reliable energy grows across the United States, Rye Development is positioning itself as the nation's leading developer of pumped storage hydropower projects. Among the projects it is advancing is the 266-megawatt Lewis Ridge Pumped Storage Project, planned for a former coal-mining site in Kentucky. When built, it will have the capacity to store 8 hours' worth of energy and provide critical grid flexibility. Rye is pushing forward with licensing and design to bring the project online by 2032. In this interview, Hydro Leader speaks with Bree Wilson, Rye's vice president of development, about how the Lewis Ridge project will help stabilize the grid during extreme weather events, support a range of power sources, create thousands of jobs during construction, and provide tax revenue for eastern Kentucky.

Hydro Leader: Please tell us about your background and how you came to be in your current position.

Bree Wilson: I graduated from Gonzaga University in 2004 with a degree in civil engineering. During my junior year of college, I began my career in hydropower as an intern with the Federal Energy Regulatory Commission (FERC), serving in its Division of Dam Safety and Inspections in Portland. Today, 22 years later, I still work in hydropower. Before joining Rye Development, I spent most of my career with the U.S. Army Corps of Engineers' Hydroelectric Design Center, managing hydropower projects. I worked on projects for the Army Corps' hydropower fleet, which comprises 75 hydropower plants nationwide. Eventually, I became the chief of the Program Integration and Delivery Branch, where I served on the leadership team and managed the team responsible for program management, project management, planning, and external outreach for the center. I joined Rye Development in 2024.

Hydro Leader: Please introduce Rye Development.

Bree Wilson: Rye is advancing the next generation of pumped storage hydropower in the United States to boost grid reliability and meet increasing energy demands. Rye Development is a partnership between Climate Adaptive Infrastructure and EDF power solutions. Rye has an experienced team with a proven track record of success in development and navigating the FERC licensing process. We have successfully secured FERC licenses for run-of-river and pumped storage projects across the nation.



A rendering of the planned Lewis Ridge Pumped Storage Plant.

Our expertise covers everything from site identification—we are constantly scouting for new projects—to planning, licensing, design, construction, and the operation of the pumped storage plants.

Hydro Leader: Please tell us about the history and significance of the Lewis Ridge Pumped Storage Project.

Bree Wilson: We identified the Lewis Ridge project site, a former coal-mining site, in 2021 and began initial assessments to see if it was a good fit for pumped storage. When we evaluate potential pumped storage project sites, we look at factors such as significant elevation changes, space for two reservoirs, proximity to water sources and transmission lines, and community support. This site meets all the topographical requirements for a pumped storage project. More importantly, the local community is eager to bring this project to the region.

The economic benefit to southeastern Kentucky will be significant. The project will create more than 2,000 jobs during construction and generate more than \$16 million in new tax revenue for Bell County. Moreover, by repurposing a former coal-mining site for pumped storage, we are giving the site a new purpose that will benefit the community for decades. Pumped storage projects have a long lifespan, typically lasting 50–100 years.

IMAGE AND PHOTO COURTESY OF RYE DEVELOPMENT.

Hydro Leader: Would you tell us more about the factors that made this site a prime candidate for pumped storage?

Bree Wilson: Finding sites that meet all the requirements for pumped storage development—such as elevation change, the possibility of constructing two large reservoirs, and the necessary energy demand—is essential. The AI revolution is bringing new data centers online, and we continue to see load growth across the country, including in southeastern Kentucky. That creates demand for this project in the region. Long-duration storage is especially beneficial. In December 2022, Winter Storm Elliot caused challenges in the area related to energy storage and reliability. Having a project like Lewis Ridge in the electric system would help keep the lights on during such events, ensuring that residents have heat and power even during extreme weather. One of the main advantages of pumped storage is that it helps optimize the existing grid, allowing the local fleet to operate more efficiently by absorbing variations in grid demand. Considering everything happening in southeastern Kentucky—the growth, weather challenges, and economic development needs—the Lewis Ridge project has received tremendous local support.

Hydro Leader: What differentiates the Lewis Ridge project from other pumped storage projects?

Bree Wilson: The main feature that makes this project distinctive is that it will be built on former coal mining land. Repurposing a mined site for pumped storage not only puts the land to productive new use but also taps into a skilled local workforce with the expertise needed to build the new plant.

Hydro Leader: Would you walk us through the project timeline, from the conception of the idea to its expected completion?

Bree Wilson: Rye filed the final license application (FLA) with FERC in June 2025. Typically, the FERC licensing process is completed before design begins, which adds a significant amount of time to the development of a project. Rye is running the design and licensing processes in parallel, leveraging our experience and relationships to accelerate progress. Rye is working collaboratively with FERC during the licensing and design process, and we anticipate obtaining a license by June 2027. We expect the project to be shovel ready by the end of 2027. With a 48-month construction timeline, we plan to bring the plant online in late 2031 or early 2032.

Hydro Leader: Pumped storage projects often face complex permitting requirements. What have been some of these key regulatory milestones so far?

Bree Wilson: Submitting the FLA, which we completed in June 2025, was a significant milestone. The FERC licensing process includes a formal environmental review, public comment periods, public hearings, and coordination with state and federal agencies. We are working to ensure that all required permits are in place by June 2027. This would put us on target to receive our license within 2 years of submitting the FLA.

Hydro Leader: Please tell us about the project's projected energy capacity and storage duration and how it complements other resources in the region.

Bree Wilson: We plan for the Lewis Ridge project to be able to generate 266 megawatts over 8 hours. It will be able to store excess power when it's available on the grid and then generate power when it's needed most. One of the benefits of pumped storage is its ability to respond quickly to changes. Lewis Ridge will be able to transition from storing to generating energy at a moment's notice. Pumped storage supports the integration of renewable energy sources, such as wind and solar, while also supporting existing baseload plants, such as nuclear, coal, and natural gas plants.

Hydro Leader: Is there anything you would like to add?

Bree Wilson: Rye is truly excited to advance pumped storage in the United States. Our entire team is enthusiastic about the Lewis Ridge project, and we are eager to bring it online to deliver economic benefits and reliable, long-duration storage to the region.

Hydro Leader: What is your vision for the future?

Bree Wilson: My vision includes getting this project online and paving the way for future ones. I hope the industry can prove out a strategy to bring pumped storage hydro projects online faster, allowing the United States to continue expanding our long-duration storage to ensure a reliable system for generations to come. [H](#)



Bree Wilson is the vice president of development at Rye Development. She can be contacted at bree@ryedevelopment.com.

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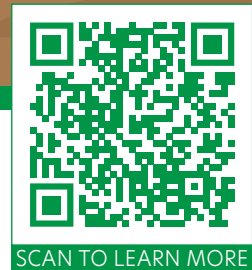
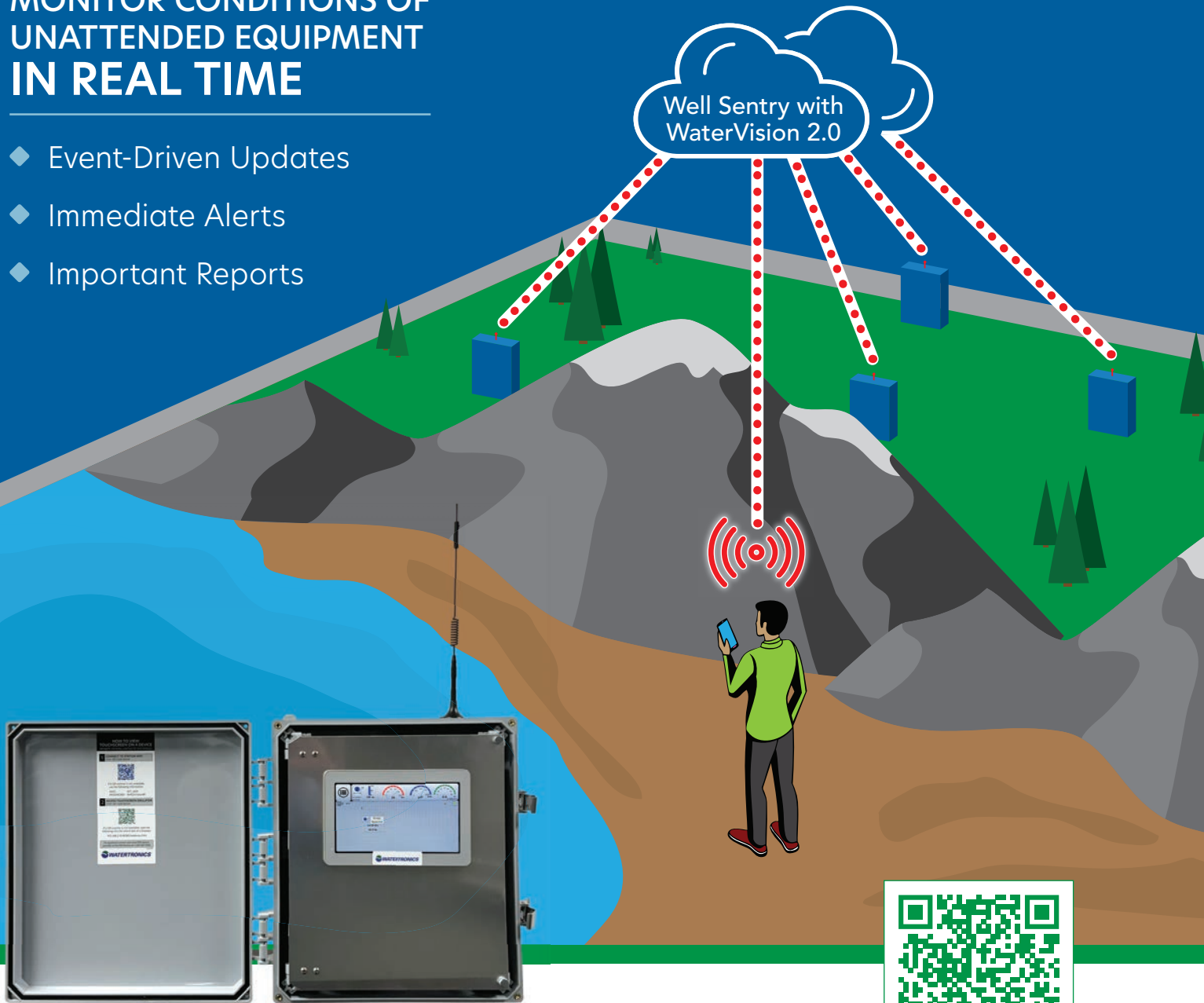
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Andrew Webber of Digital Power Optimization: Using Undervalued Hydro Assets to Power Data Centers



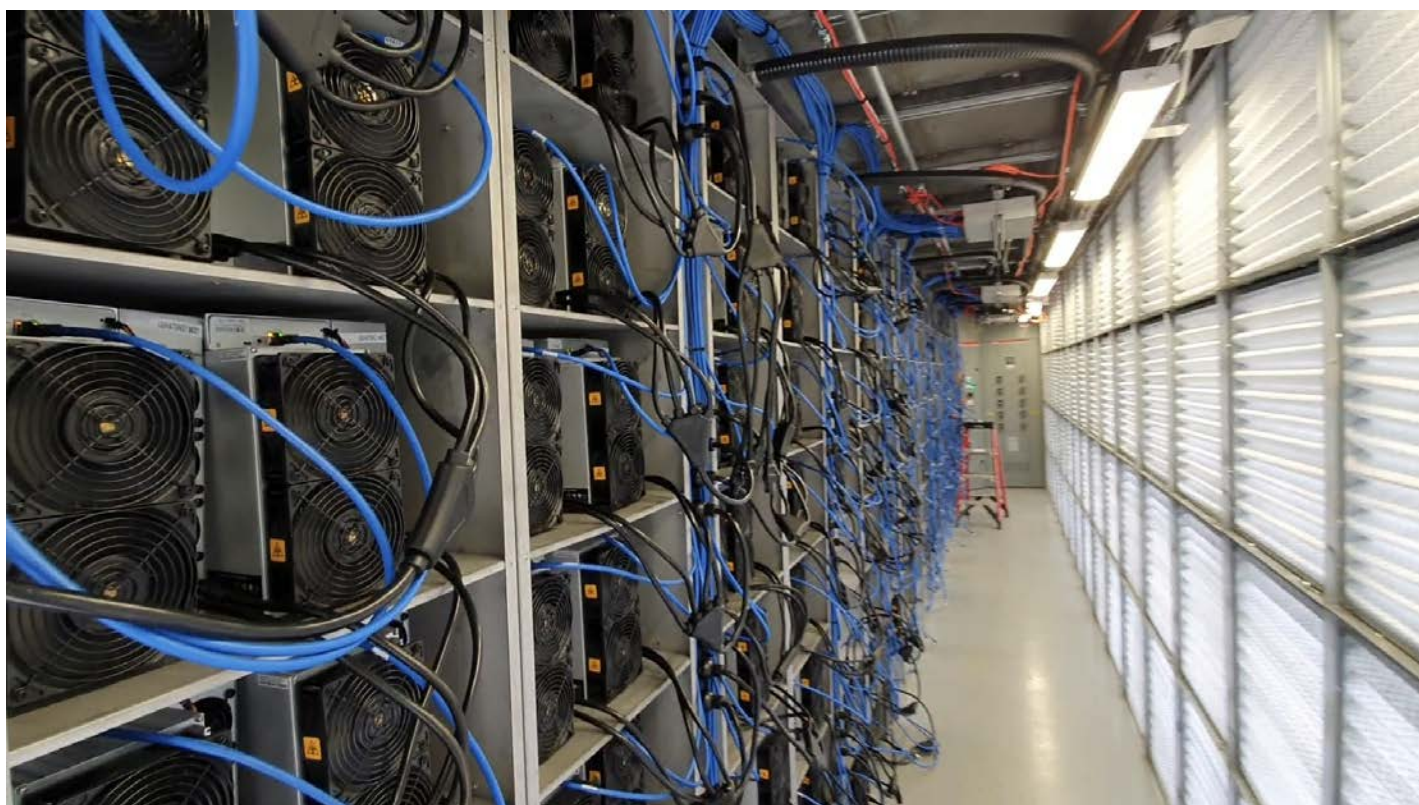
DPO deployed and manages a 1.8 MW bitcoin mining facility at this hydro facility in Hatfield, Wisconsin.

Andrew Webber believes the hydro industry is on the cusp of a powerful new energy optimization opportunity: pairing data centers with undervalued hydro assets. In this interview, he shares how the abundance of stranded power that exists across the country could be used to power new data centers for technologies such as bitcoin. Hydropower, he says, offers a uniquely reliable energy source for data centers. And in turn, bitcoin mining has the flexibility to drop away when grid prices spike, allowing the extra power to be directed to stabilizing the grid and keeping prices low for the customer. This new approach comes with some hurdles, Mr. Webber explains, but his hope is that legislators and regulators will see how it could benefit both public and private industries across the country.

Hydro Leader: Please tell us about your background and how you came to be in your current position.

Andrew Webber: I'm by and large a finance guy. After a 4-year enlistment in the U.S. Marine Corps, I started my finance career in New York at Goldman Sachs in the investment banking world. Within a couple of years, I moved on to the hedge fund and private equity space, trading stocks for a number of years for hedge funds here in New York City, after which I joined a firm called Fortress Investment Group and worked within its credit funds, where I structured bespoke private credit agreements, traded public debt, and so on. I am less of a hydro guy and more of a finance guy who just over the last couple of years has found himself in the hydro realm. In fact, my company, Digital Power Optimization (DPO), is mostly in the data center business, but we started acquiring and operating hydroelectric assets as an opportunistic play rather than as part of what was initially our primary strategy. It ultimately led to us creating a related hydro asset management

PHOTOS COURTESY OF DPO.



Inside a DPO data center installation.

subsidiary called Cascade Digital Power. Sometimes, you have one thing in mind, and it grows and evolves, leading you down a totally different path than you expected. It's been an interesting journey.

Hydro Leader: Please introduce DPO.

Andrew Webber: I founded DPO in February 2020, right before the pandemic. The idea behind the business relates to data centers and stranded energy. DPO pairs data centers with undervalued and underused generation assets. We create data centers on behalf of energy companies so that their excess and undervalued energy can be used for a productive purpose. This allows these companies to create value on site in a vertically integrated way rather than trying to find some third party to whom they can sell their power at a higher rate.

The types of data centers you can build depend on the type of generation. Some of them might have great fiber connectivity for something like an AI training facility. Others may be more remote, and something like a flexible cryptocurrency mining operation, such as a bitcoin mine, might be a more appropriate offtake mechanism. The key is matching the type of generation to the amount of potential energy. It depends on how much power is available, whether it is firm or intermittent, how big the substation is, and whether the generation asset has existing power purchasing agreements (PPAs).

This data center offtake strategy can really go almost anywhere and serve a lot of different asset types, depending on the nature of the challenge you're facing. You can do this with wind; solar; and, of course, hydro. We've worked with natural gas plants. We've done it on the grid as well. Wind, solar, and hydro all have different generation profiles. The challenge is matching up the right data center project and operation with these variable and sometimes intermittent renewable resources.

Hydro Leader: What was the flagship concept, and how has that evolved over time?

Andrew Webber: It started when someone approached me about using flared gas at oil wells as a means of powering bitcoin mining. I did not know a lot about either of those things, but I found them interesting and had already been doing some research on my own. I came across a *Los Angeles Times* article from 2017 describing all the stranded solar power in California and explaining that so much solar had been built that daytime power prices had fallen to nearly zero. Solar generation was being curtailed because there was nowhere useful for the power to go. It dawned on me that we could help the energy sector arbitrage its power in cases like this. We decided we could do this on behalf of the energy sector as a partner, rather than trying to be a counterparty. At the time, bitcoin miners were trying to get as much power from energy companies as they could, as

cheaply as they could. We took a different tactic: helping the power sector monetize its own stranded power. We work for companies large and small, with our primary goal being the creation of value for our partners through our computing-driven power offtake strategy. Bitcoin mining and even AI data center development projects are simply the means to an end: helping the energy sector. By deploying thoughtfully, in partnership with energy companies, we could get a much better result. Our flagship solution is to integrate vertically with the energy companies, allowing them to participate in bitcoin mining or data center development in whatever way benefits them most. That way, the energy companies benefit directly from the arrangement.



The DPO-operated bitcoin mining facility in Hatfield, Wisconsin.

Hydro Leader: Would you elaborate on how this would work with hydropower?

Andrew Webber: Hydro is a great resource for data centers for a couple of reasons. First, it's relatively predictable. There are wet seasons and dry seasons, and you know largely what you're going to get. That predictability is beneficial when you're constructing something like this. Wind assets, for example, are similar in that there's wind most of the time, but they are different in that you never know when it's going to stop or start. Solar is quite predictable, but there is an obvious shortfall in generation every night. The different attributes of these generation types are significant as you pursue a data center construction project.

Hydro assets of different sizes have a range of benefits. You can accommodate bitcoin mining with just a couple of megawatts (MW) from a hydro asset. AI facilities are much larger, and often, those customers want the facility in a certain place, but bitcoin mining can go anywhere, and that makes it really great for the hydro industry. It doesn't need the same sort of bandwidth and latency for internet connectivity that AI computing does. If you were to build a data center to match the maximum wet-season capacity of a hydro asset, it wouldn't produce enough electricity to run

your data center during the dry season, and you would have to buy power from the grid to supplement it. However, if you build your data center to match your dry-season average, you will have enough power all year long. When you have excess power during the wet season, you can sell it into the grid, which is what we do at one of our sites. Being able to match the seasonal flows at hydro facilities is really valuable. From the perspective of optimizing the pricing that a hydro asset gets, there are few tools out there that are as good, as profitable, or as flexible as an onsite data center.

Hydro Leader: Would you explain the value creation in colocated data center loads?

Andrew Webber: As an owner, you don't have many choices. If you own a hydro facility, the power you produce is delivered and sold at a specific point of interconnection with the power grid, and the local prices are usually determined by regional market supply and demand dynamics and the availability of electrical transmission infrastructure. Power producers often have limited options to create incremental revenue. I'll use one of the facilities we own and operate under our Cascade banner as an example. It's a 6 MW hydro asset in central Wisconsin. Most of the year, we get paid an average of about \$30–\$35 per megawatt-hour (MWh) by the grid—sometimes more, sometimes much less. At those prices, it is hard to maintain operations, pay staff, and maintain the facility.

We built a 1.8 MW data center, colocated with the generation asset, as a more profitable use for our power. During most of the year, the first 1.8 MW we generate is funneled into that data center and produces bitcoin. We sell the bitcoin for U.S. dollars, making about \$100–\$120 per MWh, more than double what we would have made otherwise. If the grid price goes above \$120 per MWh—our break-even point—we turn off the bitcoin mine and send 100 percent of our power to the grid.

Without the data center, that asset's 2024 revenues would have been about \$680,000. With the data center, they were \$1.4 million. It more than doubled our revenue. The asset's earnings without the data center would have been negative \$150,000. We couldn't have maintained payroll or conducted maintenance. With the data center, we made \$400,000. Further, we do not cause any strain on the grid. Every electron we produce is available for the grid if it ever needs it because we can turn off our bitcoin mining load at a moment's notice.

By operating in this manner, we achieve two things: We make more money, and we alleviate strain on the grid. For example, on a hot day, when people's air conditioning ramps up, and there may not be enough wind generation in the area, power prices may rise to \$600 per MWh. We try to be a good corporate citizen by getting rid of our bitcoin mining load and helping alleviate that grid strain. Bitcoin

PHOTOS COURTESY OF DPO.

mining data centers are valuable tools from an energy arbitrage and energy management perspective. Bitcoin has a negative reputation with some, but when the energy sector starts recognizing its positive potential, there will be a lot more of it distributed around our power grids.

There are many privately owned hydro assets around this country that are struggling to get by. They don't produce much revenue, and there is a risk that the owners will shut them down or abandon their licenses. Adopting this bitcoin mining strategy would keep them operational and maintain our grid infrastructure.

Hydro Leader: Does DPO's model enable hydropower plants to respond dynamically to grid fluctuations?

Andrew Webber: Different data centers have different attributes and qualities. A bitcoin mining load is super flexible. You can turn it off whenever you want. AI is a totally different animal. It needs a more consistent and stable power supply, but it can pay a lot more for it. The idea of a bitcoin mining load dropping away as a demand-response mechanism is immensely valuable. Texas recognized the value of bitcoin mining to its isolated grid system early on. It encourages bitcoin mining to come in and make some renewable assets more valuable; then, the mining can drop away whenever there's a grid-strain event. That method of operating never strains the grid in the way people think it will. They say, "These data centers are going to take all our power." In some cases, that's true, but for a flexible bitcoin mine, it's almost never true. The bitcoin mine will never operate when grid prices spike, because it would be unprofitable to do so. Government regulation is not even necessary; bitcoin miners will do it automatically because it's in their best interest. It also happens to be a good thing for the grid. It's a hugely advantageous system.

Hydro Leader: What are the main challenges and opportunities when pairing hydropower with digital infrastructure?

Andrew Webber: There are a lot of them. Regulatory overlay is critical. It's just easier in some states than others. There are questions related to the ownership of the generation versus the ownership of the data center. In some cases, it is easier if the same entity owns both. In other locations, restrictions may make that impossible. In some cases, certain tax incentives are challenging to capture if you're consuming your own power rather than selling it to a third party. Sometimes, we recommend that a group vertically integrate and spend its own funds to build on its own assets. In other cases, it's far more beneficial for it to sell power to a third party and let that entity own the data center operations.

Sizing matters as well. Bitcoin mining is very flexible—it can operate with as little as 1 MW or 0.5 MW of power. That matches well with hydro, because there are quite a lot of smaller hydro facilities. There are a lot of hydro facilities under 20 MW that make a great use case for bitcoin mining. By contrast, it would be harder to build an AI data center at a small scale. AI computing often needs more power in a single place. Entities such as Microsoft or Google ideally want 500 MW at a time, but 20–100 MW often can work just as well, so larger hydro facilities might be able to sell power to them. Google recently signed a deal to buy something like \$3 billion worth of hydropower from some of Brookfield's Pennsylvania hydro assets. Hydro is finding its niche in this changing data center landscape. I don't think many hydro owners fully understand this opportunity, but over the next 24–36 months, I believe more owners are going to see opportunities to sell power to data centers or create their own. Owners have to be thoughtful about what sort of technology they pair with, where they're doing it, and at what scale, but there are opportunities for those who are willing to dig in.



Turbines and generators inside the powerhouse at the facility in Hatfield.

Hydro Leader: What is your role with a hydro client?

Andrew Webber: DPO is primarily a data center developer and operator, with hydro asset acquisition and management being a related but separate function that we pursue under Cascade when and where it makes sense. We work for those who own generating assets, and we get paid by taking a management fee—a share of the revenue produced once the data center is built and operating. We spend a lot of time up front educating clients so that their decisions are as informed as possible.

The service we provide starts from the day we meet a new partner, whether it is a wind owner, a hydro asset owner, or a private equity firm. We pitch them, saying, "Have you ever thought about building your own data

center to create offtake for your power?” Most of them say, “Not really. We just sell power.” The idea of building their own data centers is foreign to them, so we have to walk them through it. It often takes years of conversations with their legal department, their engineering department, their chief financial officer, their CEO, and their board of directors. It’s a painstaking process to get an energy company to really consider something like this.

After we have convinced them, DPO actually builds and operates these facilities ourselves on behalf of our partners. We have our own teams source all the equipment: We buy and install transformers, containers, individual computers, and so on. We source insurance. We manage all the exchange accounts to liquidate the bitcoin production. We help with everything that needs to happen to get to the point of revenue production and profit. We then return that profit to our partners, pay all the bills, and do all the accounting and all the legal work. It becomes a separate line of business within their own footprint.

We do come across entities that say, “This is great, but it’s not for me. I’m not going to fund all of this. Is there anything else you can do for me? Can you just buy my power?” I say, “Sure, I’d be willing to just buy your power or even to buy your asset.” We have purchased two hydroelectric assets through Cascade, using third-party capital. With one of those, we built a bitcoin mine. The other just sells power with a PPA in place.

Our proposal to hydro owners is this: We can do this for you. We think it’s the best way for you to make a buck. You maintain control of it, and you have all the economic exposure. If you don’t want to do that, we’ll bring in third-party capital to build the facility. That third party will own it, and we’ll give you some uplift to your power price through a PPA structure. Instead of selling power for x , we’ll give you x plus \$2, so there’s some free uplift for those who are willing to say yes, even if the capital comes from a third party. If owners are not interested, we try to buy the facility, saying, “I’ll make more money owning this than you will because you don’t want to do what I’m suggesting. How about I just pay you a fair market price for your hydro? Then I’ll execute on this plan and create my own uplift.” I present these options to our partners and determine their risk tolerance and capital budget. Taking their answers into account, we structure a solution that hopefully gives everybody what they want.

Hydro Leader: Is there anything you would like to add?

Andrew Webber: Hydropower facilities are a resource that this country is not as aware of as it ought to be. This magazine’s readers understand how important it is as a baseload resource. The hydropower sector also faces challenges. The National Hydropower Association often talks about owners abandoning their licenses because

they just can’t afford to keep their facilities open. That is ultimately going to affect society. There is going to be increasing pressure for hydro owners to find a solution that at least allows their facilities to be maintained, not least because in some cases they hold back lakes and have other functions unrelated to power production. They’re not going to just disappear. These sorts of data-center strategies are an outside-the-box approach that can keep this industry alive. They also offer a new, modern solution that complements what older facilities are already doing.

Hydro Leader: What is your vision for the future?

Andrew Webber: Using existing assets reduces the need to build new things. If you can use what you have more efficiently and effectively, then you don’t have to build so much more. Idaho National Laboratory is currently working on a project to evaluate unpowered dams and examine how developers could add new generation capacity.

The future of development in this space includes a couple of things. First, maintaining the huge, valuable resource we already have. Second, figuring out how to expand hydro in places where it’s appropriate to do so. There are plenty of critics of all different types of generation technology, and the concerns about hydropower’s effects on fish species are all valid and relevant, but I think there are existing dams in the United States where power could be added or existing projects could be enlarged if there were a viable offtaker. Outside the United States, there’s a huge boom of new hydro facilities in places such as Africa and Southeast Asia. We talk to developers there, and the idea of creating a marginal, incremental load that’s more profitable than their baseline only makes the projects more competitive and more viable.

The concept of pairing hydropower, or really any new generation, with data-center development is in its infancy. Five years from now, it’s going to be a lot more obvious that certain data centers should be built in specific places, and certain generation assets can be made a lot more useful by the intelligent siting of those data centers. We will see more of this, and I hope regulators and legislators will realize that there’s a lot of value here for the United States and for private industry as well. 



Andrew Webber is the CEO of Digital Power Optimization. He can be reached at webber@digitalpoweroptimization.com. For more on DPO, visit digitalpoweroptimization.com.

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Decades ago, the East Columbia Basin Irrigation District, the Quincy-Columbia Basin Irrigation District, and the South Columbia Basin Irrigation District entered into an agreement to develop, operate and maintain hydroelectric generating facilities developed in conjunction with the irrigation systems that are tied to the Columbia Basin Project.



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J.D. Villegas: Glasdon's Water Safety Equipment



A Guardian life ring cabinet in New York City.



A Guardian life ring cabinet in Hampton Roads, Virginia.

Flotation life preservers don't do any good if they are absent, broken, or decayed. With that in mind, Glasdon's durable and colorful 24- and 30-inch Guardian life ring cabinets populate boat docks, marinas, swimming pools, beaches, and water treatment facilities, keeping the familiar donut-shaped life preservers stored away yet quickly accessible. In addition to the cabinets, the British company manufactures scores of products for outdoor cityscapes, including all the safety gear needed around open water. In this interview, J.D. Villegas, the vice president of sales at Glasdon Inc., explains the company's line of durable outdoor environmental and safety-related equipment.

Hydro Leader: Please tell us about your background and how you came to be in your current position.

J.D. Villegas: I grew up in Spain and joined Glasdon, a British company, 27 years ago as a sales representative. In the early 2000s, I became part of Glasdon Europe SARL, based in northern France. In 2011, a new project was started to bring our products closer to our U.S. customers. That was the beginning of Glasdon Inc., the subsidiary of Glasdon Group in the United States, and I was invited to be part of it.

Hydro Leader: Please introduce Glasdon.

J.D. Villegas: We design, manufacture, and supply environmental and safety products. Glasdon was founded by Donald Sidebottom, today our chairman, in 1959. Mr. Sidebottom had the vision to use plastic materials for longer-life outdoor equipment. Today, Glasdon is a group of companies with almost 300 employees that has provided products to over 100 countries. With a local team of five people, Glasdon Inc. serves U.S. customers. Orders are

assembled and shipped from our facilities in Richmond, Virginia. In 2017, we introduced the first product specifically designed for the U.S. market. Around half our turnover is related to water safety products. We also offer a wide range of recycling bins and garbage cans for commercial use.

Since 1959, our mission has been to design, manufacture, and supply innovative, market-leading products that enable our customers to contribute to a clean, safe, and more sustainable environment. Working with our design team, we provide real-world solutions tailored to meet the needs and requirements of our customers.

Hydro Leader: Who are your customers, and where are they primarily located? Where are your products manufactured?

J.D. Villegas: We are a business-to-business company that serves customers in multiple industries. Our customers include the U.S. armed forces; federal, state, county, and local-level agencies; and companies in the retail, manufacturing, healthcare, tech, higher education, finance, and real estate sectors. We have customers in all 50 states. Our water safety products are used by customers in many of the industries mentioned earlier, including multiple water companies. We also serve ports and marinas.

Six of the 10 most populous cities in the country have installed our Guardian life ring cabinets in public areas to increase safety around water in those communities. The life ring cabinets are made in the United States. Other products in our range are manufactured in the United States or the UK. We import the products in parts and assemble them in Virginia, matching the requirements of our customers.

Hydro Leader: Please introduce your water safety-related products and how they are used.

J.D. Villegas: Life rings are used to save lives in water-based emergencies. They are typically made of buoyant materials, such as foam. Our Guardian life ring cabinets are designed to protect and prolong the service of life-saving equipment. The cabinets protect against harmful UV degradation, corrosive saline environments, and storm damage. They are also highly visible, making them quickly recognizable in case of an emergency. They help operators to ensure that areas around bodies of water are conveniently equipped. Guardian cabinets are made from durable polymer and are designed to withstand extreme weather. The DuraPol material we use in the cabinets does not chip or rust, so maintenance is minimal, even in highly saline environments. The cabinets are designed to reduce the risk of the door opening when exposed to high winds or waves but feature a quick-release mechanism for emergency access.

Hydro Leader: Would you tell us about how your products help users comply with relevant laws and regulations?

J.D. Villegas: The City of Chicago and other area agencies rely on our water safety equipment to comply with the Lake Michigan Rescue Equipment Act, passed by the Illinois General Assembly in 2022. Indiana Senate Bill 253, a similar statute, was enacted into law in early 2024. We provide Guardian Cabinets to customers in Indiana as well. Other customers might need to comply with the Occupational Safety and Health Administration's standard 1917, which requires coast guard-approved 30-inch life rings to be readily available in waterside work areas. Our Guardian 30 Life Ring Cabinet offers an ideal solution to keep the life ring secure, visible, and ready. Our products also align with California regulations regarding life rings and personal flotation devices.

Hydro Leader: Would you tell us about your emphasis on sustainability?

J.D. Villegas: We are committed to continuously improving environmental performance and processes and providing our customers with products to enable them to improve theirs. Glasdon employees build strong relationships with each other, with our vendors, and with our customers. That has enabled Glasdon to innovate, scale, and champion sustainability in the solutions we develop for public and commercial spaces.

Following a mantra of quality by design, Glasdon products contribute to a cleaner, safer, and more sustainable environment. We are committed to developing new, long-lasting products that reduce energy consumption, increase material security, and ensure the safety of society. We are committed to driving down carbon emissions within our business and reaching net zero by 2035. This pledge is embedded in all aspects of our business,

contributing to our main goal of operating an environmentally responsible business.

Hydro Leader: What are some of Glasdon's newest products?

J.D. Villegas: Last summer, we released a recycling station with tailored finishes, versatile waste-stream configurations, and premium quality. This will be ideal for architects and designers who are seeking both sustainability and style.

Hydro Leader: What are some of Glasdon's top objectives for the future?

J.D. Villegas: We are focused on products that will improve the storage and accessibility of lifesaving equipment around water, including waterways and swimming areas. As an example, we are looking at some state parks that have loaner life-jacket stations. We think we could develop a good solution for those.

Hydro Leader: What is the best way for readers who are interested in your products to get in touch with you?

J.D. Villegas: Our website is open 24/7. There is also a live chat facility available during office hours. We have a presence on LinkedIn and are active on other social media platforms. Prospective customers interested in knowing more about our products can schedule a live video demonstration on our website.

Hydro Leader: Is there anything you would like to add?

J.D. Villegas: Part of our operating profit is used to fund the Donald J. Sidebottom Glasdon Charitable Program. Glasdon Group is a champion of social responsibility. As a company, we are committed to giving back to the communities in which we operate through donations, grants, and fundraising for charitable organizations.

Hydro Leader: What is your vision for the future?

J.D. Villegas: We want to keep having a positive effect on our community, our customers, and our employees. As a company, we envision being at the forefront of product design, expanding into new markets, and serving an even wider customer base. 



J.D. Villegas is the vice president of sales at Glasdon Inc. For more on Glasdon, visit us.glasdon.com.

Lisa Jacobson of the Business Council for Sustainable Energy: Advocating for Efficiency and Clean Energy



A hydropower dam.

Since the 1990s, the Business Council for Sustainable Energy (BCSE) has advocated for policies that support energy efficiency and clean energy deployment in the United States and around the globe. In this interview, BCSE President Lisa Jacobson discusses how the organization pursues this mission through policy work, education, and international cooperation.

Hydro Leader: Please tell us about your background and how you came to be in your current position.

Lisa Jacobson: I am the president of BCSE. We are a broad-based energy trade association that focuses on energy efficiency and the natural gas and renewable energy sectors. BCSE is dedicated to implementing policies that support a diverse portfolio of energy options in the United States and ensure access to affordable, reliable, and clean energy solutions. I have been in the field for over 20 years. Previously, I worked in Congress on federal policy, and after attending graduate school, I made the shift to energy and environmental policy.

Hydro Leader: Please tell us about BCSE's history and mission.

Lisa Jacobson: BCSE was formed in the early 1990s by executives in the efficiency, natural gas, and renewable energy industries. They were looking to create an organization to represent their interests, to promote low- and zero-carbon technologies, to enact new federal policies, and to educate policymakers on the attributes of a broad energy-resources portfolio.

We are focused on energy policy at the federal level, including tax policy, environmental regulations, annual budget, and appropriations for R&D and deployment partnerships. We are also active at the international level, where we bring our industries to international forums to talk about what types of policies would be necessary to deploy clean energy more broadly around the world.

Hydro Leader: What are BCSE's top priorities today?

Lisa Jacobson: Our biggest priority right now is to maintain the suite of federal tax incentives in the energy sector. We have done that with the hydropower industry as well as in the other industries we represent. This has been the driver of

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our national energy policy for three decades, as it can help reduce the cost of deploying energy in our country. We think it is important that those tax credits be maintained.

Hydro Leader: Would you tell us about the factbook you release?

Lisa Jacobson: We release an annual report with BloombergNEF called the *Sustainable Energy in America Factbook*. After the release, we go around the country and do work in Washington, DC, to share the information. We also release side reports, such as the Minnesota Energy Factsheet. We hope each year's report informs good policy decisions.

Hydro Leader: How does BCSE help companies speed up the process of receiving federal funding for infrastructure projects?

Lisa Jacobson: We are the administrator of the Federal Performance Contracting Coalition (FPCC), which is a defined set of federal energy service companies (ESCOs) that can bid the federal government for contracts to do energy service projects. The FPCC works with Congress and the executive branch to speed up the approval process and enable the federal government to do more ESCO projects.

Hydro Leader: Would you tell us about the BCSE Foundation?

Lisa Jacobson: About 10 years ago, BCSE established a foundation to help expand its educational programming, and it has been a great complement to BCSE, which is a trade association. BCSE does a variety of educational projects through the BCSE Foundation. Sometimes, the foundation supports the outreach related to our annual *Sustainable Energy in America Factbook*, but it can also educate on other topics. Recently, the foundation has helped do educational work at the state and local levels by describing new federal funding under the Infrastructure Investment and Jobs Act and the Inflation Reduction Act.

Hydro Leader: Would you tell us about the International Council for Sustainable Energy?

Lisa Jacobson: The International Council for Sustainable Energy is a loose federation of different trade associations that participate in international climate change negotiations related to the implementation of the Paris Agreement and other projects of the United Nations Framework Convention on Climate Change. BCSE has participated in those meetings since the early 1990s. We work with peer groups from different parts of the world, such as the Australian Clean Energy Council and E5, a European-based, multi-industry organization, to build support for policies that advance energy efficiency and clean energy.

Hydro Leader: Would you tell us about your board of directors?

Lisa Jacobson: We have a set of bylaws that direct the members of the organization to elect the board each year at our annual meeting in the fall. The board meets approximately four times a year.

Hydro Leader: Who should become a member of BCSE?

Lisa Jacobson: We are a broad-based coalition of companies and trade associations. For example, the National Hydropower Association is on our board. Members must subscribe to our policies, goals, and code of conduct. We also have annual dues. To join, an organization would review our website, request a membership application, and submit it. Based on that submission, it would receive a dues schedule, and if it fit our criteria, it would be able to join. Some of the benefits of joining include access to policy education and advocacy. There is a lot of knowledge exchange. We are very member driven.

Hydro Leader: Is there anything you would like to add?

Lisa Jacobson: We have a long-standing and very productive partnership with the hydropower industry, and we want to see that continue. We had the opportunity to sit in on part of the National Hydropower Association's Water Power Week last year, and I was impressed by the continued strong participation by the industry. Getting the word out about the benefits of hydropower is so important, and BCSE wants to be a partner in helping achieve the hydropower sector's policy objectives.

Hydro Leader: What is your vision for the future?

Lisa Jacobson: My vision for the future builds on what is going on right now with the increased modernization and expansion of the energy sector in the United States and around the world. I believe we will continue to use hydropower and hopefully find ways to capitalize on its advantage as an energy storage provider through pumped hydropower. I think it is an exciting time, and I am optimistic about the future. 

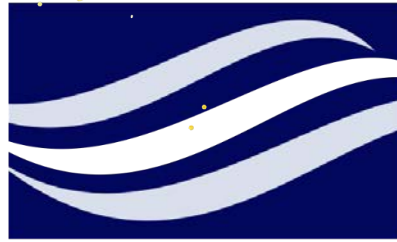


Lisa Jacobson is the president of the Business Council for Sustainable Energy. She can be contacted at bcse@bcse.org.

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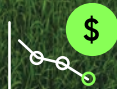
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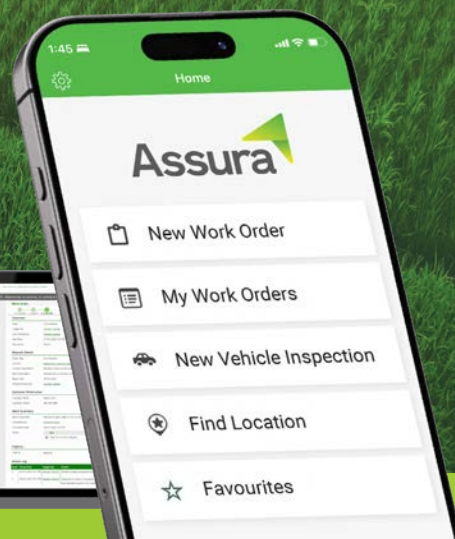
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To honor Bob's legacy, a group of friends and colleagues have established the **Robert W. (Bob) Johnson Memorial Scholarship** at his alma mater to support students in the College of Agriculture, Biotechnology & Natural Resources at University of Nevada - Reno (UNR). This scholarship will help develop the next generation of leaders in agriculture—students who, like Bob, are dedicated to serving the public good with integrity, excellence, and heart.

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January 20–22 *Irrigation Leader, Irrigation Leaders Workshop, Phoenix/Chandler, AZ*

January 20–22 PowerGen, San Antonio, TX

January 27–28 Nebraska Association of Resource Districts, Legislative Conference and Trade Show, Lincoln, NE

January 27–30 Water Professionals International, Innovation in Certification Conference, Hilton Head Island, SC

January 28–30 Colorado Water Congress, Annual Convention, Aurora, CO

January 28–30 U.S. Conference of Mayors, Winter Meeting, Washington, DC

February 2–5 Nevada Water Resources Association, Annual Conference, Las Vegas, NV

February 3–5 Montana Water Resources Association, Annual Conference, Fairmont, MT

February 6 Irrigation & Electrical Districts Association of Arizona, Annual Conference, Tempe, AZ

February 11 Association of California Water Agencies, Legislative Symposium, Sacramento, CA

February 23–25 American Public Power Association, Legislative Rally, Washington, DC

February 24–25 World Water-Tech Innovation Summit, London, England

February 24–26 Association of California Water Agencies, Annual Washington, DC, Conference

February 24–26 Northwest Hydroelectric Association, Annual Conference, Vancouver, WA

March 9–13 National Hydropower Association, Water Power Week, Washington, DC

March 11–13 Texas Water Association, Annual Convention, Fort Worth, TX

March 17–18 CEATI International, Hydropower Conference, San Diego, CA

March 27–28 American Public Power Association, Public Power Lineworkers Rodeo, Huntsville, AL

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