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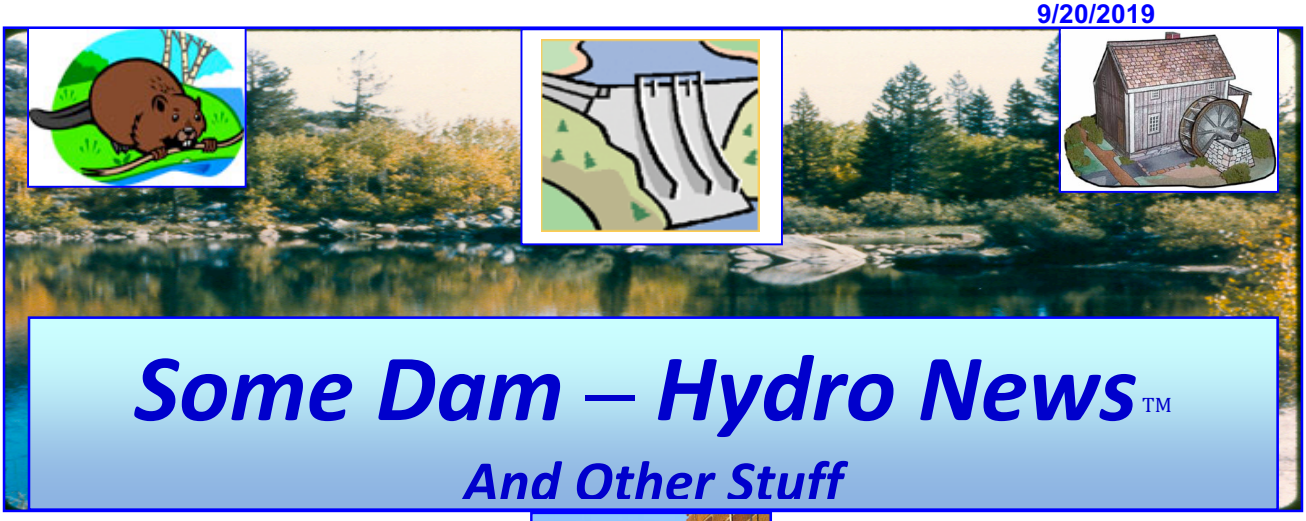


Some Dam – Hydro News™

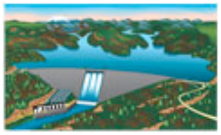
And Other Stuff

i

Quote of Note: *"The world won't care about your self-esteem. The world will expect you to accomplish something BEFORE you feel good about yourself." - Unknowm*

Some Dam - Hydro News → Newsletter Archive for Current and Back Issues and Search:
(Hold down Ctrl key when clicking on this link) http://npdp.stanford.edu/ . After clicking on link, scroll down ***under Partners/Newsletters on left, click one of the links (Current issue or View Back Issues).***

"Good wine is a necessity of life." - -Thomas Jefferson
Ron's wine pick of the week: **2017 Markus Huber Austria (St. Laurent & Zweigelt) (Red)**
"No nation was ever drunk when wine was cheap." - - Thomas Jefferson



Dams:

(Not that one, this Miami is in Oklahoma)

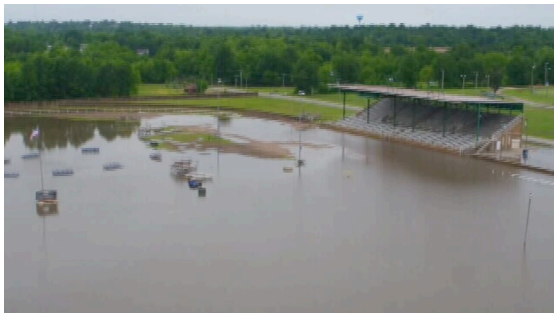
Miami officials at odds with Senator over dam releases as flood cause

GRDA license up for renewal with FERC

By: Lisa Olliges, Aug 28, 2019, koamnewsnow

MIAMI, Ok - The license for the GRDA, the Grand River Dam Authority is up for renewal for the first time in decades with FERC. That's the Federal Energy Regulatory commission. Miami city officials were told this is their chance to change how the waters of grand lake are controlled to prevent flooding. Its battle now made more complicated by their own state senator. Jack Dalrymple commented on flooding as we drove across his property. He said, "It's supposed to drain to the river right. The river's not supposed to come to you." But on his property water flows off the Neosho river and cover what was once a county road. He's lost cattle and the ability to farm. He explained, "180 acres that we never did get planted, usually in soybeans or corn. We had backwater on our property so many times this summer, we couldn't get a crop in. So, it's basically all gone to weed. Never got in cause it was covered in backwater." In May, the

floodwaters were halfway up the trees in the pecan grove on Dalrymple's property. He used a boat to survey the damage, and he said its backwater nothing else despite GRDA denials. Dalrymple said, "And GRDA says there's no backwater effect. But all the studies have been made since 1940 to present date say there is a backwater effect and it effects 12 thousand acres that GRDA should own."



The city manager Dean Kruithof agreed and said, "GRDA knowingly built the lake without the proper easement with the idea that it would be cheaper to pay for flood damage than to buy the easements." Kruithof, who has previously served as city manager in Branson, said other lakes managed by the Corps of Engineers don't have this problem. He said at Tablerock Lake, "No matter how high the lake goes, they won't flood anybody's property because they own all the property around the lake." The easements are properties Miami officials believe GRDA should buy. And want to make that case during the GRDA'S relicensing with FERC. The Federal Energy Regulatory Commission licenses GRDA because the lake was created with the Pensacola hydroelectric dam. A FERC rule curve shows that the lake is supposed to be no higher than 744 feet above sea level. Dalrymple tracked it online and said, "They're always out. They're always above 745."

The city and local tribes are ready to make the argument at GRDA's re-licensing with FERC. But U.S. Senator Jim Inhofe of Oklahoma, who has a house on Grand lake, sponsored an amendment (section 6021 in congressional record) package in a defense bill (s.1790) relieving GRDA of any easement obligations and gives the power to regulate dam releases to the Corps of Engineers. Inhofe said in a statement: "My amendment to codify the Corp's responsibility for flood control at Grand lake is just good policy—plus it's something my constituents have been requesting for years." The city manager said May flooding could have been prevented by better control of Pensacola dam releases. Kruithof said, "The lake was at 4 feet below the highest level that lake can go at 755. It was at 751, five days before the rain. We had the predicted rain in Kansas. It was gonna run down the Neosho (river) and into the lake and instead of lowering the lake level, the Corp of Engineers policy is to leave the lake alone. So, when the water started flowing in, there was nowhere for it to go other than flood Miami." The city manager said flooding is more frequent and water's linger longer now like those that sat on NEO's ball fields in May floods.

(Up up and away.)

BUFFALO BILL STATE PARK CELEBRATES GREAT DAM DAY

News & Buffalo Bill State Park, 02 August 2019, wyoparks.wyo.gov

Come celebrate the 25th Anniversary of the Buffalo Bill Dam Visitor Center during Great Dam Day, August 17, from 9 a.m. to 3 p.m. Buffalo Bill Dam Visitor Center along with Buffalo Bill State Park host this year's event at the Visitor Center located six miles west of Cody on HWY 14/16/20. In addition to the events planned, there will be different interpretive learning stations located below the visitor center on the old road to Yellowstone below the dam. Through cooperation with the Bureau of Reclamation, the old dam road is open one time during the year, allowing the public to walk or ride bicycle to take in the views. Rides back to the top will be available.

Fat Racks BBQ and Brain Freeze will have food and cold treats available for purchase at the visitor center lot. Buffalo Bill Dam was completed in 1910 and is on the National Register of Historic Places. Buffalo Bill Dam was the tallest dam in the world upon completion. Construction began in 1904 and work was dangerous, difficult and tedious. The completed water storage supplies four irrigation districts encompassing over 93,000 acres of farmland. Youth and adults alike will find the views and history fascinating. Staff and volunteers will be on-site to answer questions and provide assistance. The event is open and free to the public. For any questions, please contact the Buffalo Bill Dam Visitor Center General Manager Brad Constantine, at (307) 527-6076.

(Is this guy right? Didn't know the reservoir got that high!)

Letters: Keeping a close eye on Oroville Dam ,

By LETTERS TO THE EDITOR | September 3, 2019, orovillemr.com

On August 28, Assemblyman Gallagher responded to my concern about the lake level. The letter was careful to avoid the term "climate change," but did come close with a reference to "changes in watershed." I sat responding to Gallagher, not that I thought it would accomplish anything. Then, as if God wanted me to know I was doing the right thing, I heard thunder and heavy rainfall on the roof. That day's forecast was for 0% precipitation. The timing was heavenly.

Gallagher droned on about averages and acre feet, before assuring me that he was pushing for "what is called forecast based operations," meaning reliance on our ability to predict the weather. He didn't say what he was pushing against. He said they're attempting to "better buffer…to protect from a warm storm and large inflows like we experienced in 1986 and 1997." He didn't seem interested in 2016/17, so I'll help him with that. On August 28th, 2016, the lake level was at 770 feet and descended from there to the year's low of 725 feet on Dec. 8. From there to Feb. 11th, 2017, the lake rose to 902 feet, topping the dam and nearly removing Oroville from existence. It rose 177 feet in 63 days. On this Aug. 28th, in the face of increasingly anomalous weather, the dam sits at 840 feet. I'm concerned, however, Gallagher indicates, "I understand your concerns and you can be assured that I am continuing to monitor lake conditions." We can all relax. — *Don Fultz, Oroville, CA{Making dtronger*

(Dam removal has its consequences. Do you think the dam removal crowd cares? Farming is not an easy life, and then this.)

KLAMATH PROJECT FARMERS FACE SKYROCKETING ELECTRIC BILLS

September 4, 2019, by Lyle Ahrens, kobi5.com

Klamath Falls, Ore. – Electric bills for farmers on the Klamath Project are more than 2000% higher than they were 13 years ago. But, a meeting is coming up in Klamath Falls to address that problem. Getting irrigation water isn't the only challenge facing Klamath Project farmers and ranchers. The cost of powering pumps to move that water has skyrocketed. Paul Simmons serves as Executive Director, and chief legal counsel to the Klamath Water Users Association. "Beginning of 2006, the rates ratcheted up, stair-stepped to where they are today. And so the increase is up to 2000, or 2500 percent." Simmons notes CopCo, and later PacifiCorp had been selling power to farmers for pennies on the dollar when hydroelectric dams were placed in the Klamath River. "And it would sell power to the Bureau of Reclamation and water users on the Klamath Project at low cost."

That agreement began in 1917, and ended when the dams

weren't re-licensed in 2006. "Suddenly, the Klamath Project and upper basin irrigators were just sort of regular customers." Reflected Simmons. A meeting will be held at Klamath Community College on Tuesday of next week (September 10th) to study options for lowering those rates. Simmons says plenty of options are up for discussion. "The use of batteries – there's local solar – small hydro, and various things that are on the table." Public input from the meeting will be addressed in an upcoming congressional report. "We're enthused." Noted Simmons. "Because Congress actually recognized the need to deal with the power cost situation on the project." The meeting will be held on Tuesday the 10th from 9 to 12:30 in the Klamath Community College Conference Center. That's 'Building 7', or the old KCC bookstore.

(Excerpts. Someone's gonna pay. Damn carp.)

Lake Ocheda drawdown progressing in advance of dam modifications

By Julie Buntjer | Sep 7th 2019, dglobe.com.

WORTHINGTON, MN — A little more than a week after the first stop logs were removed from the Lake Ocheda dam, water levels in the three-basin lake have dropped nearly half a foot, according to Okabena-Ocheda Watershed District Administrator Dan Livdahl. During Tuesday's meeting with the watershed board of managers, Livdahl said one full row of stop logs and three logs on the second tier have yet to be removed. The impact downstream has been minimal. In fact, Livdahl said there hasn't been a measurable change to water levels at Lake Bella, which is taking on the Lake Ocheda water flow. The lake drawdown is being done in advance of a project to renovate the Ocheda dam and install a fish barrier to prevent carp from traveling upstream and back into the lake. Land Pride Construction of Paynesville is expected to begin work on the dam the last week of September. If all goes well, the plan is to continue with lake drawdown efforts through the fall in hopes of forcing a fish kill. A large carp population has contributed to the lake's poor water quality and lack of vegetation. If the lake can be rid of mass quantities of carp, the basins would be restocked with predator fish to help control the rough fish population.

OOWD Board Manager Rolf Mahlberg said there's talk of doing a lake cleanup when the drawdown is complete to remove items such as tires and debris that have been found in the lake's shallow waters.

The watershed district will apply for a $494,792 grant, and Nobles County Pheasants Forever plans to contribute $100,000 toward the land purchase and preparation for public use.

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- Discussed the potential for legal action to be taken against Wenck Associates, the engineers who designed the water quality improvement project at Prairie View, north of Worthington. The spillway, designed with Flexamat material, failed during flooding in June and July 2018, and again during snow melt and flooding in April. Livdahl and two managers met with attorney Jeff Flynn to discuss options and reported to the board Tuesday the suggestions that were made. Livdahl said he would like to wait with possible litigation and see if the Federal Emergency Management Agency approves full funding for the repairs. "In my opinion, we might get 100% from FEMA to fix it," he shared, saying he would rather go that route than spend the money that would be needed to hire an engineer who would state on record that wrong materials were used during construction of the spillway.---------.

(The original dam builders at work Guess beaver dams are ok, but man-made dams are not.)

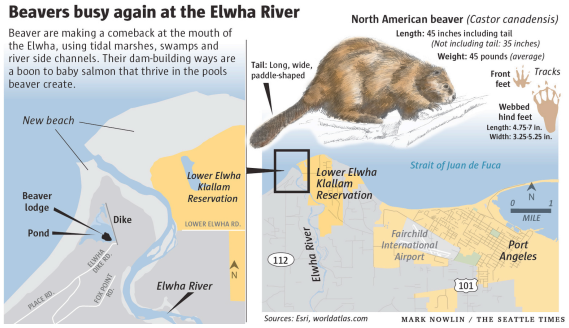
Wood chips fly at Elwha River as beavers make a comeback

By Lynda V. Mapes, Sep. 8, 2019, seattletimes.com

ELWHA RIVER, Clallam County, WA — Beavers are back. It's not hard to tell. The signs are everywhere: felled trees and branches, with telltale tooth marks. Soft sedge meadows dimpled with belly tracks from beavers hustling to and fro. And in thickets of young alder and willow — a 24/7 beaver cafe — multiple dams, built in a side channel of this reborn river. The dams are subtle, just sticks pushed into a row, bank to bank, and a bit of mud. But the dams do the trick these genius eco-engineers are so good at, creating pools to ease their travels by swimming, rather than walking, to their favorite snack spot. Created in the making of their dams, too, is a boost for salmon: These pools are perfect spots for juvenile salmon to rest and feed.

The intertwined lives of beaver and salmon emerging here is one more sign that the ecosystem-scale restoration of the Elwha, with the world's largest-ever dam removal project, begun in 2011 and completed in 2014, is taking hold. While salmon have always been the marquee species of this recovery, as the river from the mountains to the sea returns to a more natural state, all sorts of other animals also are benefiting, including beavers. In 2010, the mouth of the Elwha was expected to change when the dams come out and more than 24 million cubic yards of sediment impounded behind the dams were unleashed. (Anne Shaffer and CWI)

Two dams were taken down on the Elwha River beginning in 2011 in the world's largest dam-removal project. Over the next five years, the river unleased carried rocks, sand, silt, and even trees downstream, reshaping... (Anne Shaffer and CWI) Two hydropower dams, Elwha and Glines Canyon, were built on the Elwha in the early 1900s to power Port Angeles and give industry a kick start on the Olympic Peninsula. But taking the dams down has given beavers a chance to build some dams of their own in the Elwha's delta, a natural powerhouse of enterprise, thrumming with new life.



Millions of tons of sediment that had been stuck behind the dams have flowed to the nearshore, building what is today Washington's newest beach. The Coastal Watershed Institute, a Port Angeles nonprofit, also has been working at removing armoring from the shoreline near the river mouth — more than 43 percent of all of the shoreline armoring removal in Puget Sound in 2015-2017. Thousands of linear feet of old asphalt, concrete and rock were hauled off the beach to once again let the saltwater meet the land. Not just creatures of fresh water, beavers also have an important place in the newly emerging habitat at the mouth of the Elwha and its tidally influenced floodplain, and juicy marshes and swamps, bristling with native cattails and sedge.

Anne Shaffer, of the Coastal Watershed Institute, has with her team of partners been documenting conditions in the nearshore before and after dam removal. The pool that she has monitored at the delta with the most diversity and greatest number of fish is the one to which the side channel used by beavers connects, Shaffer said. "It's a beneficial relationship," she said. And not only on the Elwha. Greg Hood is a senior research scientist with the Skagit River System Cooperative in La Conner,

which provides natural resource management services for the Swinomish and Sauk-Suiattle tribes. Hood has worked on the Skagit River delta since 2000 and 10 years ago he surprised even himself when out looking for a plant in the delta and instead, discovered a whole new understanding of beavers.

Thought to be only freshwater animals, Hood discovered beavers were using the tidal shrub zone. These wetlands were among the first to be diked, drained and filled nearly out of existence in Puget Sound country as the region developed. But a place that is just terrific habitat for tidal beavers. Not a new species, but rather beavers making their living in a place where people did not expect them.

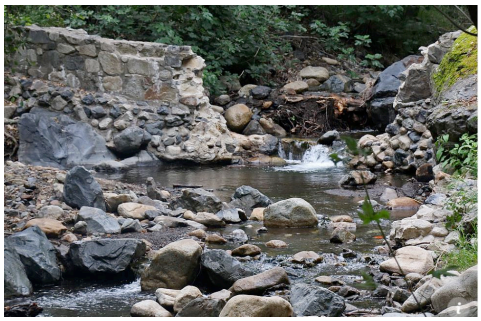
"I was really surprised, what is going on here? Beavers in tidal marshes?" Hood said. His paper published in 2009 was a first of its kind to expose and explain something that had been hidden in plain sight because no one thought to look for it. "People had been looking for beaver where they expected to find them," Hood said.
In the Skagit, just as in the Elwha, the beavers were making dams that created pools that nurtured salmon — and kept predators at bay. Herons that prey on baby salmon can't navigate a landing in the pools. And the pools create a nurturing, food-rich environment for the fish.
He learned densities of young salmon were five times greater in the pools than areas of the estuary without them. What emerged from his work was a new understanding of a relationship between rivers, salmon and beavers that had been entirely forgotten, in a kind of "ecological amnesia" — his beautiful phrase. But on the Skagit, and now on the Elwha, that memory is returning, sharp as beaver-chewed sticks.

(Dam removal – what's left of it. Doing it all at once is better than one at a time.)

A PROGRAMMATIC APPROACH TO DAM REMOVAL AND RIVER RESTORATION: CLEVELAND NATIONAL FOREST, CA

When complete, the Trabuco District Dam Removal Project will result in the demolition of 81 dams that are no longer serving a purpose.

By Allison Hacker | September 9, 2019, americanrivers.org



Removing one obsolete dam is an accomplishment. Removing more than 30 in one year is unheard of. Yet, that's exactly what Cleveland National Forest (CNF) did in 2018. They removed 33 dams, which accounted for more than 40% of all dam removals in the United States in 2018. These removals are part of a broader effort CNF is leading to restore migratory corridors for fish and other aquatic species known as the Trabuco District Dam Removal Project. When complete, it will result in the removal of 81 dams that are no longer serving a purpose. In 2018, California had the highest number of removals, surpassing Pennsylvania, the leading dam removal state for the past 15 years.

How did they do it?

The Forest's success is largely due to their ambitious approach to National Environmental Policy Act (NEPA) compliance. The CNF identified dams and other instream barriers as inhibiting stream health, passage for aquatic species, and public safety hazards, and rather than expending resources thinking about each structure individually, they took a watershed-scale approach and evaluated the removal of all 81 dams within Silverado, Holy Jim, and San Juan Creeks within a single environmental assessment (EA).

Dam removals that require a Clean Water Act Section 404 permit or are funded by federal dollars trigger one of three NEPA review processes that vary in review time, level of effort, and depth of analysis. Of the three, a Categorical Exclusion (CE) is the least rigorous, followed by an

Environmental Assessment (EA). An Environmental Impact Statement (EIS), the most rigorous process, is generally required only for complex projects with potentially significant environmental impacts. As the level of analysis required by NEPA increases, so does the planning workload for federal staff and any consultants working on the project. This has ramifications on both the project timeline and budget.

Evaluating restoration and removal of the 81 dams in a single EA greatly reduced the time to complete NEPA and cost the Forest roughly $75,000. Additionally, having only one environmental assessment afforded the CNF flexibility in the timing and removal methods for individual dams. The Trabuco District Dam Removal Project is well-suited for this programmatic approach given the size and proximity of targeted dams as well as their shared characteristics. The dams slated for removal were all small barriers concentrated on four nearby creeks within the Trabuco Ranger District. Nearly all were built or rebuilt by Orange County in the 1970's to create pools for stocked rainbow trout, conserve water and wildlife, and provide water for fire suppression. This continuity made it easy to lump the dams into one cohesive project. We also have a strong understanding of the anticipated benefits and impacts associated with dam removal as a river restoration tool.
We also have a strong understanding of the anticipated benefits and impacts associated with dam removal as a river restoration tool. In areas where many small dams are scattered throughout a watershed, the full benefits of dam removal—improved fish passage, enhanced stream habitat, and restored natural stream processes— increase exponentially when project proponents can address multiple dams within the system. This makes the Cleveland National Forest's approach necessary from a restoration standpoint and efficient from the permitting standpoint.

For other organizations looking to remove multiple dams, Kirsten Winter, the Forest Service biologist managing the project, recommends the programmatic approach for its efficiency and advises building in as much flexibility as possible regarding timing and removal methods. According to Winter, "This has been a great project and has built many partnerships for the Forest. There is a huge interest in dam removal and many partners are willing to fund this type of work for mitigation or just for habitat improvement."

What's next?

New approaches to permitting have the potential to speed the pace of dam removal on federal lands. A 2014 amendment to the Forest Service NEPA regulations added three new categorical exclusions, including modifications to water control structures, which includes dam removals. The new rule, which allows National Forests seeking to remove a dam to complete a Categorical Exclusion rather than a more arduous EA or EIS, increases the efficiency of dam removal projects while still maintaining public involvement and environmental protection.

The Pacific Northwest Region (Region 6) of the U.S. Forest Service is also looking to increase the pace of aquatic restoration by taking an analogous, but slightly different approach to that used by the Cleveland National Forest. They are evaluating a region-wide environmental assessment on Forest Service land in the Pacific Northwest covering a suite of aquatic restoration techniques, including dam removal, rather than addressing specific projects. The premise for this, much like in the CNF, is that the restoration activities selected are ones in which the impacts and benefits of said projects are a known entity and can be predicted. Hopefully, these alternate paths, along with the "many dams, one NEPA" strategy employed by the Cleveland National Forest will lead to more dam removals on federal land and improve the health of rivers nationwide. For more information about the Trabuco District Dam Removal Project, contact Kristen Winter, Cleveland National Forest, 858-674-2956, kwinter@fs.fed.us

(As more info. comes in, it gets worse every day. I wonder if they thought about repair and maintenance before or after the gate failure)

Amid lawsuit, Sunset Advisory Commission review cites problems within GBRA

Results of a state review of GBRA released a month after dam collapse

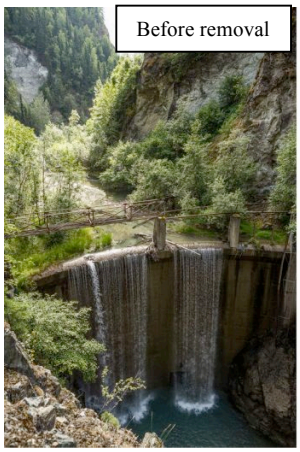
By Myra Arthur - Anchor/Reporter, September 10, 2019, ksat.com about repair and maintenance before the gate faik]

SEGUIN, Texas - A state review of the Guadalupe-Blanco River Authority identified problems related to what it said was poor management of the agency's aging infrastructure. The results of the Sunset Advisory Commission review were released in June, one month after part of a dam collapsed on Lake Dunlap, which was caught on camera. The report states the following: "The GBRA has not implemented a comprehensive asset management process to ensure timely repair and replacement of its significant utility assets, leading to failed infrastructure and potential service disruptions for its customers." The Sunset review also noted that "some of the authority's infrastructure is failing, either in critical condition or beyond repair." Following the dam failure on Lake Dunlap, the GBRA decided to drain Lake Gonzales, Meadow Lake, Lake Placid and Lake McQueeney over safety concerns that dams could fail on those lakes, too. There's also uncertainty about how the GBRA would be able to pay for any possible repairs. The draining is set for Monda

(Where's my water?)

A year after a dam was removed, this river near Anchorage is still waiting for water

By Nathaniel Herz, Alaska's Energy Desk – Anchorage, September 11, 2019, alaskapublic.org



Last summer, a conservation group teamed up with an Anchorage-area Native tribe to finish removing a defunct dam on the Eklutna River, northeast of the city. That effort couldn't succeed on its own, largely because higher upstream, utilities divert the river's water into a hydroelectric power plant. The groups that removed the lower dam envisioned that their project would push the utilities into action to improve salmon habitat and boost a fishery that could bring together the Eklutna Native people, the original residents of the Anchorage area.

But now, a year later, there's still only a trickle of water flowing through the canyon where the dam once stood. Since its removal, the utilities have gotten an early start on a legally mandated process to address some of the damage to fish and wildlife habitat caused by the upstream hydroelectric project. But that process begins with a study phase – no concrete steps are required until 2027. Brad Meiklejohn, who spearheaded the $7.5 million dam removal for a group called the Conservation Fund, is pushing the utilities to act more quickly. The status quo, Meiklejohn said, is "subsidizing cheap power on the backs of Natives and salmon." "That's the cost we've externalized here," he said. "To keep postponing this, and keep having the fish and the Native people pay the price because of our lack of innovation and creativity – I think that's criminal."

Brad Meiklejohn, who works in Alaska with a group called the Conservation Fund, spearheaded the dam removal project. (Photo by Loren Holmes / ADN)

The lower Eklutna dam was built in the 1920s to supply power to Anchorage, but it was shut down when the federal government built the much larger project at Eklutna Lake, far upstream, in the 1950s. The federal project was a major undertaking driven by the scarcity of power in Anchorage – in the 1940s, the city resorted to generating some of its power with the stern half of the Sackett's Harbor, a shipwrecked tanker. The Eklutna project required hundreds of workers and construction of a four-and-a-half-mile tunnel through a mountain, which brings the lake water to the site of the project's two generators. In 1997, the project was transferred by the federal government to three utilities. One was Municipal Light and Power, Anchorage's publicly owned utility, and the other two were cooperatives – Matanuska Electric Association, and Chugach Electric Association, which serves the Anchorage area. Today, the project generates 175,000 megawatt hours of electricity a year, or enough for 25,000 homes, according to a new informational website created by the utilities. That's less than 5 percent of the power used by the Railbelt, which runs from the Kenai Peninsula to Fairbanks. But it's among the cheapest energy sources for the region, which makes it more valuable to the utilities.

Eklutna Lake is also the source of about 90 percent of Anchorage's drinking water. But that amounts to just 10 percent of the water that's diverted from the river, according to the utilities; the remaining 90 percent goes to generate electricity. Meiklejohn said he doesn't want to interfere with the city's drinking water supply. But he estimates that just 10 percent of the diverted water would be needed to support salmon spawning, with minimal impacts to power costs. "I think it's a solvable problem. I think there's enough water to allow some to go into the river for the fish," he said. "And I would love to see the utilities get a little more proactive on this, and get some of their best and brightest minds working on a solution."

The lower dam's removal was a four-year effort that finished last year — Meiklejohn's organization partnered with the Eklutna people to do the work, hiring Eklutna Inc., their Alaska Native village corporation, as the contractor. In interviews, officials who work with the utilities said that they're committed to addressing the impacts of the upstream hydroelectric project. But, they said, they also have obligations to their members and customers, and they want the studies to happen first to help guide their actions. "We have to understand what the tradeoffs are," said Bill Falsey, the municipal manager for Anchorage, whose public utility owns 53 percent of the hydroelectric project. "We're not going to know what policy option makes the most sense until we have really run all the scenarios." The hydroelectric project drains out of the lake through a tunnel in the bottom, and utility officials said it could also cost money to reconfigure their infrastructure to send water down the river. And, Falsey added, "it's not even a known quantity what it will take to get fish to return." "That's what this is about," he said. "That's why we are engaged in these studies.

"As part of the project's transfer from the federal government to the utilities, they were not required to get an operating license from the Federal Energy Regulatory Commission. Environmental reviews and restrictions that could have accompanied the licensing process were replaced by an eight-page agreement that the new owners signed with federal agencies. The 1991 agreement, which is enforceable by federal court, requires the utilities to begin studying fish and wildlife impacts of the hydroelectric project no later than 25 years after the purchase took effect in 1997, or 2022. The utilities started the study process this summer, three years earlier than the agreement requires. But actions to address the impacts identified by the studies are not required to start until 2027, and they don't have to be finished until 2032. The agreement ultimately asks the utilities to deliver draft recommendations to the governor. The governor is then charged with adopting a formal plan that balances "efficient and economical power generation" and energy conservation with fish and wildlife, recreation, water supplies and "other beneficial public uses." Critics point out that the agreement contains no protections for the Eklutna people, and doesn't reference them whatsoever. In an interview, Aaron Leggett, president of the Native Village of Eklutna, said tribal members have gotten used to being patient. But he said he also sees the story of the lower dam's removal as being too compelling to ignore, which leaves him

"optimistic." "I think at the end of the day, we'll get there," he said. "We're at the point where, at a minimum, we know we've taken the dam out. And to us, that's something to be celebrated."
More than half of Eklutna's tribal members live in or near the Anchorage area, Leggett said. And reviving a salmon run in their community, he added, could help unify them

(Giving "em hell!)

Sept. 11 Letters to the Editor

Sept 11, 2019, lmtribune.com

Clueless

Rick Rogers doesn't know what he's talking about. He obviously knows nothing about the lower Snake River dams' purpose and construction style. The four dams between Pasco and Lewiston were built to allow river commerce to reach the great seaport of Lewiston. They are "run of the river" style projects with very limited flood control ability. A 50-year runoff event would flood downtown Lewiston. The Walla Walla District of the U.S. Army Corps of Engineers has never claimed otherwise.

When these dams are operating within the range of full pool, every cubic foot of water that enters the top of the reservoir must be allowed to exit simultaneously or the dams would quickly exceed their capacity and begin increasing discharge.

Dworshak Dam is different.
It has a huge storage capacity to absorb runoff during the spring runoff or flood events. But this ability must be planned for, i.e. by drafting the pool hundreds of feet prior to annual snow melt. If Rogers is such a scholar, why hasn't he followed the positive results that have occurred in both the White Salmon and Elwha rivers post dam removal? Mother Nature needs no help in recolonizing both flora and fauna once free-flowing rivers take over. It only took six months for steelhead and chinook salmon to begin spawning again in the Elwah system. *Diligence indeed, Rick. Steve Pettit. Juliaetta, Idaho*

Hydro:

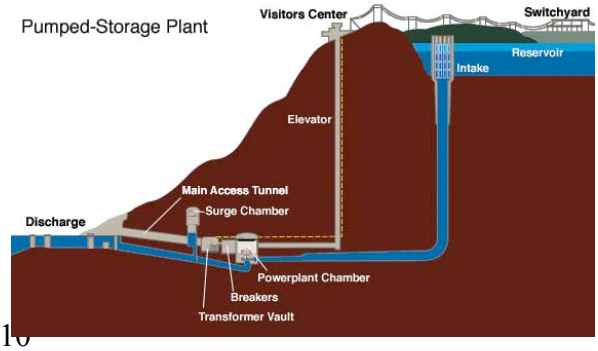
(They keep talking about it, but we still don't have enough of it.)

PUMPED HYDROPOWER

energystorage.org, 9/1/19

Gravity is a powerful, inescapable force that surrounds us at all times – and it also underpins one of the most established energy storage technologies, pumped hydro-power. Currently the most common type of energy storage is pumped hydroelectric facilities, and we have employed this utility-scale gravity storage technology for the better part of the last century in the United States and around the world.

A hydroelectric dam relies on water flowing through a turbine to create electricity to be used on the grid. In order to store energy for use at a later time, there are a number of different projects that use pumps to elevate water into a retained pool behind a dam – creating an on-demand energy source that can be unleashed rapidly. When more energy is needed on the grid, water from that pool is run through turbines to produce electricity. Because of the immense scale achieved



through these applications, this is the most common type of grid-level energy storage based on megawatts installed today. You can learn more about these technologies through the links on the right-hand side of this page.

Pumped Hydroelectric Storage

Pumped hydroelectric storage facilities store energy in the form of water in an upper reservoir, pumped from another reservoir at a lower elevation. During periods of high electricity demand, power is generated by releasing the stored water through turbines in the same manner as a conventional hydropower station. During periods of low demand (usually nights or weekends when electricity is also lower cost), the upper reservoir is recharged by using lower-cost electricity from the grid to pump the water back to the upper reservoir.

Reversible pump-turbine/motor-generator assemblies can act as both pumps and turbines. Pumped storage stations are unlike traditional hydroelectric stations in that they are a net consumer of electricity, due to hydraulic and electrical losses incurred in the cycle of pumping from lower to upper reservoirs. However, these plants are typically highly efficient (round-trip efficiencies reaching greater than 80%) and can prove very beneficial in terms of balancing load within the overall power system. Pumped-storage facilities can be very economical due to peak and off-peak price differentials and their potential to provide critical ancillary grid services.

How Pumped Hydroelectric Storage Works

Pumped storage hydroelectric projects have been providing energy storage capacity and transmission grid ancillary benefits in the United States (U.S.) and Europe since the 1920s. Today, the 43 pumped-storage projects operating in the U.S. provide around 23 GW (as of 2017), or nearly 2 percent, of the capacity of the electrical supply system according to the Energy Information Administration (EIA).

Pumped storage hydropower can provide energy-balancing, stability, storage capacity, and ancillary grid services such as network frequency control and reserves. This is due to the ability of pumped storage plants, like other hydroelectric plants, to respond to potentially large electrical load changes within seconds. Pumped storage historically has been used to balance load on a system, enabling large nuclear or thermal generating sources to operate at peak efficiencies. A pumped storage project would typically be designed to have 6 to 20 hours of hydraulic reservoir storage for operation at. By increasing plant capacity in terms of size and number of units, hydroelectric pumped storage generation can be concentrated and shaped to match periods of highest demand, when it has the greatest value.

Pumped storage projects also provide ancillary benefits such as firming capacity and reserves (both incremental and decremental), reactive power, black start capability, and spinning reserve. In the generating mode, the turbine-generators can respond very quickly to frequency deviations just as conventional hydro generators can, thus adding to the overall balancing and stability of the grid. In both turbine and pump modes, generator-motor excitation can be varied to contribute to reactive power load and stabilize voltage. When neither generating nor pumping, the machines can be also be operated in synchronous condenser mode, or can be operated to provide spinning reserve, providing the ability to quickly pick up load or balance excess generation. Grid-scale pumped storage can provide this type of load-balancing benefit for time spans ranging from seconds to hours with the digitally controlled turbine governors and large water reservoirs for bulk energy storage. In the U.S., the existing 43 pumped hydroelectric facilities can store just over 2 percent of the country's electrical generating capacity. But the industry plans to build reservoirs close to existing power plants. Enough projects are being considered to double capacity according to the EIA.

(Oh! The good old days. Try nowadays to build something like this in 2 years.)

Time Capsule: Chippewa Falls Northern States hydroelectric dam built in 1927-1928

FOR THE CHIPPEWA HERALD, Sept 9, 2019, chippewa.com

In the fall of 1926, plans started for the construction of the Northern States Power Co. hydroelectric plant located at the foot of Bridge Street in Chippewa Falls, WI. This site was previously the location of the "Big Mill" from 1836 to 1911, an important historic industry in the Chippewa Valley. Although NSP was already operating other hydroelectric plants on the Chippewa River in 1926, this would be the first hydro facility constructed by NSP in Wisconsin.

Construction ran from 1927 to 1928, providing many jobs and much revenue to the area. The final cost of the plant was approximately $3,500,000. Each Saturday, the Chippewa Area History Center showcases a piece of local history in the Herald. Visit www.ChippewaAreaHistoryCenter.org to learn more about the future Chippewa Area History Center and how you can help support local history preservation and education

Environment:

(That's our problem, we have too many opinions.)

Opinion: Why Bonneville can't save salmon

By Guest Columnist, Tom Karier, Aug 18, 2019, oregonlive.com

Karier is a professor of economics at Eastern Washington University. He represented Washington state on the Northwest Power and Conservation Council for 20 years.

The Northwest is not winning the battle to save wild salmon and steelhead in the Columbia River. Although most of the 12 listed salmonid stocks in the basin demonstrated a weak upward trend for a couple decades, that progress has stalled. Total returns of salmon and steelhead passing Bonneville Dam last year slipped to the second-lowest level in the past 18 years, and spring Chinook returns were 60 percent of the 10-year average. This year, they were only 37 percent. Everyone agrees that part of the decline can be blamed on ocean conditions. But is it too much to expect some sign of progress from Bonneville's fish and wildlife efforts that now exceed a cumulative cost of $15 billion over 40 years?

After 20 years representing Washington state on the Northwest Power and Conservation Council, I no longer expect Bonneville to save wild salmon and steelhead. Here's why. The first reason is the Bonneville Power Administration. Its idea of a salmon recovery program is to give states and tribes hundreds of millions of dollars in exchange for pledging to not sue Bonneville in federal court. However, as recent fish returns demonstrate, refraining from suing Bonneville doesn't necessarily produce more salmon. It also doesn't guarantee success in court as Bonneville continues to lose in the 9th U.S. Circuit Court of Appeals, casting suspicion on the basic strategy.

These deals – memorialized in the Columbia Basin Fish Accords signed in 2008 by three federal agencies, three states and seven tribes – are posted on Bonneville's website. Alternatively, Bonneville could have taken its role seriously as manager of the largest recovery program in the nation. It could have included performance goals in its fish contracts requiring actual results, such as more fish for harvest, more fish on spawning grounds and higher levels of productivity in restored habitat. Instead, Bonneville chose to require legal compliance rather than biological outcomes. It may have been easier as a power marketing agency to buy friends than performance, but it may not have been better for fish.

The second problem is that Bonneville's budget priorities reflect political compromises rather than fish priorities. Most of Bonneville's money is spent on overhead, planning, studies, contracting, coordination, research, monitoring and evaluation. Precious few dollars flow into on-the-ground projects that have any hope of saving salmon. Research and monitoring, for example, have accounted for as much as 40 percent of Bonneville's entire fish budget. Some of this is necessary, but most of it takes money from high-priority actions such as restoring floodplains, protecting cool-water refuges, removing culverts, protecting water flows and creating the type of habitat and safe passage that salmon need.

A serious salmon recovery program with strict performance standards and reporting obligations may not engender the friendships that Bonneville seeks. But if done fairly and intelligently, it should produce more fish, and that would deserve some respect. But this alone would not be enough. There remains the issue of harvest. Unlike almost any other endangered species, salmon and steelhead continue to be exposed to a legal harvest that can kill up to 8 percent to 45 percent of the run depending on the species. If ocean harvest is included, the numbers are higher still. Even the much-celebrated Snake River sockeye, whose returns dropped to single digits in the 1980s, can be exposed to harvest impacts of up to 8 percent. Harvest is seldom debated because it is broadly supported by federal and state agencies, federal courts, sport fishermen, commercial fishermen and businesses that make and sell fishing gear. It is true that harvest impacts are a ceiling and not always achieved and are lower than they once were, but that doesn't mean they are benign.

What is the effect of harvest? Essentially, salmonid populations listed as threatened or endangered need to exceed the spawning population by 8 percent to 45 percent every year just to stay even. And in recent years they haven't done that. If by chance more fish show up, the harvest formula ratchets up to the highest levels. If that doesn't guarantee growth will stall, it certainly makes it much harder to recover salmon. Salmon are famously resilient. Despite dams, gill nets, barbed hooks, polluted waters, dried-up creeks and introduced nonnative predators, they continue to survive in the Northwest. But current efforts are not working, and we are no closer to recovering most of these salmon and steelhead species today than we were two decades ago. We have proven that salmon cannot be recovered with an expensive but inefficient recovery program coupled with high harvest rates. What we haven't tried yet is an efficient recovery program combined with harvest levels that make sense for endangered species

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(More people with opinions.)

Tom France: When it comes to salmon, orcas and Snake River, breach the status quo

By Tom France, Special to the Union-Bulletin, Aug 18, 2019, union-bulletin.com

Opinion:

In its Aug, 4 editorial, "Dubious 'study' on dam breaching is propaganda," the Walla Walla Union-Bulletin leaves no doubt as to its opinion of a recent study that the benefits of Snake River dam removal outweigh the costs: The study was propaganda and the dams "must remain." With all due respect to people who support the dams, the quick dismissal of reports offering new information to inform the public and decision-makers does not well serve either the resources at stake or the public. The reason why the lower Snake River dams' future remains on the table is straightforward: Salmon and steelhead runs — and

now the West Coast orcas that depend on these fish as a major food source — are at risk of extinction. If the runs could be restored under the current status quo, orca would recover and the debate over the dams would end. Period. Despite decades of investment, however, the wild salmon runs of the Columbia and Snake rivers, once the largest in the world, have not recovered despite enormous investments — $17 billion and counting.

Even as the challenges of salmon and orca recovery remain unsolved, new issues are looming. The Bonneville Power Administration, which distributes the electricity produced by all of the federal dams in the Columbia Basin, faces unprecedented pressure from a rapidly changing energy market. Unable to profitably market energy to California any longer and faced with many costs including underwriting salmon recovery, BPA has gone from selling the region's cheapest power to its most expensive. This inversion could very well cause an exodus of customers when their contracts expire in the 2020s. One of the region's most experienced political leaders, Rep. Mike Simpson, R-Idaho, accurately summarized the growing peril facing salmon and steelhead runs as well as the financial challenges confronting BPA. In a speech delivered in April, Simpson said of the looming BPA crisis, "It is kind of like the side view mirror on your car: objects may be closer than they appear." \ Unlike many of the region's other political leaders, Simpson has pledged to examine all of these issues with an eye to building a compromise that solves Bonneville's economic woes and restores the wild salmon runs that once ascended the Columbia and Snake to Idaho's cold, clear mountain rivers and streams. While removing the lower Snake dams is a possible outcome, Simpson has also been emphatic that no one should be left behind whatever the solution. The needs of irrigators and shippers must be addressed as well as those of the communities along the Snake River.

While no finished proposal yet exists, the National Wildlife Federation believes Simpson is on the right track. Simply spending more money on habitat improvement, dam retrofits, barging or other mitigation is unlikely to suddenly start working — a new strategy is needed. Ensuring the region has reliable and affordable power is equally essential and so too is making sure that no one is economically penalized if a new strategy is adopted. Certainly if a sustaining wild salmon population can be re-established the costs of fish mitigation can be dramatically reduced and shifted to other needs. That we can save salmon — and orca — has never been clearer and Simpson has set the proposition on the table for governors, the congressional delegations – and even the Union-Bulletin — to consider. Barging on the river has declined more than 50 percent as more shippers shift to rail and truck. As wind and solar generation has grown, the relative importance of the energy produced by these four dams has diminished. As energy conservation has taken hold, the energy demands of the region are static even as electric generating capacity has grown. These are the factors that have destabilized BPA but they can be addressed even as we look anew at whether the dams with the biggest impacts on salmon — the four lower Snake dams — are needed. Restoring wild salmon and generating low-cost, clean energy: These are goals that vast majorities of citizens in Washington, Oregon and Idaho want achieved. Working together, across party lines and the Northwest, can ensure that wild salmon once again are found from the mouth of the Columbia to the mountain waters of Idaho and where low-cost, clean electricity power a dynamic economy. *Tom France is the regional executive director of the National Wildlife Federation's Northern Rockies, Prairies and Pacific Region.*

Other Stuff:

(Pair it with pumped storage, rather than the more expensive wind and solar power. This article exposes why wind and solar are built. It's the subsidies dummy,)

Renewable Energy Hits the Wall

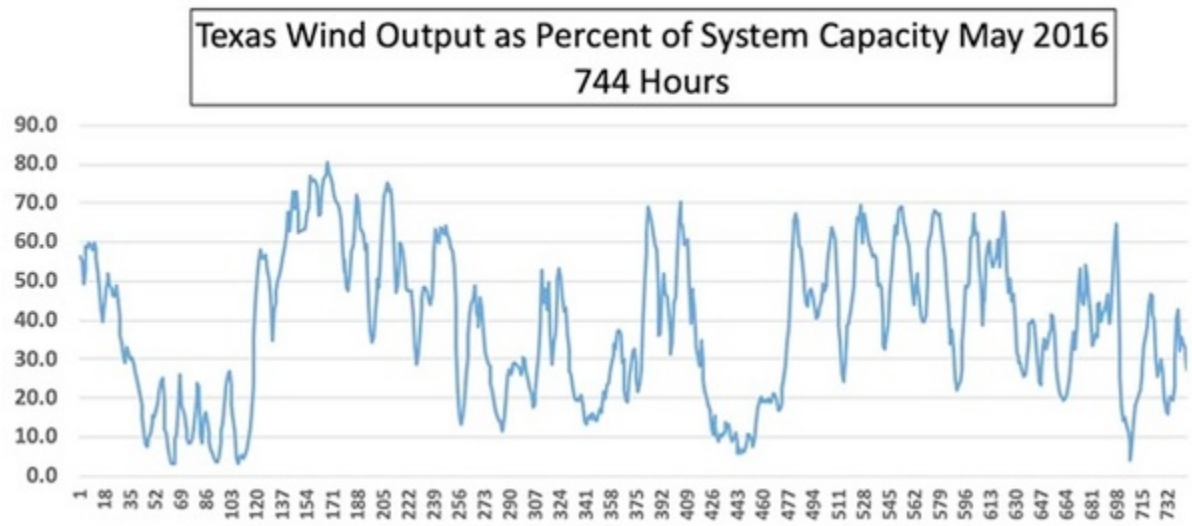
By Norman Rogers, August 17, 2019, americanthinker.com

If the official definitions of renewable energy were logical, renewable energy would be defined as energy that does not emit CO2 and that is not using a resource in danger of running out anytime

soon. But the definitions written into the laws of many states are not logical. Hydroelectric energy is mostly banned because the environmental movement hates dams. Nuclear is banned because a hysterical fear of nuclear energy was created by environmental groups. Both nuclear and hydro don't emit CO2. Hydro doesn't need fuel. Nuclear fuel is cheap and plentiful. A large number of prominent global warming activists, such as James Hansen, Michael Shellenberger, and Stewart Brand have declared that nuclear is the only solution for the crisis that they imagine is approaching. For those of us who don't take global warming seriously, there is nothing wrong with using coal and natural gas to generate electricity. The CO2 emitted helps plants to grow better with less water, a great help to agriculture. In approximately thirty states that mandate renewable energy, the only scalable forms of renewable energy allowed are wind and solar. California mandates that 60% of its electricity come from renewable energy by 2030. Nevada mandates 50% by 2030. There are other types of official renewable energy, but they can't be easily scaled up. Examples are geothermal energy, wave energy, and garbage dump methane.

Wind and solar are erratic sources of energy. The output depends on the weather. Solar doesn't work at night. Because they are erratic, there have to be backup plants, generally natural gas plants, that balance the erratic flow of electricity from wind or solar. The backup plants increase output when renewable energy output declines and vice versa. Because both wind and solar are subjected to periods of near zero output, the backup system has to be able to carry the entire load of the electric grid without the wind or solar. Neither wind nor solar can replace conventional plants. If you hear that a utility is replacing fossil fuel plants with wind or solar, that can't happen. The most that can happen is that the fossil fuel plants will use less fuel when the wind or solar is generating electricity. For a natural gas plant, the gas to generate a megawatt-hour of electricity costs about $20. That $20 is the economic value of each megawatt-hour generated by wind or solar. Unsubsidized, wind or solar electricity, either one, costs about $80 a megawatt-hour to generate. The difference between $80 and $20 is the subsidy that has to be paid in order to use wind or solar.

As long as the percentage of electricity that comes from wind or solar is small, the grid can handle the erratic nature of that electricity. But if the penetration becomes large, severe problems start to emerge. Solar power is strongest in the middle of the day and weakens toward the end of the day. But the late afternoon and early evening, when solar is dying, are when power usage peaks in many locations. The graph below shows how the sun's strength varied in Las Vegas for July 2018. The output of wind farms varies rapidly. The graph below is for the Texas wind system, with thousands of wind turbines. In one hour, the output can change by more than 3,000 megawatts.



The problem with increasing the penetration of wind or solar to 50% or 60% of electricity generation is that there will be periods when there is too much electricity from wind or solar. In that case, the grid operator will order that the wind or solar power be curtailed. If you cut the output of a wind or solar plant, the power not generated is lost forever. Further, curtailing the renewable energy works against meeting the mandate of 50% or 60% renewable energy. For various technical reasons, it is increasingly difficult to utilize erratic renewable energy as the penetration increases. Backup fossil fuel plants have trouble rapidly changing their output. The geographical distribution of sources of generation impacts the capability of the transmission network. The network has to have spinning reserve capability so that the sudden failure of a plant doesn't create a blackout.

In Nevada, the Gemini project is in the approval process. It is a 700-megawatt (nameplate) solar plant with an associated battery system that can store 1,400 megawatt-hours of electricity, allowing electricity to be moved from midday, when there may be too much solar electricity, to the late afternoon, early evening, when it is needed. The problem is that batteries are very costly for moving electricity. A megawatt-hour of solar electricity that costs, unsubsidized, $80 during the day ends up costing $270 when moved to the early evening via a battery, based on costs from the National Renewable Energy Laboratory. The $270 includes the cost of replacing the battery every five years. The batteries have to be air-conditioned; otherwise, they will wear out even faster than in five years. If the day is cloudy, there will be no solar energy, and the battery can't be charged. Backup plants will take care of supplying electricity on cloudy days. Use of batteries with wind is more difficult because there are long periods with too much or not enough electricity.

The renewable energy industry is asking its friends in Congress to extend subsidies for another five years and to add new subsidies for energy storage (batteries). Producing CO2-free electricity for $270 a megawatt-hour that needs a duplicate set of backup plants makes no sense because nuclear could supply CO2-free electricity for $80 without needing backup plants. Battery electricity demands large subsidies.

Another side-effect of increasing the penetration of wind and solar is that backup natural gas generating plants generate only half as much electricity if the penetration of renewables is increased to 50%. The cost of electricity from a natural gas plant mainly consists of the capital cost of the plant spread over the megawatt-hours generated during the life of the plant and the cost of the fuel to generate each megawatt-hour. Typical combined cycle natural gas plants operate at a capacity factor of about 50%. That means they generate 50% of what they could generate if they ran at full power 100% all the time. At 50%, the cost of the electricity is about half capital cost and half fuel cost. If the capacity factor is cut in half, the capital cost doubles, increasing the cost of the electricity from underutilized plants. Roughly, the cost of gas electricity will increase from $50 to $70 per megawatt-hour if renewable penetration increases to 50%.

Wind and solar are basically a waste of money. The subsidies can be justified only as a payment for reducing CO2 emissions. But wind and solar are expensive devices for reducing emissions. It cost about $140 in subsidies per metric ton of CO2 emissions avoided. Using nuclear or buying carbon offsets is a much cheaper solution. ***Norman Rogers writes often about energy. He has a website: Nevada Solar Scam. He is the author of the book* Dumb Energy: A Critique of Wind and Solar Energy**

(This is getting a lot of print. Although they acknowledged it, they don't account for the huge difference in efficiency, nor the large difference in costs. Solar can only increase your electric bill. Solar would never be built if they had to give up their subsidies,)

Converting hydro-dams into solar farms would be a 'boon' to the US

By Daniel T Cross, September 2, 2019, sustainability-times.com

The United States has more than 2,600 hydropower dams, which together provide 6% of domestically generated electricity. Yet hydropower, despite being a renewable source of energy, isn't an unmitigated blessing. Far from it. Dams can wreak havoc with aquatic environments and

can cause massive destruction in the case of floods. The authors of a new study in the journal Nature Sustainability has an answer: converting dams, or parts of them, into solar farms. "[W]e estimated that 529,885 ha of PVs would be needed to replace the generation of all 2,603 hydro-dams — an area approximately equal to the land size of Delaware. PVs could replace the total annual energy produced from these dams while requiring only 13% of their existing reservoir area," they write. "If all the hydro-dams in the United States were removed and only 50% of the emergent land was used for PVs, 945,062 GWh yr −1 power could be generated, which is 3.44 times the current hydropower generation," the researchers explain.

They caution that their analysis is theoretical and does not take into account costs that would vary from site to site. Replacing dams with solar panels without more efficient energy storage could not replicate the dispatchability and grid services provisions of existing hydropower facilities, either. "[H]owever, improving battery storage capabilities may ameliorate this shortcoming," they say. "We suggest that PVs could replace much of the annual electricity output of hydro-dams in the United States while using substantially less land area and providing considerable environmental and ecological benefit."

The U.S. has been relying on dams for electricity generation since 1881 when the country's first hydropower dam started operating near Niagara Falls. Within a half century, hydropower would come to account for 40% of the country's electricity generation. Yet in the process the environmental costs became considerable. The creation of reservoirs caused large areas of land to be permanently submerged in water, often destroying biodiverse forests, marshlands and grasslands. Damming also interferes with local aquatic ecosystems, especially impacting migratory fish such as salmon by blocking their migratory routes. John Waldman, a conservation biologist at the City University of New York who led the new study, notes that dams across the United States have dealt "tremendous harm" to ecosystems, both on land and in water, by fragmenting wildlife habitats and disrupting migration patterns. Faced by pressure from environmentalists, more than 1,000 dams have been dismantled in the country in recent years. "On the Atlantic Coast, the precedent-setting removal of the Edwards Dam on the Kennebec in 1999 opened 17 miles of main stem river, also allowing river herring to reach the tributary Sebasticook River for the first time in 162 years," Waldman writes. "River herring numbers exploded there, going from zero to a million-plus one year later, to more than six million in 2019." If only half of the remaining reservoirs were drained and their land area was covered with solar panels, the result would be a great boost to energy efficiency, the researchers say. The newly installed solar banks could produce nearly three and a half times the amount of energy currently generated by hydropower. "On the state level, California could replace all of its 339 hydro-dams with PV comprising about 0.1% of the state's land area," Waldman says." Florida could replace its four hydro-dams that impound 26,520 hectares with just 342 hectares of PV, i.e., the size of New York City's Central Park."

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