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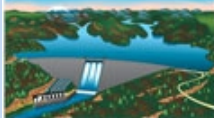
Some Dam – Hydro News™ *And Other Stuff*



Quote of Note: “Never get angry. Never make a threat. Reason with people.” - - Mario Puzo

*Some Dam - Hydro News → Newsletter Archive for Back Issues and Search <http://npdp.stanford.edu/>
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*“Good wine is a necessity of life.” - -Thomas Jefferson
Ron’s wine pick of the week: 2012 Valentin Bianchi Cabernet Sauvignon "Famiglia Bianchi"
“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson*



Dams:

(This just won't go away.)

Delay likely for Lewisville Lake Dam repairs set to start Monday

By CHRISTIAN MCPHATE, dentonrc.com, Denton Record-Chronicle, 01 January 2016

DENTON, TX — The U.S. Army Corps of Engineers, under pressure to begin repairs on the Lewisville Lake Dam, finds itself in a difficult spot. With lake levels rising, the corps says it can't repair the 160-foot-long landslide that stretches along a section of the 6.2-mile dam. The corps, which manages Lewisville Lake for the federal government, covered the landslide with tarps to protect it from rain, using rocks, sand bags and wooden pallets to hold it in place. It looks like a Band-Aid covering a wound and serves as a vivid reminder of the threat facing more than 400,000 people who live downstream in the Dallas-Fort Worth area. Recent severe thunderstorms have wreaked havoc on the tarps, exposing the vulnerable landslide to more than 16 inches of rain that bombarded the North Texas area over the Thanksgiving and Christmas holidays. It's a threat that could cause more erosion already affecting what the corps rates as the eighth-most-hazardous dam in the country, as well as raising lake levels nearly 10 feet above conservation levels of 522 feet.

The corps had planned to begin repairs on the landslide Monday. But those plans seem highly unlikely because of the rising lake levels, said Rob Jordan, lake manager of Lewisville Lake and Ray Roberts Lake.

“This recent wind has been brutal,” Jordan said. “But we’re trying to make sure that we keep it covered to prevent additional erosion.”

The corps added an additional tarp to protect the landslide. But there’s no guarantee the next round of rain — forecast for next week — won’t repeat what occurred over the Thanksgiving and Christmas holidays, peeling away the tarps.



Nathan Hunsinger/Staff Photographer
Tarps weighted down by sandbags are covering the 160-foot-long landslide that stretches along a section of the Lewisville Lake Dam. Repairs had been planned for Monday, but those plans may be jeopardized by rising lake levels.

Origins of problem

The massive landslide appeared in late June after record rainfall hit North Texas in May, Jordan said. The landslide is adjacent to another major slide that occurred in 1995, which suggests to engineers instability within the embankment. Large rocks covering the embankment and a section of the asphalt road along the crest of the dam came tumbling down toward the 2.3 million acre-feet of lake water providing electricity, drinking water and recreation for North Texans.

The ground was completely saturated, Jordan said, and it didn’t help that a nearly decade-long drought had been affecting the area. “It’s the North Texas soils expanding and contracting,” he said. And with the wettest year on record just past and more waves of rain in the forecast, some engineers say the new slide could develop into a deep-seated slide that could threaten the dam’s foundation. Sarwenaj Ashraf, dam safety program manager for the corps, said the corps had devised a way to repair the landslide by building a cofferdam around the afflicted area to prevent the reservoir from filling up the 23-foot-deep hole in the side of the dam caused by the landslide. But the cofferdam was never built. After The Dallas Morning News published a report about the threat to Lewisville Lake Dam, three members of the North Texas congressional delegation pledged to raise money to accelerate repairs. The corps estimates that permanent repairs will cost between \$50 million and \$500 million and would take several years. The corps has taken steps to lower the lake level to repair the landslide by releasing water downstream.

Floodgates open

Lewisville Lake’s floodgates have been open since Wednesday morning. The amount of water being released from Ray Roberts Lake upstream has been scaled back to lower Lewisville Lake from its current level of 531.64 feet to 522 feet, Jordan said. There’s no telling how long it could take to lower the lake’s level, especially with rain in next week’s forecast. Rain also could wreak more havoc because of cracks spreading across the crest of the dam. Corps engineers said that if water falls into those cracks, it could lead to additional slides. Jordan said the lake level is just a few inches from pouring over the spillway, which acts like a drain at the top of a bathtub. “It’s kind of an overflow,” he said. But the spillway is also in danger. It suffers from instability and erosion problems, according to the corps’ 2013 Dam Safety Modification Study. The concrete portions of the spillway may not be stable under higher pool loadings while the spillway’s earthen channel continues to erode, according to the corps study. The corps has offered assurances that the dam is functioning as expected. Tim McAllister, the corps’ chief of the operations division, appeared

before Denton County commissioners in late December to downplay the threat to the dam. "I just want to reiterate that we do not have an imminent dam failure going on [at Lewisville Lake]," he said. "The dam performed very, very well during this last rain flood [in May], and it's still performing as it was designed."

(Stories about Hoover Dam never end.)

Hoover Dam, an engineering marvel, is surrounded by natural wonders

By Jay Jones, January 2, 2016, latimes.com

Without the massive wall of concrete called Hoover Dam, Boulder City, Nev., wouldn't exist. The town sprouted during the Great Depression to house thousands of workers, mainly men, who had headed west to help build the dam. People now often bypass the town on the drive from Las Vegas to visit the engineering marvel. But for those who prefer an outdoor adventure over a smoky casino, Boulder City



offers a wealth of pursuits on land and on Lake Mead, the vast body of water created by the dam. The tab for two: \$89 (excluding taxes and fees) for a room at the Boulder Dam Hotel and about \$50 for dinner at the Dillinger.

The bed

Workers slept in shanties and tents while visiting executives enjoyed the relative luxury of the Boulder Dam Hotel (1305 Arizona St., Boulder City; [702] 293-3510, www.boulderdamhotel.com), built in 1933. Its 21 small rooms reflect the property's age, but they've been well maintained. Queen rooms are \$89 a night; add \$5 for a king. A real plus: The hotel houses the Boulder City/Hoover Dam Museum ([702] 294-1988, www.bcmha.org), a compact but well-curated museum chronicling the astonishing construction feat. Admission is \$2, a mechanic's helper wage for a full day's work at the dam during the early 1930s.

The meal

Two shotguns fashioned into door handles set the theme at the Dillinger (1224 Arizona St., Boulder City; [702] 293-4001, www.thedillinger.com). With an ever-changing array of craft beers, the restaurant is known for its burgers (\$8-\$19) named for thugs such as Al Capone, Baby Face Nelson and Bugsy Siegel. For breakfast, consider the Coffee Cup Cafe (512 Nevada Way, Boulder City; [702] 294-0517, www.worldfamouscoffeecup.com), where popular dishes include the pork chile verde omelet (\$9) and "The Hangover" (\$8), a mix of biscuits and gravy, sausage and eggs all topped with cheddar cheese.

The find

The desert, mountains and water provide plentiful recreational opportunities. There are several hiking paths, including the Historic Railroad Tunnel Trail. The nearly four-mile trail includes tunnels blasted to haul equipment to the dam during its construction. In Bootleg Canyon, home to another hiking trail, there's the Flightlinez zip-line ([702] 293-6885, www.flightlinezbootleg.com). The lake is so expansive it's easy for boaters to feel it's theirs alone. The closest place to Boulder City that rents watercraft is Lake Mead Marina ([702] 293-3484, www.boatinglakemead.com).

The lesson learned

In the 1920s Boulder Dam was the unofficial name for the huge public works project. In 1930 the secretary of the Interior formally named it Hoover Dam after his boss, Republican President Herbert Hoover. After Democrat Franklin Roosevelt took office, the name reverted to Boulder in 1933. In 1947 Congress resolved to once again call it Hoover Dam. According to the local museum, an anonymous citizen suggested another name: Whogivza Dam.

(Some dams in Alabama are inspected and maintained despite no State regulation.)

Robust inspection program keeps focus on safety at Alabama Power hydroelectric dams

By Gilbert Nicholson, January 4, 2016,

In the wake of a report questioning the safety of some dams in the state, Alabama Power officials say they've always kept a close watch on the company's 14 hydroelectric dams, with year-round inspections and rigorous maintenance.

"Because of the robust dam safety inspection program we have in place and the constant monitoring of our dams, we are confident any issues would be detected well in advance of them becoming



problematic," said Richard Mickwee, dam safety and surveillance supervisor for Southern Company Generation's Hydro Services team in Alabama. "We've had a dam safety inspection program for Alabama Power's hydro facilities for more than 50 years, so we have a long-running institutional history and the knowledge to keep our dams safe."

The Alabama Section of the American Society of Civil Engineers released a report in December grading infrastructure, saying only 2 percent of known dams are inspected for safety and have emergency action plans in place.

Alabama Power dams are monitored and inspected by the Federal Energy Regulatory Commission, but the company has its own reasons for a high threshold of oversight, Mickwee said.

"We have a much more vested interest in the safety of our dams than any state or federal governing authority," Mickwee said. "These are our structures and our legal responsibility should something go wrong. We're doing it because it's the right thing to do, it's important to us as an electric utility, and as servants of the public." Twice each week, Alabama Power employees make a checklist inspection of each dam. They receive annual training on the identification of conditions that could lead to problems. A more comprehensive inspection is conducted annually by the Hydro Services team of safety engineers. Once every five years, an independent outside expert conducts an exhaustive audit of the condition and stability of each dam.

Twice weekly inspections are conducted to monitor conditions such as seepage, structural distress or unusual aspects itemized for each dam, Mickwee explained. Annual inspections include close observation of earthen embankments; all concrete structures such as powerhouses and spillways; and safety instrumentation data. "We walk every inch of every dam," Mickwee said. At each hydroelectric dam, Alabama Power has emergency action plans for the unlikely event of a failure. In addition, Alabama Power annually performs emergency drills at each dam. Three times every five years the company conducts large-scale comprehensive exercises with local and state emergency management agencies and first-responders in which a dam failure is simulated. Mickwee said he has proof of Alabama Power's rigorous oversight and monitoring.

"I've taken calls at 2 o'clock in the morning when someone noticed an unusual instrument reading," Mickwee said. "We're on call 24/7, 365 days a year." Learn more about Alabama's hydroelectric facilities at www.apcshorelines.com

(The public isn't always against dams.)

Public Sounds Off During Open Meeting on Dam Removals

Written by Ryan Petrovich, January 04, 2016, wdtv.com

The West Virginia Department of Environmental Protection held a meeting to accepting public comments when it comes to the removals of the West Milford Dam, Highland Dam and the Two Lick Dam. Many people were in attendance and many voiced their concerns. One person we spoke to said he wants to see the dams removed because he feels we'd be better off with free flowing water. "People have talked about how there's no visibility in the river and I think as soon as we get flow, we get oxygen to the water, we're going to find it clearing up," said George G. Brown of Harrison County. "Plan is for any debris that's in the river now to be cleared up and money has been allocated for that purpose and so I think it's a win-win where we end up with a nice free flowing stream, better for fishing, better for boating. (It's) a recreational opportunity."



But, the majority of people sounded off on why they didn't want the dams removed. Many cited farming reasons and say the reasons for not removing it outweigh the ones for removing it. "The dams serve purposes for beyond just backing up water for the water board," said John Stenger of Lost Creek. "There's tremendous recreation resource, there's tremendous irrigation potential for the farmland. The reasons to keep the dams are massive and the reasons to remove the dams are trivial and mostly lies." Ron Watson and Frank Angotti of the Harrison County Commission were also in attendance and both stated that they did not want to see the dams removed. "I'm going to say two votes on the County Commission is against taking out the dams and on a three-man board, you only need two votes to make the law," said Watson. The D.E.P. declined to comment, but did tell me they will review all the comments made during the meeting. No decisions were made and no one from the Clarksburg Water Board was in attendance either. It appears the issue will continue to rage on.

(That's for sure!)

As Technology Marches On, Reservoir Caretakers Stay At Their Posts

January 5, 2016, by Grace Hood, npr.org

As technology advances, many industries are being disrupted by increased automation. But when it comes to managing and protecting the water supply, there are many tasks that still require a combination of people and technology. That's where reservoir caretakers come in. Some cities and counties employ these workers to live in remote locations and watch over the water supply. Doug Billingsley is one of those caretakers. While lots of us start our workday staring at a computer screen, his typical day begins with a snowmobile ride that feels like a bucking bronco. By snowmobile, snowshoe or foot, he looks after about a half-dozen northern Colorado reservoirs that feed the city of Greeley's water supply. He does it multiple times a week. And he's done the job for two decades. Today Billingsley digs through snow at Barnes Meadow Reservoir to make sure the water levels are holding steady. Next, it's time to take a look at the nearby dam. Billingsley explains what he looks for. "Do I see any bulges? Do I see any rises, do I see any dips — anything out of the ordinary? Because I know what the dam is supposed to look like, summer and winter." When it comes to dam safety, human eyes are still one of the best tools to recognize problems, according to Bill McCormick, the dam safety chief for Colorado. Take for example an earthen dam, a type of dam made with compacted earth. Automated tools monitor water seepage;

small amounts are common. But if new seepage starts in another location, automated sensors can't catch that problem.

"The caretaker can help see those things, they can determine the appropriate action, and they can prevent a small situation like that from ever becoming an emergency," McCormick says.

Today, water managers have a lot of automated tools to help out. Some dams can even operate remotely, like those managed by the Bureau of Reclamation. But sometimes that equipment is old, like that at the Hetch Hetchy Reservoir in California, which is a key water source for the San Francisco Bay Area. Much of the equipment there is from the 1920s and 1930s, when the reservoir was built inside Yosemite National Park. That's one reason why I think a watershed keeper will be here," says Michael Royce, who keeps watch over the reservoir. "It really takes a lot of experience and practice with each valve." And it's not just technical know-how. Many caretakers say the job also requires diplomacy and people skills. Royce fields questions about the controversy surrounding Hetch Hetchy Reservoir — some environmental groups want to remove the dam there. For Doug Billingsley, the job has become a calling. In order to watch over a reservoir, he didn't evacuate during a significant 2012 wildfire. He stayed put during the 2013 floods to make sure the dams held for the city of Greeley — which they did. "They're trusting me to take care of the city's assets. And I'm up here enjoying life," he says. "I'm by myself 90 percent of the time. I'm out here in nature. I talk to myself and nobody judges me. It's great." Billingsley's job may shift in the coming decades with technology. But many water managers believe the caretaker's role won't disappear completely. That's because some reservoirs are too remote. And water is just too important for there not to be eyes on the ground.

(Flood control releases are much better than a flood,)

Flooding continues at Falls Lake after dam opened

By Elaina Athans, January 05, 2016, abc11.com

WAKE COUNTY, N.C. (WTVD) -- Flooding continues to plague parts of the Triangle even though it's been drying out after the massive amount of rain recently. The Army Corps of Engineers has opened the dam by Falls Lake to release some of the rain and it caused flooding in many spots along the Neuse River Greenway Trail. Water is gushing out of the dam near Old Falls of Neuse Road. "I have never seen it like this," said north Raleigh resident Karen Vaughn. "The water's jumping up on where you walk at over here," said Angela Bailey. "It's crazy." Parts of the trail, as well as pedestrian bridges and parking lots are completely under water after the dam was opened.



"I have never seen it like this," said north Raleigh resident Karen Vaughn. "The water's jumping up on where you walk at over here," said Angela Bailey. "It's crazy." Parts of the trail, as well as pedestrian bridges and parking lots are completely under water after the dam was opened.

"I'm missing my ride today. If it wasn't flooded I'd be riding today. I don't care how cold it is," said north Raleigh resident Randy Bass. "I took so many pictures the other day because I was in shock. It's just flooded everywhere," said Vaughn. "It's awful. I don't have my walking trail right now." The recent persistent rain caused the water levels to significantly rise. The Army Corps of Engineers told ABC11 that on Friday, the water levels were 10 feet above normal elevation. It was the fifth time in the lake's history the level got so high. The Army Corps of Engineers says they will continue to release water from the dam for the next couple of weeks.



Hydro:

(Well, how about that?)

Comments show support of hydroelectric dam in Juneau

January 1, 2016, sfgate.com

JUNEAU, Alaska (AP) — Federal, state and local agencies haven't found any major obstacles to a plan to build a hydroelectric dam on Sweetheart Creek southeast of Juneau. The Juneau Empire reports (<http://bit.ly/1JjCTu4>) that the Federal Energy Regulatory Commission released a draft environment impact for the project in October. Tuesday was the last day for officials and the public to give feedback on the document. Juneau Hydropower Inc. Director Duff Mitchell said by phone Wednesday that the comments only found minor problems with the project. He says there seems to be a lot of support for the dam, which aims to provide additional electrical reliability to meet the city's growing demand. The most significant comment came from Alaska Electric Light and Power, which questioned the need for the project. The company doubts the predictions of rising electric demand.

(Isn't this always the case?)

Partisan politicians block people of good will

EDITORIAL, by the Editorial Board, JANUARY 1, 2016, sacbee.com

**Farmers, tribes, environmentalists, others reached a Klamath Basin accord
Politicians pander to narrow interests, at expense of deal that could benefit people of two states**

Potential demise of Klamath River accord doesn't bode well for more complex water issues ahead

People of good will struck a historic pact to end the decades-long Klamath River basin water war. Then partisan politicians intervened. The Republican-controlled Congress adjourned without approving tens of millions to help restore environmental damage caused by four antiquated Klamath River dams, three of them in California and one in Oregon. Congress' failure meant a critical portion of the Klamath Agreements expired with the start of 2016 and could unravel a compromise that was years



Copco 1 Dam is one of four hydroelectric dams that received a reprieve but not a commutation. Jeff Barnard Associated Press file

in the making, as The Sacramento Bee's Ryan Sabalow and McClatchy Washington bureau reporter Michael Doyle recently reported. Disappointed though they are, participants should stick together and press for solutions. The Klamath River accord had its origins in 2008, in the final days of President George W. Bush's administration when federal officials announced the deal's outlines. Bush officials had been dealing with the issue from the start of their time in office. In the 2001 drought, farmers, unable to plant for lack of water, dramatized their plight by creating a mile-and-a-half-long bucket brigade in Klamath Falls, Ore. Later that summer, desperate farmers forcibly opened gates to let water flow to their fields, as downstream Indian tribes and commercial fishermen fought to maintain river flows to preserve what fisheries survived. The deal took shape: PacifiCorp, which owns the hydroelectric dams, agreed to help dismantle them by 2020. Klamath tribes ceded some water to upper basin farmers in exchange for habitat restoration. Farmers

agreed to claim less water in exchange for greater reliability. Without the dams, hundreds of miles of spawning habitat could be restored, promising better days for commercial fishermen.

The \$7.5 billion water bond measure approved by California voters last year includes \$250 million to help pay for dam removal. PacifiCorp, owned by Warren Buffett's Berkshire Hathaway, pledged \$200 million. It all depended on congressional action. PacifiCorp sought congressional legislation granting it immunity from lawsuits stemming from flooding or short-term damage to fisheries caused by the dams' removal. That legislation, vital to PacifiCorp, stalled. So did any appropriation for environmental restoration. Rep. Doug LaMalfa, R-Richvale, whose district includes three of the four dams, says he sees no reason for the federal government to participate in dam removal. Successful politician that he is, LaMalfa is tending to his conservative State of Jefferson constituents, who seem determined to keep the dams. If only he were more statesmanlike, LaMalfa would consider the greater good and make clear that the dams must go. Rep. Tom McClintock, a Republican who lives in Elk Grove, hundreds of miles from the Klamath, piled on in his typically glib partisan fashion, calling it lunacy to remove "four perfectly good hydroelectric dams." His facile words aside, the dams aren't perfectly fine. Built 50 and 100 years ago, before the Clean Water Act and Endangered Species Act became law, the dams have destroyed fisheries, have combined water storage of a mere 109,230 acre-feet, a relative drop, and account for only 2 percent of PacifiCorp's electricity. Company executives say they could easily replace the lost power.

Congress' failure to act might not spare the dams. The Federal Energy Regulatory Commission must decide whether to renew PacifiCorp's license to operate the dams. The commission could require costly improvements to restore fisheries, or insist that the dams be torn down. The dysfunction that threatens to unravel the Klamath accords does not bode well for California as officials confront other complex water-related issues. In that proceeding, Oregon and California officials will have their say. The State Water Resources Control Board next month will begin reviewing the scope of a study to determine whether the dams violate the Clean Water Act, in preparation for a report to the federal energy commission. As part of that process, the board expects to require a full Environmental Impact Report, which would take a year or more. Although the dams still could be removed by 2020, California's environmental law also could get in the way. How ironic it would be if the Klamath River ecosystem were to be degraded further because of California's cumbersome environmental law. The Klamath Basin has been studied repeatedly, to death. The state needs to act expeditiously. Downstream Indian tribes, their patience exhausted, could seek to force the issue by suing. The dysfunction that threatens to unravel the Klamath accords does not bode well for California as officials confront other complex water-related issues, among them whether the state can muster the political will and money to build Sites reservoir.

Unlike the Klamath dams, Sites would help ease the statewide impact of future droughts and give operators greater flexibility as they seek to maintain the Sacramento-San Joaquin Delta ecosystem. Operators would fill Sites – its capacity would be 1.8 million acre-feet, 16 times greater than the four Klamath reservoirs – by diverting water to it during high flows on the Sacramento River. Because it would not require the damming of a river, Sites would cause little if any damage to fisheries. California must improve its water system and enhance the environment. Just as Congress ought to allocate money to help pay for Klamath basin restoration, partisans need to put aside their differences for the good of the state and pitch in.

(To me, 65 is not so old!)

Davis Dam turns 65: Turbines turned on for the first time in January 1951

1/4/2016, kdminer.com, by Ryan Abella, Miner Staff Reporter

Mohave County prior to the early 1900s was quite inhospitable to most settlers, due in part to the arid Mojave Desert. The Colorado River did provide relief, but was left wild for many years and was subject to massive flooding, preventing any meaningful agriculture or settling from occurring. A series of acts, most notable being the Newlands Reclamation Act of 1902 and the Reclamation Project Act of 1939, would aim to change that. Taming rivers of the West was critical in providing irrigation for residents here, but almost equally as critical was the power those dam projects would provide.



Courtesy - Work continues on Davis Dam in 1946.

The Hoover Dam, then known as the Boulder Dam, continues to provide over 2,000 megawatts of power to Arizona, Nevada and California. As the New Year rolled around in 1951, Davis Dam was set to turn on its turbines for the first time. While the power that Davis Dam provides today is just over 250 megawatts, at the time it was one of the largest projects in the country and provided substantial power to the region.

January 4, 1951 - Mohave County Miner

First Generator at Davis Dam Will be Started by the Secy. of Interior Tomorrow. Secretary of the Interior Oscar L. Chapman will officially start by remote control from Washington, D. C., tomorrow the first generator in the new Davis Dam power plant on the Colorado river between Nevada and Arizona, it was announced here today by E. A. Moritz, director of the Bureau of Reclamation's Region 3. Mr. Moritz said the Secretary will press a telegraph key at 3 p.m. EST (1 p.m. MST) to set in motion the big hydroelectric generating unit. Members of the congressional delegations from three states which will utilize Davis Dam power - Arizona, Nevada and California - have been invited to the Secretary's office for the ceremony. The inauguration of power production at this newest of the Reclamation dams in the West is more than three months ahead of schedule as the result of a speed-up in the construction program. Weeks were shaved from the schedule of the Davis power installations thru an agreement between the Bureau of Reclamation and the contractor, Donovan-James-Wismer & Becker, of St. Paul, Minn. The generator is the first of five, each having a capacity of 45,000 kilowatts, which are now being installed. The other units will go into production at the rate of about one each month. All five are expected to be in operation by next July on an integrated transmission system with generators at Hoover and Parker dams to furnish additional Colorado River power to the Southwest.

"The Davis Dam power plant will be in production in time to be of material benefit during the approaching spring season to irrigation farmers in the Salt and Gila river valleys of Arizona who depend on electricity for pumping," Mr. Moritz said. In past years there have been critical shortages of power on farms in this area. The Davis power plant will add nearly a billion kilowatt hours of energy to the present annual output of Colorado river dams which, more than a year ago, amounted to about 42 percent of the power requirements of the Pacific southwest and a third of the total energy generated on all Reclamation projects.

Work on the dam started in March 1946. The Davis Dam Project, comprising the earth - and rock-fill embankment rising 138 feet above the river bed, the power plant, intake, and spillway structures, and over 1,000 miles of transmission lines, is substantially completed and will have received the finishing touches by the end of fiscal year 1952. Besides the power plant installations, the main items to be completed include certain transmission line features and the stilling basin just below the spillway. The project is being built at an estimated cost of \$114 million. The Davis power plant will be the Bureau of Reclamation's fourth largest hydroelectric installation.

Grand Coulee Dam power plant on the Columbia river in Washington is the first, Hoover Dam power plant on the Colorado river between Nevada and Arizona is second, and Shasta Dam power plant on the Sacramento river in California is the third. "In peace or in war the Davis dam project will be a major asset to our nation from which we can expect to reap benefits for many years to come," Mr. Moritz declared. "This development is an example of man's ingenuity in working hand in hand with nature to realize the multiple benefits from the Colorado River." Mr. Moritz heralded the inauguration of power production at Davis dam as a major milestone in the industrial development of the Southwest.

...

As Davis Dam was set to start generating power here in the desert, across the Pacific Ocean the United States and the United Nations were entrenched in a war with North Korea, Communist China and the Union of Soviet Socialist Republics. Editorials written at that time stated that "our faith has not been well founded" as far as the United Nations was concerned, and that "through the effective use of the United Nations as a sounding board the enemy has throttled us as effectively as if he had removed the engines from each of our long range bombers." While exceptionally critical of our role in Korea, the Mohave County Miner printed a letter to the editor on the front page from Sgt. William T. Mascoffian, who was looking for some moral support from the community of Kingman.

Letter to the Editor - Somewhere in Korea

Dear Sir:

It may seem strange for a paper to receive a letter of this type from a person that has never been in your friendly town. I once knew a GI that served at the Army Air Base there and he told me about the friendly people of Kingman. Having no family or friends to write or receive mail from makes my morale very low, especially at mail call. I would appreciate your help very much in getting me some pen pals. I will do my best to answer any letters that I receive. I am looking forward to a visit to your city.

Sincerely,

Sgt. William T. Mascoffian - RA 13307309
Co. B, 76th Engr. Const Bn
APO 59, c/o Postmaster
San Francisco, Calif.

(Never heard this before. What happened to Tesla?)



#32 Edward Dean Adams '64 Pioneered Hydroelectric Power at Niagara Falls

Edward Dean Adams is one of the 40 honorees of Norwich's iconic Centennial Stairway. As a student in the class of 1864, he served as drill sergeant, adjutant of the Corps, and president of the cricket club. After graduating, he became one of the most influential electrical engineers to come out of Norwich University. Adams worked in a wide variety of industries before becoming president of the Cataract Construction Company in 1890. The company's mission was to harness hydroelectric power from the immense volume of water that cascaded over Niagara Falls. The scope of the project was gargantuan, and Adams personally supervised the engineering work. Thomas Edison and other leading experts insisted that the facility should produce direct electrical current (DC), but Adams determined that alternating current (AC) was preferable, a decision that would have enormous influence upon the



evolution of the electric power industry in the United States. The Niagara Falls plant, which was later named after Adams, was completed in 1895, the same year electric lights were installed on the Norwich campus. That station was capable of generating 37.5 megawatts of electricity, an astonishing amount of power by the standards of the time.

The Niagara Falls hydroelectric project was one of the greatest engineering feats of the 19th century and was pivotal in the development of modern industry, from petroleum to consumer appliances. In recognition of his engineering achievements, Edward Adams received the John Fritz Medal in 1926, a prestigious award that had previously been presented to such notables as George Westinghouse, Thomas Edison, and Alexander Graham Bell. Adams served on Norwich's Board of Trustees for over ten years and provided key financial support for construction projects like Alumni Hall and Plumley Armory. We now remember him as an alumnus who truly used his Norwich education to transform the world. Adapted from "Edward Dean Adams, Class of 1864: Financier, Engineer, Industrialist" by Professor Gary Lord, originally appearing in the Summer/Fall 200 edition of the Norwich Record.

(It's still too complicated.)

US House brings hydropower licensing process into the 21st century

6 January 2016, waterpowermagazine.com

The National Hydropower Association (NHA) has applauded passage of bipartisan hydropower regulatory improvement provisions as part of the North American Energy Security and Infrastructure Act (HR8). The hydropower provisions are designed to make the hydropower licensing process more timely, coherent and collaborative by promoting predictability and requiring timely decisions by regulators -- all without narrowing the authorities of federal and state resource agencies and Indian tribes under existing federal environmental laws. NHA says the provisions will break the licensing process status quo that has stifled the growth of US hydro for a number of years. The association also congratulated the bipartisan leadership of Reps. Cathy McMorris Rodgers and Jerry McNerney for "championing a common sense clean energy proposal that protects environmental values".

The US Senate is now expected to take up the Energy Policy Modernisation Act of 2015 (S2012), which contains similar hydropower improvement provisions. "As we look to further action in the Senate, it is important to note that the bipartisan hydropower provisions that are moving forward in both chambers do not repeal or weaken the Clean Water Act, Endangered Species Act, or other federal environmental requirements," Linda Church Ciocci, Executive Director of NHA said. "As the legislative process moves forward, we will continue working with Congress, the Administration and all stakeholders to pass a final bill that preserves the existing hydro system, protects the environment and promotes new development."

(First thing you'll know, they'll own all of them.)

Verso sells local hydroelectric facilities

By Ben Hanstein • January 7, 2016 • dailybulldog.com

JAY, Maine - Verso Corporation announced today the sale of a subsidiary energy company to Eagle Creek Renewable Energy LLC, who purchased four hydroelectric generation facilities for \$62 million. Those facilities are located in Livermore Falls, Livermore and Jay. In a statement released today, Verso Corporation said that the sale of Verso Androscoggin Power LLC would not have any impact on operations at Androscoggin mill. VAP owns the four facilities, the Riley, Jay, Otis and Livermore developments, which are



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located along 10 miles of the Androscoggin River and provide electrical output to power the pulp and paper mill in Jay. According to the Low Impact Hydropower Institute, the four facilities generate roughly 142,000 Megawatt-hour in an average year. There is no direct connection between the facilities and the power grid.

The announcement comes in the wake of Verso Corporation shutting down two machines and laying off 300 of its 863 workers at the Androscoggin Mill. In November 2015, the company said that it was considering both selling the mill and bankruptcy as possible restructuring alternatives. In an earnings statement released on Nov. 16, 2015, the company said, "based on our liquidity position as of Sept. 30, 2015, and our projections of operating results and cash flows for the remainder of 2015 and 2016, we believe that there is substantial doubt about our ability to continue as a going concern for the next 12 months." However, in the prepared statement released today, Verso said that the sale of VAP is "expected to have no impact on the operations of the Androscoggin mill." "The mill purchased electricity from VAP before the transaction," Verso said in the statement, "and it will continue to do so with VAP now under Eagle Creek's ownership." The company went on to note that the mill now operated its own energy facilities, including two recovery boilers, a biomass boiler, three steam turbines, and three gas turbines. The mill also purchases electricity from Central Maine Power. "Most importantly," the statement said, "the sale will not affect the Androscoggin mill's ability to manufacture its high-quality products and will not cause any interruption in serving its customers." Eagle Creek is private company that owns and operates more than 47 hydroelectric facilities nationally. They are headquartered in Morristown, N.J.

(Let's hope this isn't going to happen.)

The Future of Hydropower Looks Dim as Heat and Drought Intensify

By Tim Radford, Climate News Network | January 7, 2016, ecowatch.com

Climate change could threaten the electricity supply around the world, according to new calculations. That is because the power generation depends on a sure supply of water. But climate change also promises greater frequencies and intensities of heat and drought. So more than half of the world's hydropower and thermoelectric generating plants could find their capacity reduced.

Michelle van Vliet, an environmental scientist at Wageningen University in the Netherlands, and colleagues from the International Institute of Applied Systems Analysis in Austria report in *Nature Climate Change* that they modeled the potential performance in the decades ahead of 24,515 hydropower plants and 1,427 nuclear, fossil-fueled, biomass-fueled and geothermal power stations.



The powerful flow of rivers such as the Columbia in Oregon, could be greatly reduced. Photo credit: National Weather Service Forecast Office via Wikimedia Commons

Global Consumption

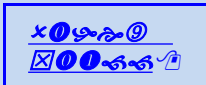
Thermoelectric turbines—which generate power directly from heat, and rely on water as a coolant—and hydropower plants currently generate 98 percent of the planet's electricity. But global water consumption for power generation is expected to double in the next 40 years as economies develop and the population continues to grow. The scientists found that reductions in stream and river flow and the rise in levels of water temperature could reduce the generating capacity of up to 86 percent of the thermoelectric plants and up to 74% of the hydropower plants in their study.

This means that power from hydro stations could fall by 3.6 percent in the 2050s and 6.1 percent in the 2080s, because of reduced stream flow. And by the 2050s, the monthly capacity of most of

the thermoelectric power plants could drop by 50 percent. Dr van Vliet said: "In particular, the United States, southern South America, southern Africa, central and southern Europe, Southeast Asia and southern Australia are vulnerable regions, because declines in mean annual stream flow are projected, combined with strong increases in water temperature under changing climate. "This reduces the potential for both hydropower and thermoelectric power generation in these regions."

Constrained Supply

Forewarned is forearmed: there are steps that the energy industry could take to make generation more efficient and to adapt to a world in which water supply might be constrained, at least for part of the year. But the report suggests that the planning for a different tomorrow should start now. "In order to sustain water and energy security in the next decades, the electricity industry will need to increase their focus on climate change adaptation, in addition to mitigation," Dr van Vliet said. Keywan Riahi, energy programme director at IIASA and a co-author of the report, said: "This is the first study of its kind to examine the linkages between climate change, water resources and electricity production on a global scale. "We clearly show that power plants are not only causing climate change, but they might also be affected in major ways by climate."



Other Stuff:

(Hydro has to be part of a good plan.)

Commentary

To meet renewable energy goals, Alaska and US need long-term storage plan

Robert L. Seitz, January 1, 2016, adn.com

OPINION: Before we shut off our access to cheap electricity as a response to climate change, we need to develop long-term energy storage systems while we can still afford it.

To achieve the goal of 100 percent renewable energy, we need to develop long-term energy storage while we still have hydrocarbon fuels -- and we need to do this together, all of us. Subsequent to the climate change meetings in Paris, there have been a number of news articles and commentaries addressing various aspects of energy and covering a variety of topics and points of view: Utilities' reluctance to support independent producers; coal and oil being bad and should be severely limited right now; and the need to arrive at a high percentage of renewable energy production soon. Striving for clean energy is good, but so far we are attempting to do so without an overall plan and consideration for all the parts of the electrical power system. To achieve a high percentage of renewable energy, all parties will have to work together to develop a real long-term energy policy. This applies to the state of Alaska and the rest of the nation. By all parties I mean the oil and gas producers, coal producers, environmental groups (all who are for



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BILL ROTH / Daily News 2009

elimination of hydrocarbon fuels and all who want renewable energy), utilities, independent power producers, manufacturers, government agencies, politicians and the engineering societies.

Before we shut off our hydrocarbon fuel supply and cheap electricity, we need to develop long-term energy storage means and mechanisms while we can still afford the development costs.

This needs to become the focus of our long-term energy policy. Our power systems need to be looked at as systems, and not just as collection sources tied to the utility. Electrical engineers deal with systems and need to be a part of the team. I am an electrical engineer and a lifelong Alaskan, and have been an advocate for renewable energy for more than 40 years. It was obvious back then that long-term energy storage would be necessary for the ultimate success of wind, solar and other renewable sources -- storage to capture solar and wind power when they're abundant, and release when needed. Long-term storage, at least 6 months, would be needed to save summer energy for the dark and cold winter. Kodiak has success with their wind power because of hydropower, a form of long-term energy storage. Kodiak also has flywheel energy storage for the short term to provide stability to the system. Energy storage is the reason for success there. Copper Valley Electric Association will increase their hydropower generation so that in the summer they will not have to rely upon liquid hydrocarbon fuel. Because the availability of water in the winter is considerably reduced, hydropower is not a winter option, and most of their power will be from hydrocarbon-fueled turbine generators. There is some solar power electrical generation all year long, but not nearly enough to greatly affect the system. Additional energy storage is required to eliminate the need for winter fuel.

Batteries are one electrical energy storage means that has been available for a long time, but are more for short-term applications and are complex and expensive. Not all locations have hydropower, and in Alaska few places can depend on their hydropower in winter. The success of alternate energy in Europe is supported by the energy storage of the hydropower of Norway. Energy storage for Europe and Kodiak is easily solved, but long-term energy storage for remote Alaska, or even the Railbelt, must be something besides hydropower. A real energy policy for Alaska and for the nation must encourage development of a variety of long-term energy storage methods, advocate upgrade of the utilities to accommodate the distributed resources (from renewable energy), and ensure compatibility of many distributed resources with the existing utility systems. There are actual problems associated with the incorporation of wind and solar power into the electric power system (the utility), which must be worked out before renewable energy has a real chance to succeed. So let's spend hydrocarbon energy to find our freedom from it and let us all work together to find the way. *Robert L. Seitz, PE, is current chair of Alaska Section of the Institute of Electrical and Electronic Engineers. The views expressed here are the writer's own and are not necessarily endorsed by Alaska Dispatch News, which welcomes a broad range of viewpoints. To submit a piece for consideration, email commentary@alaskadispatch.com. Send submissions shorter than 200 words to letters@alaskadispatch.com or click here to submit via any web browser.*

(With all that hydro, what more do you need?)

NorthWestern rebuts renewables criticism

Guest opinion, by RICK BURT, 1/4/16, billingsgazette.com

In a Dec. 19 Guest opinion, Colorado attorney Russ Doty asserted that NorthWestern Energy should be doing more to develop wind and solar electricity production and to promote energy efficiency. He suggested Montana should follow the energy path of California. While California has a renewable energy goal of 50 percent by 2030, today NorthWestern's 60 percent carbon-free electric production is already better and less expensive than California's long-term goal. According to recent information from the Edison Electric Institute, electric rates in Montana are 21 percent below the national average, while California rates are among the highest in the nation.

Invested in hydropower

In recent years, NorthWestern has invested more than \$1 billion in clean energy. These investments mesh very well with our thermal generation, which provide necessary back-up for the unpredictability of wind generation. The purchase of Montana hydroelectric facilities from Pacific Power and Light in late 2014, combined with existing wind generation, created a portfolio dominated by carbon-free sources. We now have a made-in-Montana hydro-based generation system. **Hydro is the very best renewable.**



MICHAEL GALLACHER/For the Gazette - The setting sun casts an amber glow on Colstrip's four power plants.

We disagree with Doty's statement suggesting that wind can easily replace coal in our generation portfolio.

NorthWestern Energy owns 30 percent of Colstrip Unit 4, the newest and cleanest of the Colstrip generating units. The electricity dependably produced at Unit 4 provides a little more than 25 percent of the electricity we need to serve our Montana customers.

Coal and natural gas provide reliable generation during periods of peak demand, typically the coldest days of winter and warmest days of summer, when the wind often doesn't blow. This Thanksgiving was a great example: The cold was blistering, the wind wasn't blowing, and although we have about the same "nameplate capacity" of wind and coal on our system, it was our hydro and thermal resources that kept us safe and warm. After our recent purchase of the dams, our greatest need is for generation that can meet the peak-demand needs of our customers. Wind simply doesn't meet those needs.

Fair prices for dams

We paid about \$1,000 per kilowatt less than a recent sale of other dams by Talen Energy (formerly PPL). Most importantly, Montana's dams are now dedicated to serve our Montana customers at prices based on the cost of production. That will benefit our current customers, their children, and their grandchildren. **Doty ignores that fact we are responsible for 80 percent of the efficiency programs in place in Montana.** We see the value of cost-effective efficiency measures and have offered efficiency programs for over two decades to help our customers save energy. We have worked with others in the region on efficiency efforts, including successful market transformation programs. Unfortunately, Montana is behind other states in policies that support utility efficiency programs. Doty is passionate about LED light bulbs, and we agree. Company officials are working to measure their cost effectiveness and are sharing that information with local government officials interested in street-light conversions and other uses. NorthWestern recognizes the utility industry in Montana and across the United States is changing rapidly. We believe it is critical to take a realistic view of the relevant issues and rely on facts while looking at ways to help shape Montana's energy future. *Rick Burt is director of community relations for NorthWestern Energy, a company based in South Dakota.*

(You can be sure of one thing, it'll be more expensive!)

Utility companies unsure of costs associated with renewable-energy mandate

New state law boosts mandate from 33 to 50 percent

Officials say Merced Irrigation District in 'unique' situation

Turlock Irrigation District has mainly used wind turbines so far

By John Holland, modbee.com, 1/3/16

Electricity providers have a new state mandate – get at least half of their power from renewable sources by 2030 – but they do not yet know the cost to customers. Wind, solar and other sources will come into play as utilities carry out Senate Bill 350 in the Northern San Joaquin Valley and beyond. The measure, signed by Gov. Jerry Brown in October, builds on a previous mandate of 33 percent renewables by 2020.

Though the Merced Irrigation District provides power to more than 8,000 customers, it receives nearly all of its power from the Turlock Irrigation District, said Mike Jensen, a spokesman for MID. Turlock Irrigation District already gets about 25 percent of its power from renewables, thanks mainly to wind turbines in the

Pacific Northwest. Pacific Gas and Electric Co. is around that figure for its much larger service area, including the central Sierra Nevada and parts of the Northern San Joaquin Valley outside the districts.



Water flows through the McSwain Dam in Snelling on Wednesday, Dec. 30, 2015. According to Bill Cochran, project manager of the Merced Irrigation District's New Exchequer Hydroelectric Project, the McSwain powerhouse is capable of producing 10 megawatts of power. Andrew Kuhn
akuhn@mercedsunstar.com

MID has contracts for energy from wind and small hydroelectric sources, which amount to about 1 percent of energy use, Jensen said. The cost will depend on the going prices for renewable power, which generally have been higher than conventional sources such as natural gas and hydroelectric. Planners also have to figure in the growth in overall demand, including the possibility that many cars will run on electricity rather than gasoline as part of the same planet-saving campaign. "As always, any associated cost to comply with a state mandate results in a direct 'pass-through' cost to MID ratepayers," Jensen said. Jensen described MID's situation as "unique" because it is connected to and receives power from TID. Plus, because the district serves an economically disadvantaged community, it exercises a cost limitation option allowed under state regulations. Local legislators Anthony Cannella and Adam Gray also got legislation passed to help the district with its costs, Jensen said. Backers say the law will reduce the carbon emissions from coal and petroleum that are contributing to global climate change. They see it as a worthwhile cost to ratepayers if it blunts heat waves, sea-level rises, habitat losses and other effects.

The law counts small hydroelectric plants as renewable, such as MID's generator at McSwain Dam, but not big generators such as New Exchequer. It also does not include the nuclear portion of PG&E's supply. Jensen said MID is working with the California Energy Commission to review its options and ensure the district complies with the requirements. Brian LaFollette, assistant general manager for power supply at TID, said the district will meet the 33 percent goal in 2017 with power purchased from a large solar plant under construction in Kern County. It already has solar, geothermal and small hydro to go along with the wind turbines it owns in the Columbia River Gorge. The district will likely have to add new sources starting in 2021 or 2022, he said. It also faces a 2029 renewal of the land lease for the wind turbines. LaFollette noted that the costs incurred to meet the 33 percent mandate have been blunted by the drop in prices for natural gas, the main fuel for power plants.

The new law maintains the 33 percent target for 2020 and adds steps of 40 percent renewables by 2024, 45 percent by 2027 and 50 percent by 2030. PG&E was at 27 percent renewable at the

end of last year and expects to be at about 30 percent once the 2015 numbers are all in, said Lynsey Paulo, corporate relations manager. It has solar, wind, geothermal, biomass and small hydro, with no source dominating. Paulo said the costs to ratepayers for reaching 50 percent will have to include new transmission lines and backup sources. "We're still crunching the numbers, but we certainly know that the new goal and other factors could impact customer rates," she said. *Sun-Star staff reporter Brianna Calix contributed to this story.*



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