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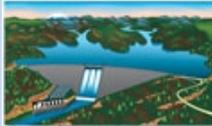
Some Dam – Hydro News™ *And Other Stuff*



Quote of Note: “Engineering is the professional art of applying science to the optimum conversion of natural resources to the benefit of man.” - - Ralph J. Smith

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“Good wine is a necessity of life.” - -Thomas Jefferson
Ron’s wine pick of the week: 2013 Zuccardi Cabernet Sauvignon “Q”
“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson



Dams:

(When all else fails you have to have a good EAP.)

Dam emergency plan in place

By Jake Mosbach, clintonherald.com, Jan 27, 2017

An emergency action plan for four Clinton flood dams was approved at Wednesday’s Clinton City, Iowa Council Committee of the Whole meeting. The dams in question, known as the Whittier dam, First Congregational Church dam, May Pond dam and Spring Valley dam, are the four flood control dams that the city of Clinton is directly responsible for maintaining. Inspected every year, all of the dams appear to be in good shape as of now, Clinton Water Quality Superintendent Bob Milroy said. The location of the Whittier dam is described as “just north of the school, on Second Avenue South.” The First Congregational Church dam is “on the west side of the church in the woods,” with the May Pond dam being described as “behind the old Larry May property.” The Spring Valley dam is “on the west side of Spring Valley Drive, in a pasture.” The emergency action plan is part of a “worst case scenario,” Milroy says.

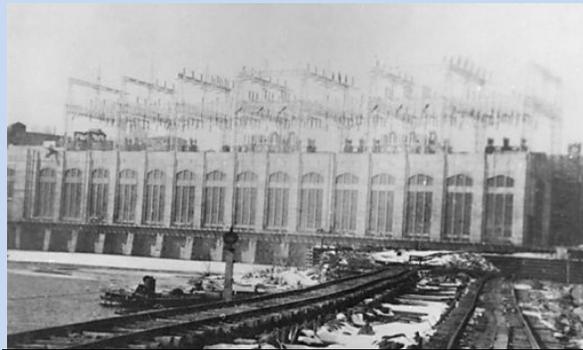
“What this plan is, is just a ‘best practice’ of what the DNR wants us to try to complement,” Milroy said. “It’s a template that was prepared by the DNR, and we essentially had to go through and just put the right contact information, and so on and so forth.” There is no expense to the city for the

plan in the near future, according to Milroy, though if something were to happen to one of the dams, the city would face the cost to repair. The plan ultimately consists of five steps. First, event detection is necessary; finding the incident. The second step is emergency level determination; analyzing the severity of the dam breach or failure. Third is notification and communication to the appropriate recipients. Step four is expected actions. Termination of the event is step five. At this point, the issue will have been resolved and emergency action plans are to be terminated. The timeliness of these steps also depends on the level of emergency, according to the plan. Levels one through three, with one being the least severe or slowest developing, dictate the potential contact entity or response time. The dams aren't currently holding water, and are merely being used as emergency control areas. Milroy says he's personally never seen more than a foot or two of water in any of the four dam areas. The emergency action plan now must go in front of the Clinton City Council, which meets again on Feb. 14.

The 21-month miracle of 89 years ago

By Erika Quesenbery Sturgill Special to the Whig, Jan 28, 2017, cecildaily.com

CONOWINGO — Maryland Public Television researched, filmed and aired one of their most popular locally-produced documentaries this past year, "Conowingo Dam: Power on the Susquehanna." The public TV station gained hundreds of new members in the rush to purchase the DVD of the episode and cases of the documentary were sold during the two-day September open house at the facility, in which every single tour was packed beyond capacity, even with extra tours added every 15 minutes. Often touted as an engineering marvel, the hydroelectric dam at Conowingo could equally be described as a construction miracle spanning the Susquehanna River between Harford and Cecil counties. Especially when one considers that construction began March 8, 1926. Exactly 21 months later the main unit, or Unit No. 1, was turned over for the very time on Jan. 31, 1928. It was an incredible feat 89 years ago, when coffer dams were built of boards, before plywood, steam shovels were limited, and horses and oxen were still a major source of "horsepower" during the construction.



Vintage photo of Conowingo PH

To many locals, it is the free bridge with no toll across the river. A bit scary and intimidating with the narrow span at the powerhouse on the Harford side, but still a convenient bridge to cross. To visitors, it is a fascinating masonry gravity dam with soaring art deco architectural details from the impressive castle-like doors to the multi-pane windows. It was on Jan. 31, 1927, that alternating sections of Conowingo's east cofferdam were completed, exposing the dry riverbed to allow access for construction on the important powerhouse side. Exactly 12 months later to the day, the main unit or generator was turned over for the first time. Over 3,800 workers flocked to the jobsite to be a part of this modern marvel of construction. This would be the last hydroelectric dam built on the Susquehanna River, though it was the first in Maryland. Other dams upstream in Pennsylvania, including Holtwood and Safe Harbor, pre-date the Conowingo Dam and Maryland's span would be built to supply power to Philadelphia, which was at the time known as the "workshop of the world." An employment office was opened in Baltimore, with easy access to docks and railroad stations to capture new immigrants to the country as a potential workforce. The plan worked and persons of every color, creed and — to the frustration of many work crew foremen — languages were hired on the spot. A short line railroad was installed from Havre de Grace to the construction site to haul workers and supplies to the dam on multiple runs a day. Philadelphia Electric Company awarded the \$52 million construction contract for dam to Stone & Webster of Boston on Jan. 23, 1925. The Boston firm did the design work while construction began March 8, 1926, by Arundel Corporation of Maryland. When it was completed 21 months

later, it was the second-largest hydroelectric project, by power output, in the United States, immediately after Niagara Falls. Charles Lawson Eglin, the chief engineer for Philadelphia Electric, was the brain trust behind the construction. It was he who determined to build 11 turbine sites, or chutes for the water power to spin turbines, but only seven turbines were installed. The four higher capacity turbine units were added some 50 years later. Sadly, Eglin passed away in February 1928, so he never had the opportunity to see what was essentially his life's greatest work completed.

(If you have to, fix it.)

Questions are raised about Meander Dam

By RENEE FOX, Tribune Chronicle, Jan 29, 2017, tribtoday.com

MINERAL RIDGE, Ohio — “Considerable” dam slippage, concrete separation and cracks at the Meander Dam led the board president of the Mahoning Valley Sanitary District to seek help from oversight agencies and a state lawmaker in 2014 and 2016. The damage at the facility “accelerated” in the past few years, according to letters penned in 2014 and 2016 by Matt Blair, president of the board governing the Mahoning Valley Sanitary District, which owns the dam. Attached to letters Blair sent are photos showing slippage and seepage. Seepage is water moving through the dam, while slippage is instability in dam slopes.



According to the Ohio Department of Natural Resources' Ohio Dam Safety Program website, seepage is the cause of dam failures 20 percent of the time a dam fails and slope instability is the cause of failures 30 percent of the time. Overflow accounts for other failures. While the letters Blair penned to the U.S. Environmental Protection Agency, the Ohio Department of Natural Resources and then-state Rep. Sean O'Brien explicitly state it is uncertain what is causing the damage, and that it doesn't pose a threat to the public, Blair expresses concern that increased seismic activity in the area or ground shifting could coincide with increased problems at the dam. He included news articles about local earthquakes connected to nearby wastewater injections wells. “At first I was under the impression that the problems could be the result of ordinary wear and tear due to the fact that the facility and dam were built in the 1930s, but given the fact that we have also experienced similar problems with recent construction projects, it would lead me to conclude that there may be some other reason giving rise to the structural damage experienced with our builds and dam,” Blair states. He asks ODNR if any studies on ground shifting in the area have been conducted, and states the facility needs the data in order to plan future construction around it. Blair asked for help getting an earthquake stability survey for the dam, asked for information about local fault lines and requested cash to help with repairs and studies. The dam is being studied by Gannett Fleming, the company the board hired to examine it. Cost estimates to repair the dam went up from around \$4 million to \$28 million over the last few years, according to Blair's letters.

While the dam has cosmetic and structural flaws, the preliminary study did not reveal anything alarming, but was not complete, said now-retired chief plant engineer Tom Holloway at a Niles City Council roundtable discussion in early January. Frackfree Mahoning Valley, a local group concerned about the safety of the dam in relation to seismic activity connected to waste water injection wells, handed out fliers last week in areas that could be affected if the dam were to fail, including the 4th Ward in Niles. After receiving numerous calls about the fliers, Niles Mayor Tom Scarnecchia went to an MVSD board meeting Friday to ask the directors if he should be worried too. Scarnecchia said while the fliers created a bit of a “hysteria,” it brought his attention to the

need to have an evacuation plan in place. The city does not have one yet, but Scarnecchia said he would contact the Trumbull County Emergency Management Agency and Weathersfield fire Chief Randall Pugh, who organized an evacuation plan for his township. "God forbid if something does happen and we aren't prepared that would be a major thing. We need to be ready and know what to do. Some people are scared and I don't blame them," Scarnecchia said. Blair said that plans to repair the dam are underway.

(Removing those dams is not a popular idea for some.)

Nez Perce County officials oppose breaching of dams on Snake, Columbia rivers

By JOEL MILLS of the Tribune, 2/1/17, Imtribune.com

The Nez Perce County Commission is adding its voice to other local agencies concerned about the effects of dam breaching on local social and economic issues. In a letter to the U.S. Army Corps of Engineers, commissioners Bob Tippet, Douglas Havens and Douglas Zenner declared their opposition to dam breaching because of potential negative effects on transportation, employment, recreation, tourism, hydropower and infrastructure.

Several other local agencies, including the Lewiston City Council, have submitted similar lists of concerns to the Corps, the U.S. Bureau of Reclamation and the Bonneville Power Administration as they prepare an environmental impact statement on the Columbia River system operations in anticipation of 14 projects.



The commissioners wrote that the loss of commercial navigation would hurt farmers, the timber industry and others who rely on barging to get their goods to market. Jet boat manufacturers also would suffer with the loss of slackwater, and tour boat operators would no longer be able to bring large numbers of visitors to the area. Recreation provided by the levee trail system and golf courses that draw their water from the Snake River would take a hit, the commissioners wrote, and energy costs would rise if hydropower is lost. Finally, the commissioners noted that a 1992 test drawdown of the river system damaged roadways, railroad embankments, piers, bridges and boat docks.

(Big stuff.)

Massive gate replaced at TD dam

By Jesse Burkhardt, February 1, 2017, thedalleschronicle.com

On Tuesday morning, contractors used heavy-duty cranes to lower a new upstream gate at The Dalles Lock & Dam. The gate, which weighs 110.5 tons, is a vital piece of machinery for operation of the navigation locks, and represents the most important component of the annual maintenance upgrades and repairs at the dam this winter. The Dalles Dam, operated by the U.S. Army Corps of Engineers, was among the navigation locks on the Columbia River and the Snake River system that closed for a 14-week period that began Dec. 12.



Contractors lower a new upstream gate into place at The Dalles Lock and Dam, located on the Washington side of the Columbia River. The gate weighs 110.5 tons. The locks take 20 minutes to fill or empty and are 85 feet wide, 675 feet long, and 88 feet deep. Photo by [Jesse Burkhardt](#).

The closure allows crews to tackle a variety of critical infrastructure projects, as well as routine maintenance.

Weather issues have slowed work at The Dalles Dam, but Karim Delgado, public affairs specialist for the Corps of Engineers, said the project remains on schedule. "We're still on track to complete the project in the outage window, but it has gotten precarious," Delgado said.

Barring a major setback, work at the dam is scheduled to be completed and the locks reopened to river traffic on March 20. Critical repairs, routine maintenance and improvements are being made throughout the system. The Corps' Portland District, has jurisdiction over dams in The Dalles, Bonneville and John Day, include:

Bonneville

At Bonneville, the navigation lock controls will be updated, which includes removing existing navigation lock systems and control interfaces. Workers will also install new and redundant systems with important safety elements. The navigation lock will be fully dewatered during the extended lock outage. The new equipment will improve automated functions and make the controls easier to use.

John Day

The John Day Lock and Dam has no extensive repairs planned. Maintenance crews will use the time to clean and check equipment, paint, clean gauges, change gear box fluids, repair upstream and downstream guidewalls, do preventive maintenance and conduct dam safety inspections.

The John Day Dam will not be dewatered lower than the chamber floor during the closure.

The three locks pass up to 10 million tons of commercial shipping annually.



Hydro:

(Where most of the hydro is.)

Top 15 Hydropower Producing States in America

January 25, 2017, by Milica Radenkovic, insidermonkey.com

Check out the top 15 hydropower producing states in America, a country which is the fourth largest hydropower producer in the world. In 2015, the United States generated 250,148 GWh of hydroelectric power. At the same time, around 6% of all US electricity was obtained from hydropower, which is currently the most exploited renewable source of energy. Hydropower, the power which is produced from the energy of moving water, has been used for centuries. In ancient Greece, people relied on falling water's force to move water mills which ground wheat into flour. Today, hydropower provides 16.6% of global electricity and accounts for 85% of all electricity produced from renewable resources. It is expected that in following years world's reliance on hydropower will continue to increase.



There are two strong reasons which justify production of electricity from running water. First and foremost, hydropower is renewable, which means that there is no danger that one-day resources will run out as it is the case with fossil fuels. Secondly, it is green and its generation is not accompanied by greenhouse gas emission. Both reasons appear compelling especially if we bear in mind that we are using a much greater amount of resources than Earth can produce, while at the same time pollution has reached a critical point which requires immediate action.

However, hydropower has downsides as well, including high costs and environmental impact. Costs of building a hydropower plant are considerable. According to Energy Information Administration (EIA), an average cost of hydropower generators installed in 2013 in the US was 2,294\$/Kw, which is more than double compared to costs of generators that run on natural gas or petroleum liquids. At the same time, International Renewable Energy Agency (IRENA) estimates that costs of large-scale hydropower projects range from 1,000\$/Kw to 3,500\$/Kw depending on whether project location has adequate infrastructure. For instance, installation of a hydropower plant in a place where a dam already exists can cost only 500\$/Kw, while in others it can be more than 3,500\$/Kw.

Installing new hydropower capacity sometimes requires flooding of large areas of land which are habitat for diverse wildlife. Hydropower facilities also disturb aquatic ecosystems – they can cause a change in water volume, temperature, oxygen levels, which in turn, affects the life of water organisms. In addition, dams interfere with salmon migration patterns, while turbines might kill fish. Finally, in recent years hydropower plants were blamed for calamities such earthquakes and floods. At the end of 2015 global hydropower capacity was 1,064 GW, which represented the increase compared to 1,036 GW in 2014. Eight countries – China, Brazil, the United States, Canada, the Russian Federation, India, and Norway – accounted for 63% of all installed capacities. China is a leader in hydropower development – in 2015 the country added more capacity than the rest of the world combined. Other countries which have seen increase in hydropower projects were Brazil, Turkey, India, Vietnam, Malaysia, Canada, and Colombia. At the same time, China ranked as a leading hydropower producer with 1,126 TWh. Unlike many other countries in which hydropower output declined due to unfavorable weather conditions, China recently increased hydropower production by 5%. If you would like to find out which other countries in the world are leading hydropower producers, you can read our article 8 Countries that Produce the Most Hydroelectric Power in the World, which is based on data from 2010 to 2012.

In creating the list of top 15 hydropower producing states in America, we relied on data provided by EIA. We ranked states by net hydroelectricity generation in 2015, and net electricity generation in September 2016. We calculated average ranking to come up with the final list.

15. Oklahoma

Net electricity generation 2015 (thousand MWh): 2,664

Net electricity generation, September 2016 (thousand MWh): 198

Oklahoma is a home to some of the largest oil and natural gas fields in America. In addition, it has significant coal deposits so it is not a surprise that the state generates electricity mainly from fossil fuels. However, it also uses renewable resources, mostly wind and hydropower. Hydroelectricity accounts for around 3% of all Oklahoma's electric power.



14. Maine

Net electricity generation 2015 (thousand MWh): 3,361

Net electricity generation, September 2016 (thousand MWh): 191

Maine heavily relies on renewable resources for electricity generation. Two-thirds of state's electricity is produced by hydroelectric dams and biomass. Hydropower facilities generated 30% of electrical power in 2015, which is second highest share among states located east of the Mississippi River (only in Vermont electricity produced from falling water accounted for a greater share of total electric power).

13. Kentucky

Net electricity generation 2015 (thousand MWh): 3,403

Net electricity generation, September 2016 (thousand MWh): 209

Kentucky is another state on this list which is rich in fossil fuels, mainly coal. The state is third-largest coal producer in the US and coal plants produce nine-tenths of the state's electricity.

Among renewable resources, **Kentucky mainly relies on hydropower which provides around 4% of electricity.**



12. North Carolina

Net electricity generation 2015 (thousand MWh): 4,472

Net electricity generation, September 2016 (thousand MWh): 234

North Carolina relies on nuclear power and hydropower for electricity production. It is the fifth largest producer of electricity from nuclear energy in America. At the same time, hydropower facilities generate more than a half of all electricity produced from renewable resources. Besides hydropower, North Carolina also exploits biomass and solar energy.

11. Arkansas

Net electricity generation 2015 (thousand MWh): 3,569

Net electricity generation, September 2016 (thousand MWh): 251

In Arkansas, electricity is mainly produced from coal – about half of electrical power is produced from this fuel. As the state does not have large coal deposits, it obtains the fuel from other states such as Wyoming and Oklahoma. **Besides coal, electricity is generated from hydropower which provides two-thirds of all electricity generated from renewable resources.**

10. South Dakota

Net electricity generation 2015 (thousand MWh): 4,850

Net electricity generation, September 2016 (thousand MWh): 363

Unlike previously mentioned states, South Dakota is not rich in oil, natural gas or coal, which is a reason why **it heavily relies on renewable resources, mainly hydropower and the wind.** More than half of state's electricity is generated from hydroelectric dams located on Missouri River. The Wind is another heavily exploited renewable resource in the state – one-fourth of South Dakota's electricity comes from the wind, which is second largest percentage in America.

9. Alabama

Net electricity generation 2015 (thousand MWh): 9,862

Net electricity generation, September 2016 (thousand MWh): 325

Alabama, one of the leading producers of electricity in America, mainly generates electrical power from coal and natural gasses. It also uses hydropower and biomass for obtaining electricity.

Around 6% of all state's electricity comes from hydroelectric dams. Hydroelectricity accounts for 75% of electrical power generated from renewable resources.



8. Tennessee

Net electricity generation 2015 (thousand MWh): 9,581

Net electricity generation, September 2016 (thousand MWh): 478

The largest share of electricity in Tennessee, which occupies the eight place on our list of top 15 hydropower producing states in America, is generated in coal-fueled plants. Nuclear plants are **second largest electricity producer in the state while hydropower is the leading renewable resource for electricity production.** Hydroelectric facilities generate one-eighth of state's electricity which places Tennessee among top three hydroelectric producers east of the Rocky Mountains.

7. Idaho

Net electricity generation 2015 (thousand MWh): 8,757

Net electricity generation, September 2016 (thousand MWh): 544

Idaho ranks as one of the leading states in the production of energy from renewable resources.

Until recently hydropower facilities generated around four-fifths of state's electricity. Due to droughts, the share of electricity produced from hydropower decreased to little more than one-half. The rest comes from the wind, biomass, natural gas and other resources. Idaho uses more electricity than it produces, so it depends on supplies that come from out-of-state resources.

6. Arizona

Net electricity generation 2015 (thousand MWh): 6,536

Net electricity generation, September 2016 (thousand MWh): 563

Arizona is a home to the largest nuclear power plant in the US – Palo Verde Nuclear Generating Station. Besides nuclear power, the state also relies on coal and natural gas for electricity production. These three resources together provide nine-tenths of all electricity while the rest mainly comes from hydropower and solar energy. The greatest share of hydroelectricity is produced by Glen Canyon Dam and Hoover Dam, which are among largest plants in America.

5. Montana

Net electricity generation 2015 (thousand MWh): 9,888

Net electricity generation, September 2016 (thousand MWh): 535

Montana, the state which has the largest recoverable reserves of coal in America and which produces 5% of the country's coal, generates more than half of its electricity from this fuel. The other half is generated mainly from hydropower as the state exploits benefits of Missouri River.

Montana uses only half of produced electricity, and the rest is distributed to other states.

4. Oregon

Net electricity generation 2015 (thousand MWh):

31,254

Net electricity generation, September 2016
(thousand MWh): 1,916

In terms of hydroelectricity generation in 2015, Oregon is second largest hydropower producer in America. The state occupies fourth place on this list because of lower hydroelectricity generation during September last year. More than half of all electricity is produced in hydropower facilities and four largest among them are located on the Columbia River. Besides hydropower the state is rich in wind and geothermal potential.



3. New York

Net electricity generation 2015 (thousand MWh): 26,015

Net electricity generation, September 2016
(thousand MWh): 1,953

New York is a home to the largest hydropower plant in the east part of America. Robert Moses Niagara plant has 13 generators whose capacity is 2,525 MW. Hydropower facilities provide one-fifth of all electricity in the state while the rest is

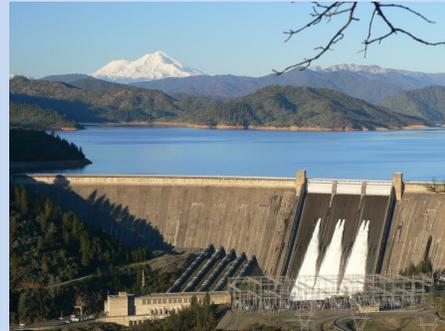
obtained mainly from nuclear power and natural gas. Besides hydropower, which is the most exploited renewable source of energy, New York also relies on wind and biomass for electricity production.

2. California

Net electricity generation 2015 (thousand MWh): 13,808

Net electricity generation, September 2016 (thousand MWh): 2297

The greatest share of electricity, three-fifths of total generation, is provided by natural gas fueled plants. The rest is obtained from nuclear power and hydropower plants. Four years ago electricity generated from nuclear power almost halved because two reactors in the San Onofre plant were shut down. At the same time production of hydroelectricity varies due to weather conditions. When there is enough precipitation, hydroelectricity can account for one-fourth of total electrical energy. However in 2015 hydroelectricity's share in total electricity dropped to one-tenth because of drought. When weather interferes with electricity production from hydropower, California relies on other renewable resources such as solar and wind energy.



1. Washington

Net electricity generation 2015 (thousand MWh): 73,405

Net electricity generation, September 2016 (thousand MWh): 4,083

Washington ranks as first on our list of top 15 hydropower producing states in America. Around one-fourth of all America's hydroelectricity is generated in Washington. At the same time, the state is home to seventh largest hydropower plant in the world – Grand Coulee, which is like many other hydropower plants located on the Columbia River. Between two-thirds and four-fifths of electricity produced in Washington come from hydropower facilities, while the rest is obtained from natural gas, nuclear power and coal. Washington exports significant share of its electricity to Canada and also supplies other US states.

(What's to study? Sounds like a make work project for grad students.)

University to use grant to 'rethink' hydropower

26 January 2017, waterpowermagazine.com

An interdisciplinary team of Michigan State University scientists in the US is to use part of a \$2.6 million National Science Foundation grant to investigate new ways of producing hydropower. MSU's four-year project, which runs until Dec. 31, 2020, will include looking at innovative technology geared towards smaller dams and in-water turbines. "We want to rethink hydropower placement, scale of hydropower and what kind of technology makes sense," said Emilio Moran, Hannah Distinguished Professor and principal investigator on the project. The study is called "Rethinking dams: Innovative hydropower solutions to achieve sustainable food and energy production and sustainable communities." Co-investigators include David Hyndman from the College of Natural Science; Maria Claudia Lopez from the College of Agriculture and Natural Resources; Norbert Mueller from the College of Engineering; and Nathan Moore from the College of Social Science.

(If we're going to build wind and solar power, we need a way to store energy – the best way is pumped storage.)

Old mine could become battery

Editorials

Jan 27, 2017, leaderherald.com, 1/28/17

Whether it's now or 100 years ago, engineering marvels are always pretty cool. The one we're thinking of is, on one hand, new and fascinating; on the other, one wonders why it took so long. This innovation is taking place in an old iron ore mine in the eastern Adirondacks, NY in the appropriately named Mineville. Over the decades since the mine was last used, its shafts have become flooded with millions of gallons of water, but an ambitious group of engineers has a plan to use that water to generate electricity. They would pump it higher into the shafts, hold it there until needed and then let it flow down over 100 hydroelectric turbines that would crank out wattage — then pump the water back up and do it over and over again. The plan is to use this in

conjunction with renewable wind and solar power projects. Solar arrays do not generate power when the sun is not shining. Ditto for wind turbines when the air is calm. Therefore, neither type of generating facility, on its own, is reliable for peak load periods when utilities need certain amounts of power to meet demand.

Think of the mine as a gigantic battery, or a hydroelectric dam on a river that only runs when you want it to. During times when demand for electricity is low, use a little of that solar and/or wind power to pump the water up high in the mine. Then when demand is high and the sun and wind aren't cutting it, let the water rip. It's clean, renewable, safe (unless someone falls into the mine and drowns, but that's the case now) and wouldn't change the landscape the way wind turbines and solar panels do. This kind of system is called "pumped storage," and Mineville isn't the only place where it's being considered. In Montana, a company has been granted a license to construct a \$1 billion electric energy project. Absaroka Energy of Bozeman, Montana, plans to build a 400-megawatt pumped storage facility. If completed, it would provide a necessary adjunct to the scores of solar and wind energy projects on which the federal government has subsidized to the tune of billions of dollars during the past few years. Former President Barack Obama's administration was generous with federal money for wind farms and solar arrays, and we're glad the private sector is stepping up to develop the pumped storage facilities that complement them. Whether or not you like solar and wind power, they're here to stay, and they're an important part of our nation's increasing energy independence, as well as safety and cleanliness. Merging them with a new take on hydro power makes sense.

(Better now, more energy too.)

Improvement Project Blocks Record Year at Hydroelectric Plant

By Lee Voss January 27, 2017, wjon.com

ST. CLOUD, MN — The St. Cloud Hydroelectric Plant was on pace to set a new output record in 2016. That is, until a \$3,500,000 trip-gate project forced the plant to lower the water level. Plant Manager Daryl Stang says it's bittersweet... "Obviously, we had a barge and a crane in the river. Last year would have been a record-breaking year flow-wise and production-wise. Because of the project, we had to draw the pool down a couple of times and run at a lower head pressure, meaning we produced less power during those times. It prevented us from having the record-breaking year we would have had."



The project is replacing the old manual trip-gates with new automated ones. When the water flow is high in the spring, the gates would be tripped open and stay open until Stang could safely raise them manually. The old system was a breakable link that operated under pressure. Once the pressure increased and the links broke, the gates laid down and I had to manually go put 'em up when the water level was low enough where I could safely do it. It amounted to about 18% less electricity production during that time. Stang says it could be up to three months until the gates could be raised again. He says the new automated gates will allow him to raise and lower the gates as needed and increase output sooner. The project began in July 2016 and is slated to be completed toward the end of February.

(Running a marathon that goes on and on.)

New hurdle will extend Oroville Dam relicensing saga

By Heather Hacking, Chico Enterprise-Record, 01/29/17, orovillemr.com

Oroville, CA >> A long-awaited milestone in the years-long process to relicense Oroville Dam was reached last month, with the approval of the biological opinion by the National Oceanic and Atmospheric Administration. That was believed to be the last loose end, and it was thought that might allow the license to be approved this spring by the Federal Energy Regulatory Commission, which could clear the way for a renewed burst of funding to the area in a few months. Oroville and the Feather River Recreation and Park District were poised to receive \$3.4 million, and an additional tens of millions of dollars over 30-50



years. But as has been the case with the relicensing effort, when one hurdle is cleared, a new one crops up. That happened Thursday when FERC commissioner Norman Bay announced his resignation, after President Donald Trump replaced him as chair of the panel by elevating commissioner Cheryl LaFleur, as reported by Politico. The five-member board already had two unfilled vacancies, and Bay's resignation leaves the commission without a quorum, unable to approve anything or even meet until a replacement is appointed and confirmed by the Senate. If filling the FERC vacancies was a priority, it would still take two to three months to do so. But the Senate also is in the process of confirming Trump's cabinet appointees and a raft of other officials. When Trump and the Senate will get to the FERC spots is unknown. So once again as has been the case for 10 years, relicensing and the money it could mean to the area remain in limbo.

What is relicensing?

When Oroville Dam was built in the 1960s, it changed the landscape, the environment and the way people used the land. The FERC license laid out a balance between the water supply, hydroelectric generation and the impact to area residents. Basically the license says money collected from people who use money from the State Water Project will be used on projects within the dam complex and in adjacent areas impacted by the dam. The original license expired in 2007. Discussions about renewing the license have gone on since then.

Money for projects

There are two streams of money that would come from relicensing. An estimated \$300 million would go to programs at the lake, including ongoing expenses such as contracts with State Parks, Fish and Wildlife, Feather River Fish Hatchery and others, said Kevin Dossey, senior civil engineer in recreation and land use for the Department of Water Resources. New projects under the new license could include new fish weirs, river habitat improvement, lake access projects and fish hatchery improvements, as examples. Another \$50 million is also being discussed for additional recreation projects over the first 10 years of the license agreement, Dossey said.

Local money

A second flow of money would go to projects outside the dam footprint, primarily along the "low flow" stretch of the Feather River through Oroville, from the Diversion Dam upstream to the Afterbay outlet downstream. That money goes to a Supplemental Benefits Fund. A committee of three people from the city of Oroville and two from Feather River Recreation and Park District decide how that money is spent. Advisory members are from the Department of Water Resources, State Water Contractors, Oroville Area Chamber of Commerce and American Rivers. Even though the relicensing agreement has not been complete, the committee has received and spent about \$8 million dollars for various projects including Riverbend Park, said Dossey. When relicensing is complete, the Supplemental Benefits Fund committee will receive more money each year for the length of the contract. If it's a 50-year agreement, the Supplemental Benefits Fund would receive \$1 million a year for 50 years. A 40-year agreement would include a

payment of \$800,000 a year. Payment for a 30-year agreement would be at the discretion of DWR, Dossey said.

Will it really happen?

After all this time waiting for the relicensing, it was thought there might actually be some ink on paperwork soon. Kevin Zeitler, a non-voting member of the Supplemental Benefits Fund heard things really were moving forward this time. Laura Page at Congressman Doug LaMalfa's office in Oroville, attended many FERC meetings over the past decade. The biological opinion was first requested in 2007. The 400-plus page document was delivered Dec. 5. She also believes that was the last hurdle. That was before FERC commissioner Bay quit.

County out for now

Of note is that Butte County did not sign a settlement agreement. Leaders on the county level, including Supervisor Bill Connelly, strongly believe the county has been historically shortchanged by the Lake Oroville complex. Since the dam was built, the county has lost out on property tax money from the land, Connelly said. The county spends money for law enforcement and other expenses because the lake is here, he said. "The settlement for the city of Oroville is a big deal, but it doesn't make up for all the broken promises to the county."

(2 years is still too long, but with all the new laws not much can be done. Congress caused the problem and FERC is trying to make it work. Congress is the one that made the mess, they should clean it up.)

FERC 2-year licensing pilot workshop

1/31/2017, by Todd Griset, jdsupra.com | PretiFlaherty

The regulatory process for Federal Energy Regulatory Commission licensing of hydropower projects can take many years and significant expense -- but can it be improved following a two-year pilot process ordered by Congress? After running a pilot process for one license application, the Commission has scheduled a workshop to discuss lessons learned from its pilot licensing process. Under the Federal Power Act, the Commission is responsible for licensing most non-federal hydropower development in the U.S. Concerned over the duration and expense of the regulatory process, Congress enacted the Hydropower Regulatory Efficiency Act of 2013, section 6 of which directed the Commission to investigate the feasibility of a two-year licensing process, develop criteria for identifying projects that may be appropriate for the process, and develop and implement pilot projects to test the process.

After a January 6, 2014 solicitation for pilot projects, the Commission selected Free Flow Power Project 92, LLC's (FFP) proposed 5-megawatt project at the Kentucky River Authority's existing Lock & Dam No. 11 on the Kentucky River. The January notice set minimum criteria and a process plan for projects that may be appropriate for licensing within a two-year process, including:

- The project must cause little to no change to existing surface and groundwater flows and uses;
- The project must not adversely affect federally listed threatened and endangered species;
- If the project is proposed to be located at or use a federal dam, the request to use the two-year process must include a letter from the dam owner saying the plan is feasible;
- If the project would use any public park, recreation area, or wildlife refuge, the request to use the two-year process must include a letter from the managing entity giving its approval to use the site; and
- For a closed-loop pumped storage project, the project must not be continuously connected to a naturally flowing water feature.

After trying a two-year pilot to abbreviate its hydropower project licensing process, the Commission has scheduled a workshop to discuss the pilot's effectiveness.



Environment:

(Something must be working.)

Sockeye salmon return to Deschutes in droves Fall return at Round Butte Dam was way above average

By Kyle Spurr, The Bulletin, Jan 31, 2017, bendbulletin.com

A complex of dams along the Deschutes River saw a massive return of native sockeye salmon in 2016. A total of 536 sockeye salmon returned to the Pelton Round Butte Hydroelectric Project, a complex of three hydroelectric dams and reservoirs that stretch about 20 miles along the Deschutes River just west of Madras.



The numbers are well above previous annual returns of 19 to 86 fish since 2010. More than 93 percent of the sockeye originated from the Middle Deschutes basin, according to laboratory results from genetic testing received by Portland General Electric in January. Of that, 92 percent were from Lake Billy Chinook, created by the Round Butte Dam.

(Too many people, our no.1 problem.)

Humans Taking a Toll on 100 World Heritage Sites New study raises alarm on degradation

By Arden Dier, Newser Staff, Jan 31, 2017, newser.com

(NEWSER) – Almost half of all natural world heritage sites are slowly being degraded, and experts have a clear suspect: humans. A study based on the Human Footprint Index—which evaluates agriculture, infrastructure, population density, and other factors—identifies more than 100 of 229 sites that are suffering from human activities, reports Smithsonian. "The world would never accept the Acropolis being knocked down, nor a couple of pyramids being flattened for housing estates or roads, yet, right now, across our



planet, we are letting many of our natural world heritage sites be fundamentally altered," the study author says in a release. The Guardian notes that many sites suffering damage are home to endangered species or those that can't be found anywhere else.

Losses were seen on every continent, but North America alone has accounted for 57% of forest loss globally since 1993, with pine beetles seen as the main problem. Overall, however, sites in Asia fared the worst. Some notable specifics close to home: The Waterton Glacier International Peace Park on the US-Canada border has lost 23% of its forested area, Yellowstone 10%, and the Grand Canyon 6%. This "is alarming and must be addressed," says lead author James Allan from the University of Queensland. The study authors urge UNESCO to institute conservation measures before the damage becomes irreparable.



Other Stuff:

(Article too long for Newsletter, but worth reading (good photos too): Here's web address-
<http://www.popularmechanics.com/technology/infrastructure/g2932/50-states-infrastructure/>

50 States, 50 Things America Must Fix Now

A state-by-state by breakdown of what is broken and needs fixing.

By Tim Newcomb, Jan 26, 2017, popularmechanics.com

(Miscellaneous, but had to add photo of dam.)

Hamburg Photographer's View Point of Beltzville Dam

01/3/17, 8:29 PM EST | berksmontnews.com

Hamburg photographer Neven Dries took his camera out on a recent morning walk at Wild Creek Falls near the Beltzville Dam, Lehigh, PA. He shares a few photographs he captured while admiring the views.



Beltzville dam

(Great photo.)

Proposed site of Old Irish Mill added to historic register

By Dan Cherry, Daily Telegram Staff Writer, Jan 31, 2017, monroenews.com

BROOKLYN, NY - Another hurdle has been cleared in the quest to bring an Irish-themed marketplace to Brooklyn. The owners of the former Ford Motor Co. plant in Brooklyn announced the complex built in 1939 was listed Jan. 12 on the National Register of Historic Places. The historical designation, owner Daniel Ross said, should create more funding opportunities and will mean a \$1.1 million federal tax credit once the \$9 million complex is finished. Next on the list is raising \$1 million in private funding before seeking lending partners.



"We are going to start that process very soon," Ross said. Ross and his wife, Samantha, bought the former plant on 11 acres in 2015 with the vision of transforming the long-closed facility into an authentic, Irish-themed business complex called the Old Irish Mill. The plans call for a variety of shops, a farmers market and a collection of attractions focused on the River Raisin. Original plans called for the complex to be opened last fall. Delays in attaining historical status to be eligible for funding took months longer than anticipated. On Sept. 23, the pair received the historic recommendation from the State Historic Preservation Office. That recommendation went to the National Park Service to be approved. "During this time we were not allowed to touch the building," Ross said. "We needed this recommendation to come through because it comes with a federal grant for preservation of historic buildings. Without those funds, this project likely would not be able to move forward."



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