Some Dam – Hydro News™
And Other Stuff

Quote of Note: “Never be afraid to sit awhile and think.” – Lorraine Hansberry

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“Good wine is a necessity of life.” --Thomas Jefferson
Ron’s wine pick of the week: 2013 Drew Pinot Noir “Gatekeepers”
“No nation was ever drunk when wine was cheap.” -- Thomas Jefferson

Dams:
(Show me the money!)
Study: Shasta Dam expansion feasible but financing unclear
By KEVIN FREKING, Associated Press | July 31, 2015, sfgate.com

WASHINGTON (AP) — A long-awaited study requested by Congress concludes that enlarging Shasta Dam in California by 18.5 feet is technically and economically feasible, though the Bureau of Reclamation declined to make a formal recommendation to move ahead with the project. The study found the most viable expansion option would cost an estimated $1.4 billion and provide an economic benefit of $30 million annually from increased salmon populations, water supply, flood control and recreational opportunities. However, it was unclear who would be willing to take on the cost of construction.

The report said non-federal alternative financing would have to be secured for a majority of the construction costs before the secretary of Interior could recommend the project. State officials made it clear that the project is ineligible for funding through a recently approved bond proposition.

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
The federal government typically funds construction of major reservoirs that Congress authorizes and is then repaid from the project's beneficiaries over the course of several decades. California voters last year approved $2.7 billion for additional water storage as part of a bond proposition.

Nancy Vogel, deputy secretary for communications at the California Natural Resources Agency, said the project is not eligible for funding from Proposition 1, as funding cannot go to any project that would negatively affect a river protected under the state's Wild and Scenic Rivers Act.

Raising the dam would inundate portions of the protected McCloud River.

California is in the midst of a four-year drought that has forced tough decisions for many cities and farmers. Gov. Jerry Brown has ordered communities throughout the state to collectively reduce water use by 25 percent. To prepare for future droughts, some federal and state lawmakers have said securing more water storage through new or expanded reservoirs is critical. They have grown frustrated with how long it has taken for the Bureau of Reclamation to complete feasibility studies on a handful of projects. Congress first authorized the Shasta study in 1980. Shasta Reservoir is located on the upper stretches of the Sacramento River about 160 miles north of Sacramento. Federal officials looked at an array of options for the dam, from raising it by 6.5 feet to raising it by 12.5 feet, then to 18.5 feet. The most beneficial alternative calls for an 18.5-foot increase, adding spawning gravel to the upper Sacramento River and restoring habitat along the river. The higher lake level would require the relocation of utilities and bridges as well as the modification or total replacement of several marinas, boat ramps and trails. Expanding the dam by higher than 18.5 feet would require much more extensive and costly relocations, including for Interstate 5, the report said. The study said the most economically beneficial option would increase the amount of water stored in the reservoir enough to cover 634,000 acres with a foot of water. About a third of that additional water would be used to benefit fish populations.

(Dealing with karst can be a tricky thing, especially when it's hundreds of feet underground,)

Test boring to begin Monday on Boone Dam earthen section

BLOUNTVILLE — Tennessee Valley Authority officials made the agency's long-term repair plan for Boone Dam public this past Thursday and test boring is set to begin Monday. Environmental review work is underway and expected to be completed in January — and the repair work is projected to begin immediately thereafter.
The estimated $200 million to $300 million three-phase repair could take as long as seven years. TVA officials said their goal is to try to complete it in five years. Many nearby property and business owners have questioned why the repairs need to take even that long. TVA's answer: safety, and making sure it's a permanent solution. "This is a permanent repair for this reservoir," TVA Vice President of Safety, River Management and Environment John McCormick said. "This is doing it right." The repair will include hundreds of borings into the earthen section, in multiple rows, relatively close together across the length of the earthen section, and going 200 to 250 underground. That can't be done quickly without risking integrity of the dam, TVA officials said. "Time is needed to make it a permanent fix," McCormick said. Several hundred people attended a public meeting TVA hosted about the repair plan on Thursday. Dozens spoke during public comment. One young man asked if Boone Dam needed to be saved at all. "Is it really worth fixing?" he asked. "Absolutely, it is," McCormick said. The repair work will be completed by a private contractor. TVA officials said there are only three across the globe who do this type work — and one of them will get the job. Multiple possible fixes were considered by TVA's experienced team of dam engineers and safety experts, the officials said. TVA has posted a lengthy explanation of the repair plan online.

Also posted — all options considered:
- Removing the dam.
- Constructing a new dam.
- Building seepage filters.
- Grouting the voids underneath the dam.
- Constructing a composite seepage barrier.
- Building berms to fortify the dam.

Also at play in the decision-making process was consideration of variables such as:
- Durability of the repair.
- Time to return to normal operation.
- Impact on the public.
- Risk of the problem returning.
- Environmental impacts.
- Cost to ratepayers.

TVA's announced plan is construction of a "composite seepage barrier" — also described as a "concrete cutoff wall" — within the earthen portion of the dam. According to TVA:
- A composite seepage barrier creates a positive cutoff from the reservoir and is made from non-erodible material. Therefore, this solution has a very low probability of a seepage connection within the reservoir recurring.
- The composite seepage barrier will consist of two components constructed in a three-stage process: Stages 1 and 2: Grout curtain in the foundation soils and epikarst, grouting the underlying bedrock; and Stage 3: Concrete diaphragm wall through the dam and epikarst terminating in the underlying bedrock.
- The remediation approach is similar in concept to that used in other dams with karstic seepage issues in Kentucky and Tennessee, such as Wolf Creek Dam and Center Hill Dam.
- The original designers and constructors of Boone Dam in the early 1950s encountered highly irregular bedrock known as "karst," consisting of local pinnacles separated by 20- to 30-foot deep crevices during excavation of the foundation.

Near the surface of the bedrock and within these pinnacles, in a part of the ground termed "epikarst," they encountered voids and soft muddy soils.
To limit reservoir seepage underneath the dam, a deep excavation called a "cutoff trench" was created to remove the voids and soft soils within the rock pinnacles and epikarst. Additionally, grout was pumped into the foundation to fill any remaining voids beneath the embankment dam.
While the foundation treatment was state of the art in the 1950s and functioned well for over 60 years, dam safety engineers now recognize the potential for deterioration with this type of construction.

In March of 2015, TVA discovered a well-developed, complex network of groundwater seepage paths coming from sources other than the reservoir. The land east of the dam is higher in elevation and contains numerous depressions and sinkholes. During large rain events, surface runoff flows underneath the dam and is a leading contributor to the observed seepage and sinkhole at the toe of the dam. This phenomenon (as represented by the arrows in the accompanying diagrams) occurs after large rain events, and was discovered by the intense instrumentation program initiated in November 2014.

Further investigation has confirmed that deterioration of the cutoff trench has occurred as seepage flows continue to undermine the foundation of the embankment dam. To address access to the water during the drawdown, TVA has started or committed to several community projects, including:

- Boat ramp extension at Pickens Bridge Access area (the only area with current boat access).
- Boat ramp extension and new temporary public swim beach at Boone Dam tract 22R located along the right bank of the Holston River.
- Boat ramp extension just north of Devault Bridge, also along the right riverbank.
- This spring, TVA installed several buoy markers on Boone Lake to designate areas that present potential hazards to boaters because of rocks, tree stumps and debris uncovered by the shallow water.
- To protect the public during project construction, TVA in early July installed buoy markers and barricade floats in the dam forebay area an average about 300 feet upstream of the dam, and also in the tailwater area about 1,200 feet downstream.

Additional details of the proposed repair and the latest updates on the ongoing project are available at www.tva.gov/boonedrawdown.

(The title of this article should’ve been – “Dumb Old Man”.)

**Sullivan Co. man charged with terroristic threat against Boone Dam**

Author: News 5 Staff, News 5 Staff, [wcyb.com](http://wcyb.com), Aug 02 2015

SULLIVAN COUNTY, Tenn. - A Sullivan County man is charged with making a terroristic threat after claiming he would blow up Boone Dam if the Tennessee Valley Authority did not raise water levels in Boone Lake. According to the Sullivan County Sheriff's Office, 58-year-old Joel Nadeau of Piney Flats dialed 911 four times for non-emergency reasons. During one of those calls, he threatened to harm a dispatcher and told her he would be waiting on her when she left work, according to a press release. Officers responded to a home on Devault Bridge Road, where Nadeau started yelling and stated that if the TVA did not raise water levels in Boone Lake, he would blow up the dam. He also mentioned he had the experience and means available to carry out the plan, according to police. Officers arrested Nadeau and took him to the Sullivan County Correctional Facility. He is charged with making terroristic threats, abuse of 911 and assault. Officers searched Nadeau's property and found no explosives, according to police.

(Not to worry!)

**Officials: Operations back to normal at Cannonsville Reservoir**

By The Associated Press, Aug 3, 2015, recordonline.com

Copy obtained from the National Performance of Dams Program: [http://npdp.stanford.edu](http://npdp.stanford.edu)
DEPOSIT — New York City officials say operations have returned to normal at an upstate reservoir as they work to permanently plug a leak near its dam. Officials say that drinking water diversions and downstream releases from the Cannonsville Reservoir will be reduced to normal levels beginning Sunday. They say repair work has successfully halted the turbid discharge below the dam. Workers drilling boring holes for a hydroelectric plant in an embankment near the dam accidentally created the leak in early July. About a billion gallons of water a day have been drained from the reservoir west of the Catskill Mountains. City officials have assured downriver communities that the dam is safe and they are draining the water out of "an abundance of caution."

(A plaque is needed, lest we forget.)

**A proper tribute needed at dam site**

*Our View, The Editorial Board, August 1, 2015, signalscv.com*

It was the worst man-made disaster in California history, yet its remnants lie neglected and crumbling in a Santa Clarita Valley canyon. While the worst natural disaster in state history is the 1906 Great San Francisco Earthquake, the St. Francis Dam failure on March 12, 1928, was the direct result of mankind’s folly and arrogance. Folly because dangerous risks were taken without understanding of consequences. Arrogance because those risks were assumed in a greedy rush to provide for developers of the greater Los Angeles basin – and only more water could meet human needs. The consequences were an estimated 400-600 lives lost in the path of destruction, a swath of land from San Francisquito Canyon through the Santa Clarita and Santa Clara River valleys to the Pacific Ocean as the great dam built to supply Los Angeles’ water needs failed.

The exact number of dead will never be known — 12.4 billion gallons of water buried bodies under suddenly rearranged topography and carried others to the ocean; some were found in the Pacific near the Mexican border; some, no doubt, will never be found. The catastrophe was painfully avoidable. The dam was deemed an immediate need by the precursor to the Los Angeles Department of Water and Power because of ongoing disputes with Owens Valley farmers who embraced guerilla warfare tactics to interrupt the flow of the Los Angeles Aqueduct. The city to the south, its leaders determined, would not be left without sufficient water. And so the Los Angeles Bureau of Water Works and Supply turned to its water guru, William Mulholland, who had designed and built the L.A. Aqueduct. It was bureau engineers led by Mulholland who chose the geologically flawed site for the St. Francis Dam; bureau engineers led by Mulholland who oversaw the dam construction; bureau engineers led by Mulholland who OK’d adding 10 feet to the dam’s height in 1925, the year after base construction had begun; and Mulholland himself who, with an associate, declared the dam safe not long before it failed. It was Mulholland, too, who took the blame for the dam’s failure, which ruined him. That fact, however, most likely brought little comfort to survivors. In some cases, entire families were wiped out. Through the horror of abruptly vanished family members, suddenly missing neighbors and friends, instantly leveled homes and ranches, stunned residents of the two valleys rebuilt and carried on. In those days, high-priced lawyers and massive lawsuits were not the first thought after grieving. Survival was.

Meanwhile, Los Angeles city officials quietly did what they could to obliterate the dam site. The “tombstone,” a massive section of the dam that remained standing after the flood, was pulled down and jack-hammered, along with other dam debris. The location, extremely remote by 1920s
standards, made it easier to overlook the devastation brought by human folly. Eighty-seven years of weathering have since taken their toll. Today there’s one obscure plaque marking the disaster on the side of San Francisquito Canyon Road below the dam site. Nothing else marks the spot. No signs showing where to park to visit the dam site, no footpath indicators for hiking to the location, no identifiers to distinguish aged and crumbling concrete from the topography, no displays that would allow visitors to picture the then-powerful dam compared to its lowly present status, to point out the geology that may have laid the dam low. No accounts of the heroism of men and women that night as black water swept through darkness to kill; no displays to illustrate what went wrong at St. Francis, prompting visitors to ponder man’s arrogant attempts to control nature; no discussions of the good that came from this disaster: dam safety legislation, civil engineer licensing and regulation requirements. Congressman Steve Knight, R-Palmdale, has proposed legislation for a national memorial at the St. Francis Dam site, and we wholeheartedly agree. We urge you to support Knight’s proposal HR3153, which is currently in the House Committee on Natural Resources, by writing or calling committee Chairman Rob Bishop at 123 Cannon Building, Washington, D.C. 20515; 202-225-0453; fax 202-225-5857. Or send an electronic message to Bishop at http://robbishop.house.gov/.

(The reservoir is full of silt, what good is it?)

San Clemente Dam teardown work begins; completion expected by end of month

By Jim Johnson, Monterey Herald, 08/04/15, montereyherald.com

Carmel Valley, CA >> After 94 years, the San Clemente Dam is actually, finally coming down. Last week, Granite Construction workers began tearing down the old dam on the Carmel River using a hoe ram, a kind of giant jackhammer chipping away at the concrete and reinforced steel structure. The rubble is being dumped into massive trucks and hauled off. The steel will be carted off to be disposed of, while the concrete will be buried elsewhere on the project site. During a tour of the project site on Tuesday, a gaping hole could be seen on the left side of the dam, and nearly half of the top third of the structure was already missing.

According to California American Water project manager J. Aman Gonzalez, the top third of the dam will be removed by the end of the week or the beginning of next week, with the rest of the structure removed by the third week of August.

Elimination of the 106-foot-tall, 7,000-square-foot dam built in 1921 is the central element of the $84 million dam removal and river reroute project aimed at addressing a seismic and flooding hazard along with restoring the river’s habitat. The project is the largest of its kind in state history. Cal Am project executive Rich Svindland called the beginning of demolition "a huge milestone, there’s no question about that." “We’ve reached the point of no return,” Svindland said. “I commend my fellow partners, the Coastal Conservancy and National Marine Fisheries, for getting to this point. We’re on the forefront of what will need to happen across the country, and we’ve proved it can be done.” The project’s costs will be shared by Cal Am customers, who are covering about $49 million but are expected to end up paying about $150 million over the next 20 years including interest and profit, along with the state’s Coastal Conservancy, the National Oceanic and Atmospheric Association’s National Marine Fisheries Service, and the Nature Conservancy, as well as private donors. Granite Construction’s compliance officer Michael Barnhart, who led Tuesday’s tour of the project site, said it represents a truly unique endeavor, including dealing with myriad regulatory agencies. While dam removal may be becoming a trend, Barnhart said the San Clemente Dam project stands alone. “This is a true one-off,” Barnhart said.
Meanwhile, work will begin ramping up on the final stages of the river reroute portion of the project, re-creating a new river channel complete with 56 “step pools” to allow steelhead to travel up the waterway to their spawning grounds. Gonzalez said plans call for doubling the work crews using heavy equipment to wrest gargantuan boulders, including tons of them imported from Livermore, into place along the new river bottom. The goal, according to Gonzalez, is to finish the new river channel by the end of October, hopefully in advance of the winter storms expected to be super-charged by an El Niño effect. While some forecasts predict the channel could be tested by a 100-year flow, Gonzalez said the project was constructed to withstand a 1,000-year deluge. The real test for the channel will likely happen in the spring, when the steelhead attempt to use the new route. While some of the remaining work on the project — removal of the Old Carmel River Dam and the yellow bridge, construction of a new Sleepy Hollow bridge and the final habitat restoration and tree plantings — could slip into early next year, Gonzalez said the project will be “substantially complete” by the end of this year.

Hydro:
(It's about time!)

The Renewable Energy Source That's About to Boom Again
By Justin Worland, July 31, 2015, time.com

"Whether we like it or not, over the next 20 years roughly the world will double its hydropower capacity" Ten years ago hydropower might have been taken for dead in the United States. Environmentalists didn't want hydropower dams because of the destruction they wreaked on nearby ecosystems. Energy companies had lost interest because hydropower wouldn’t produce enough energy to make the investment worthwhile. Indeed, in every decade since the 1970s, the U.S. has added less hydropower capacity than the decade prior. But now energy experts say that new ways of thinking about hydropower has placed the energy source on the verge of a resurgence in the U.S. Hydropower production is anticipated to grow by more than 5% in 2016 alone, according to the U.S. Energy Information Administration. "There has been more interest in the last few years. There are a lot of projects being considered," said Rocío Uria-Martinez, an energy researcher at Oak Ridge National Laboratory. "Hydropower is, or it can be, a very viable complement for the other renewables." The U.S. has some 80,000 dams, and only 2,000 are being used to harness electricity, according to Uria-Martinez. Adaptations to existing dams could drive a 15 to 20% increase in total hydropower capacity in the U.S. At the same time, adapting dams saves the cost of building new ones from the ground up.

While experts anticipate dramatic growth in hydropower in the coming years, don't expect to see another Hoover Dam anytime soon. "Building large dams is almost out of the question in the U.S. and in Europe because of environmental constraints," said Uria-Martinez. Energy policymakers have focused instead on developing sustainable hydropower dams, which are typically on a small scale. In some communities this means installing hydropower capabilities to existing dams that have never produced electricity. In some areas, increasing dam efficiency has meant eliminating dams that harm the environment and replacing them with more sustainable ones. The Penobscot

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
River in Maine, for instance, had several dams over hundreds of miles of river, many of which were operated inefficiently. Seven conservation groups teamed up and employed scientists to consider how to increase energy production and, at the same time, eliminate some dams. In the end, the group ended up dismantling two dams while achieving the same energy output with the remaining ones. “We got the river to produce exactly the same amount of hydropower as before but with 1,000 km of connected river,” said Giulio Boccaletti, who runs the water program at the Nature Conservancy. He argues that similar results can be reached in other places around the world.

“We like we it or not, over the next 20 years, roughly, the world will double its hydropower capacity,” he said. “How do you intervene in a world where saying no to that development is simply not an option? I think there’s appetite for a more sustainable outcome.” In the early stages of electricity production in the U.S., hydropower played an important role. Communities first used free-flowing water to harness electricity in the late 19th century. In need of electricity, communities across the country built dams to harness the power of free-flowing water during the first half of the 20th century. In the 1960s, heightened environmental consciousness piqued American interest in conservation, and hydropower quickly fell out of favor. The timing worked well as few good sites for hydropower dams remained.

(NYPA power is cheap! Hate crumbly cookies before they’re dunked in the coffee.)

**Hydropower keeps doors open, cookies from crumbling in Wyoming County**

thedailynewsonline.com, August 1, 2015

WARSAW — Two Wyoming county companies are among the latest recipients of ReCharge NY program incentives, state Sen. Patrick Gallivan announced. The awards support the retention and expansion of jobs at Creative Food Ingredients Inc. of Perry, a commercial bakery specializing in cookie products; and Upstate Door Inc. of Warsaw, a designer and manufacturer of custom doors. The New York Power Authority’s Board of Trustees has awarded Creative Food Ingredients with 10 kW of low-cost power, which is expected to leverage $2 million in capital investment and create four new jobs. Upstate Door will receive 176 kW of low-cost electricity based on a $950,000 capital investment, which will help retain 55 jobs. The companies and 13 others statewide are sharing 10,388 kW of low-cost power, which according to NYPA will support the creation of 785 new jobs and 1,637 retained jobs by supporting $342 million in capital investments. Recipients also include Bausch & Lomb of Rochester, which is adding 112 jobs in a $242 million investment, and Amazon Corporate of New York, which is creating 300 new jobs on a $46 million investment. “The ReCharge NY program grants low-cost power to those companies looking to grow their business and retain or expand their workforce,” Gallivan said. “The promise of low-cost electricity, some of which is generated by the Niagara hydropower plant, provides the incentive for business to invest in our communities, expand our economy and provide jobs that people need.”

(We need rain!)

**Flow of Cheap Hydroelectricity Slows in Parched West**

BY JOHN ROACH, Aug 2 2015, nbcnews.com

As rivers and reservoirs shrink across the parched West, cheap sources of water-generated electricity are starting to dry up. Historically low flows on the McKenzie River that snakes west of Oregon's snow-starved Cascades, for example, forced the closure of a hydroelectric generation turbine at the Trail Bridge dam in early July. Two more hydropower facilities downstream of the dam are likely to meet a similar fate in the coming weeks.

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"We've done this before, but we usually don't have to do it until August," said Joe Harwood, a spokesman for the Eugene Water and Electric Board. "Like everywhere else in the Northwest, the lack of snowpack essentially has accelerated the water volume in the rivers. We saw in June what we usually see in mid to late August."

A similar scenario is playing out in California, which is in its fourth year of a severe drought. Total hydroelectric generation dropped 60 percent between the wet year of 2011 and 2014, according to data from the California Energy Commission. Hydro typically accounts for between 14 and 19 percent of California's total power mix. In recent years, it has dipped below 8 percent. To help make up for California's loss of hydro as well as the 2012 shutdown of a nuclear power plant, natural gas generation increased 33 percent between 2011 and 2014. "Natural gas is the fuel used most often to respond to electricity increases or decreases, so one would expect more gas usage when it is dry and less when it is wet," Robert B. Weisenmiller, chair of the California Energy Commission, said in emailed comments. But, he said, there has also been a rise in power generated from wind and solar, allowing utilities to rely less on natural gas to fill the void. Solar generation alone increased to 10,365 gigawatt hours in 2014 from 1,097 gigawatt hours in 2011.

**Imperfect replacement**

Wind and solar, however, are variable, which means they are an imperfect replacement for hydroelectricity, said Jeffery Dagle, an expert on the integration of renewables at the Department of Energy's Pacific Northwest National Laboratory in Richland, Washington. "The nice thing about hydro is that you can store it up and dispatch it, to draw it when you need it," he said. In addition, hydroelectric generation can be ramped up and down quickly and efficiently to meet shifts in demand throughout the day. "You are just changing the setting of the gate for the turbine," Dagle said. Natural gas-fired power plants -- known as peakers -- are the closest approximation to hydro and are thus the go-to supplement, said Christopher Namovicz, a renewables analyst with the Washington-based U.S. Energy Information Administration. But, "every kilowatt hour you can generate from a wind plant or a solar plant is one that you don't have to burn gas for or you don't have to burn water for, so [wind and solar] can potentially help keep more water behind the dam, so to speak," he said.

**Higher rates, emissions**

Electricity from natural gas, wind and solar is also more expensive than hydro, Namovicz said. Any utility that supplements a dip in hydro with alternatives faces higher operating costs. "But how that passes through to the ratepayers is very complicated and you wouldn't necessarily expect to see any kind of immediate impact," he said. The turbine shutoff at the Trail Bridge dam on the McKenzie River in Oregon has a 5-megawatt capacity, a blip in the Eugene Water and Electric Board's daily load of 275 megawatts. "The effect we are going to see is maybe a slight drop in surplus power sales revenue," Harwood said. "But there has been so much wind generation added in the Columbia River basin in the last 10 years that as a region we are very long on power." The picture is less rosy at the Sacramento Municipal Utility District in California, which this April hiked rates 1.3 percent to cover an anticipated $20 million bill for purchases of power to supplement the loss of hydro. "Usually we get anywhere from 20 to 25 percent from our hydro for our portfolio and we've ended up more in the 8 to 10 percent coming from hydro this year," said Scott Martin, the utility's director of resource management. The California-wide
economic impact from the dip in hydro during the three years ending in October 2014 was approximately $1.4 billion, according to a recent analysis by the Pacific Institute, an Oakland-based environmental think tank. What's more, the increased use of natural gas resulted in an 8 percent rise in the greenhouse gas carbon dioxide from the state's power sector. "The good news for people who care about renewables," said Peter Gleick, the institute's president and co-founder, "is that wind and solar continue to grow really fast; we are expanding wind and solar capacity at a remarkable rate. But whatever you don't build in terms of other renewables, we'll make up with natural gas."  

JOHN ROACH TOPICS ENVIRONMENT

(Only hydro could be that old and still operating!)

Ask the Truth: Is the hydroelectric dam in Elkhart still operational, and how much power does it generate?
The existing dam and building along St. Joseph River was first built in 1913.
By J. C. Lee, Aug. 5, 2015, elkharttruth.com

If you live in Elkhart, IN chances are you've passed the hydroelectric dam along Johnson Street.

American Electric Power (AEP) Indiana Michigan Power operates the hydroelectric dam, also called The Elkhart Hydro, at the corner of Johnson Street and Marine Avenue in Elkhart. You might have driven alongside the dam as you crossed the Johnson Street bridge, where the water from the St. Joseph River barrels down west towards Island Park. The Elkhart Hydro has three hydroelectric turbines at the southern edge of the St. Joseph River, which have the capacity to generate 3.44 megawatts. By maintenance supervisor Richard Walag's estimates, that's enough power for about 3,000 homes.

If you're looking at the dam from the Johnson Street bridge, you won't be able to find the turbines. They're beneath metal grates behind the red-brick plant. What you can see from the bridge is the spillway which stretches about two thirds across the St. Joseph River, which is used to control the flow of water.

AEP Indiana Michigan Power will replace 11 gates, used to manage the water, along the spillway by 2015 or 2016, according to Erica Putt, Principal Communications Consultant with AEP Indiana Michigan Power. But those are the only upgrades that will come to the facility now. A dam was first built at that location in 1868, according to a brochure from AEP Indiana Michigan Power. The Elkhart Hydraulic Company then built the existing dam and powerhouse in 1913. AEP Indiana Michigan Power then acquired the hydroelectric plant in 1922.

The Resurgence of Hydropower in the U.S.
The forgotten renewable...
Written by Keith Kohl, August 5, 2015, energyandcapital.com

I'm sure you've heard all about the growing desire for solar and wind expansion. There's even been a surge by companies like Apple and Google in building solar and wind farms to power some of their buildings (the pairing of SolarCity and Tesla that has put solar panels on the mass market comes immediately to mind). However, what we don't hear much about is hydropower.
The technology to produce electricity using moving water has been utilized in the United States since the late 19th century, and the use of dams began during the first half of the 20th century. Starting in the 1960's, unfortunately, environmental concerns started to question the growth of this technology. Environmentalists worried that dams would hurt ecosystems, and inefficiently
operated dams were not producing enough energy to be worth the cost. That attitude is changing... As technology advances with innovations like the Internet of Things, it's now much easier to identify and address problems with hydropower plants.

Here's an example...
In the Penobscot River in Maine, a series of dams extended across several hundred miles, yet weren't very efficient producing energy. So, a team of seven conservation groups paired with several scientists to figure out how to increase energy production and reduce the number of dams on the river. Two dams were taken down in the end, and the rest were updated to better production standards. The U.S. currently has approximately 80,000 dams, yet only 2,000 of them are used to produce electricity. And even though it's unlikely that more dams will be built, new technologies will allow existing dams to be made into hydropower plants. The U.S. Energy Information Administration (EIA) estimates that hydropower production will grow by 5% in 2016. Rocío Uria-Martinez, energy researcher at Oak Ridge National Laboratory, estimates that just adapting existing dams to produce energy could increase the country's hydropower capacity by 15-20% in coming years. "Hydropower is, or it can be, a very viable complement for the other renewables," says Uria-Martinez.

(A little here, a little there, first you'll know you'll have a lot of power.)

**Hydroelectric plans advance**
August 6, 2015 | by Charles Roberts, highlandnews.net

The San Bernardino Valley Municipal Water District (Valley District), CA Board of Directors has approved purchases and documents for local hydroelectric plants at East Valley Water District and at the Waterman Turnout. High pressure from the plunge from Lake Silverwood to San Bernardino and Highland will provide more than enough energy to run the turbines, according to Engineering Manager Wen Huang. The East Valley Water District line will be from the City Creek Turnout and will supply enough electricity to operate the Water Treatment Plant on Highland Avenue. The $4 million cost will be fronted by Valley District with East Valley Water District to repay the costs within 10 years. The Valley District Board approved purchase of necessary equipment at its Tuesday, Aug. 4 meeting.

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Water:
(CA water problem.)

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Environment:
(What effect on salmon would exist without dams?)

Dead Salmon, climate change and Northwest dams
By Pat Ford, Special to The Times, August 2, 2015, seattletimes.com

Operation of the dams on the Columbia and Snake rivers must change to restore salmon and steelhead runs.

This summer, we are feeling climate change in the Northwest. Rivers and waters started hot this spring and got hotter. Fishery agencies say 250,000 to 400,000 Columbia River Basin salmon are dead or will die. Sockeye salmon are the worst hit, but chinooks are dying, too, and sturgeon. Unrelieved hot water, at and above 70 degrees in the Columbia, Snake and many tributaries, is sickening and killing them. The best summary so far, by Hal Bernton in The Seattle Times, names the immediate causes: "Snowpack drought has salmon dying in overheated rivers." Water is low and water temperatures are too hot. Now comes August. Is our warming climate a contributing cause behind the immediate causes? Even in my own climate-denying Idaho, the answer can no longer be refuted. This mass die-off may be the worst signal so far of the new abnormal in our rivers, but it's far from the first signal.

So a question must be asked: Why has the National Oceanic and Atmospheric Administration, the federal agency in charge of salmon and climate science, refused since 2008 to analyze how climate change is affecting Columbia River Basin salmon, and how to reduce or buffer those effects? And why does Washington state support this inaction?

On June 23, two weeks after Columbia salmon were first found dead from hot water, NOAA's attorneys argued in federal court that climate impacts on Columbia salmon are too speculative to usefully assess, analysis is not needed now, and measures already in place to mitigate salmon damage by dams will also cover any speculative effects of climate change. The court case centers on whether a massive federal habitat-restoration effort in the Columbia River Basin would save salmon and steelhead. The hundreds of thousands of dead salmon in the Columbia and Snake rivers are proving that NOAA is colossally wrong. But it was just as obviously wrong in 2008 and each year since. Why so stupid a policy? The Bonneville Power Administration and U.S. Army Corps of Engineers have more power than NOAA, and use that power to block changes to dam operations. Dams are the main human-caused killer of Columbia and Snake salmon, and honest climate planning would surely lead to changes at the dams. NOAA has tortured its mission, science and climate leadership to duck analysis that bigger dogs don’t want done. Now salmon are shouting, "Mistake!"

What should be done? The federal court's verdict, expected soon, will rule whether NOAA's climate inaction is wrong. If the court orders climate planning for salmon and their rivers, NOAA would write it. But it would take a U-turn within NOAA and sustained White House attention to reverse the conscious lethargy behind this mistake. The Northwest needs President Obama to insist on it. There’s a second path: Some years ago, I attended a congressional hearing on salmon. When a witness said climate change was an issue for the future — its effects on fish,
rivers and people needed no attention now — then-U. S. Rep. Jay Inslee interrupted with memorable passion. How can you say that, he asked? Look at the evidence, Inslee said. He was right then. And, despite Washington’s support for NOAA’s climate denial regarding the Columbia River, he is right now. Inslee is a climate champion, so he should take action. Puget Sound orcas also eat chinook salmon, and would benefit from changes to the operation of the Columbia and Snake dams. The salmon die-off is bad for orcas now, but worse for their future unless we act. If Gov. Inslee, Oregon Gov. Kate Brown and Montana Gov. Steve Bullock asked for honest, science-based, inclusive climate planning for salmon, people, and for the waters in the Columbia and Snake Rivers, and promised to participate, it would happen and be good for the Northwest. Whatever the court rules, I hope these three good governors will put it on their hot list. Pat Ford lives in Boise, Idaho. He worked for the Save Our Wild Salmon coalition from 1992 through 2013, but this column reflects his own views.

Other Stuff:
(Rivers can do many things.)

How Oregon Rivers Carried Millions Of Trees Into Production
By John Rosman and Vince Patton OPB | Aug. 1, 2015, opb.org

Around the same time famed photographer Carleton Watkins first captured the Columbia River Gorge with his traveling darkroom, on the south fork of the Coos River in southwest Oregon a large dam helped fuel Oregon’s burgeoning timber industry. The Tioga Dam was the largest splash dam in the Northwest. It was the first of what would grow to become 230 splash dams throughout western Oregon. Let’s start big picture. From 1849-1924, Oregon produced over 47 billion board feet of lumber production, most of it hauled out on rivers. For context, trucks carried about 4 billion board feet lumber out of the woods on forest roads in 2014.

In the past, ax men would cut down the towering trees and guide them into flooded rivers, which were controlled by splash dams. When ready, the splash dams opened and the wood rushed down in log drives. Workers would use dynamite to carve out natural objects in the way and clear backed up trees. The river could carried off around a million board feet of timber in a single drive. Oregon’s years of log drives ended with the Tioga, as the last standing splash dam in Oregon. Under pressure from the state and landowners, it closed in 1957. Workers burned it down in a night. Many of the rivers changed by the log drives have

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
healed over the past 70 years. But there are some lingering challenges. Oregon Field Guide explores this history and what means now for some rivers in Oregon.
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