Dams:

(A PMF fix, I guess.)

Work to raise height of Cherokee Dam complete
standardbanner.com, Apr 23, 2015, by Steve Marion – Staff Writer

TVA’s project to raise the height of Cherokee Dam is complete, though landscaping is still continuing in the park area off Highway 92. The campground opened March 15 under a new concessionaire, Recreation Resource Management, LLC, reported Scott Brooks of TVA public relations. The height-raising project followed another major effort to prepare Cherokee for the future by bolting it into the bedrock below. The $40 million project, which also included “post-tensioning” bolts at Douglas Dam, is designed to render them impervious to a
deluge of almost Biblical proportions. The heights of three other dams in the TVA system were also increased.

Temporary sand basket “Hesco” barriers were removed, said Brooks. Workers are still on site cleaning and improving landscaping, but the heavy work is done. It won’t be a factor as the recreation season begins, he added. Hydro-turbines were updated several years ago, but the new project represents the largest project involving the structure of the dams since the World War II era structures were put in place to provide power for an aluminum plant 50 miles away — and another secret project that would result in the first atomic bomb. Huge cranes, one of them 435 feet tall, gathered around Cherokee to install 84 huge “bolts,” torquing them in the bedrock, and grouting them in with concrete. A similar project put in a total of 20 bolts at Douglas.

The anchors help update the 70-plus-year-old dams to current standards. The anchors, between 150 and 235 feet long, were placed in 15-inch bores that extend from the top of the dam deep into bedrock in non-spillway areas. Where spillways are located, anchors were placed in at an angle from the front of the dam. Once installed, the so-called “post-tension anchors” were “grouted” with concrete and fastened on top with massive bolts — each torqued with more than a million pounds of pressure. Several years ago, engineers discovered that several dams in the TVA system could be overspilled in the event of a historic rainfall event. TVA installed lines of “Hesco” baskets filled with fine gravel as a temporary measure, but the long-term solution will be an increase in the height of four dams, including Cherokee. Workers are recycling the gravel from the baskets to line walkways. They also applied roller-compacted concrete to increase the height of all structures associated with the dams. Roadways and walkways atop the structures have new asphalt, as well as a two-foot concrete wall on the downstream side and guardrails where necessary. A total of 19,000 feet of Hesco baskets were replaced, including 8,000 feet at Cherokee. Other dams receiving the work include Ft. Loudon, Tellico, and Watts Bar.

(Dam height was increased about four feet.)

(Short and to the point.)

Dick Harmon: Invest in dams
theunion.com, 5/1/15

The “Our View” column of April 25 missed the boat. It does say to forget the bullet train, but does not say to put that money into building dams. Building dams will not solve the problem of today’s drought, but could help prevent future water problems. The rains of the years to come will not end up in the Pacific Ocean, as they do now.

Dick Harmon, Grass Valley, CA

(When was the last time something got done below budget?)

Dam project nets savings of $1 million: WYDOT helps find cheaper way to clear silt from sluice gates
codyenterprise.com, April 29, 2015 6:00 pm | By LEW FREEDMAN Staff writer
Creative planning and an adjustment on the fly are providing greater flexibility on refurbishment of the Willwood Dam. **Those resulting savings could net $1 million.** The projected multi-faceted plan – estimated to cost $1.6 million – may come in at $500,000 or lower, Willwood Irrigation District manager Tom Walker said. **What was considered to be long-overdue repair work on the dam over the Shoshone River that was built by the Bureau of Reclamation in 1924 may result in doing more for less.** The main issues are the north, south and middle sluice gates that are blocked by decades of silt. The gates allow sediment to pass downstream. For at least 20 years only one of the three gates was operational. The stems that helped open and close the north and middle gates were bent and there was a fear the south gate might have the same problem. Willwood Dam, northeast of Cody, acts as a conduit for diverting water to 12,500 acres owned by some 180 farmers who primarily grow beets, beans, alfalfa and hay. “The demand we have determines the release,” Walker said. Without the ability to control water flow with dams, the Shoshone “would just be a wild river,” Walker said. “You’d have areas susceptible to flooding. You wouldn’t have these towns and you wouldn’t have enough water to farm.” “These towns” are Cody and Powell.

Walker, who has been on the job since 2006, said he has been concerned by the situation the entire time he has supervised dam operations. “I thought, ‘Why are we letting this situation go unchecked?’” he said. “What happens if the other gate goes down?” Walker has pushed for a repair plan since 2009 and a Wyoming Water Development Commission grant of $1.6 million was the answer.

While the silt has been accumulating for years, “It wasn’t severe until the gates went down,” Walker said. One estimate said the dam needed $3.5 million for a thorough repair job and removal of up to 325,000 cubic yards of dirt. “It was far more than the State of Wyoming and our little district could afford,” Walker added. But the state Department of Transportation was in the vicinity researching pending bridge work and as long as the department was looking under water, WYDOT officials provided sonar imagery. The pictures showed that by inserting a pipe and blasting compressed air into the silt it could be moved without dredging. With a bit of trepidation, the middle gate was opened for the first time since the 1990s, more easily than predicted, and within an hour enough silt was pushed aside to allow usage of the gate all winter.

“That was a really big development for us,” Walker said. “That was a big deal for the district.” Under the original plan the district was responsible for paying $500,000 worth of the project. The charge would be passed on to farmers at the rate of $2.50 per acre for 30 years. Now the cost will be much lower. **Although the new projected total is $500,000, Walker hopes when completed it will cost even less.** The Game and Fish Department has worked to preserve the Shoshone as a trout fishery with high water quality and the district needed a 45-day variance to move silt. In February and March the bent stems were replaced. This fall they plan to upgrade the big gear mechanisms that raise and lower the gates. They may date to the 1920s, and despite how noisy they are in operation, the machinery is automated. It will be replaced with a “more robust system,” Walker said. The most dramatic development was discovering a comparatively inexpensive way to remove silt. Walker said he hopes a repeat of last year’s air compressor method can clear even more silt blocking the south gate. “We’ll be able to free up that gate and we can have all three gates operational for the first time in more than 40 years,” Walker said.
Hydro power near shuttered paper mill expands Dairyland’s renewable energy
By Thomas Content of the Journal Sentinel, April 22, 2015, jsonline.com

Dairyland Power Cooperative is expanding its renewable energy supply through its purchase of the output from a hydroelectric station on the Mississippi River, the cooperative said Wednesday. Dairyland, based in La Crosse, said the Sartell Hydro in Sartell, Minn., produces 10 megawatts, or enough to power about 4,500 homes with water-powered electricity.

The plant was originally built in the early 1900s to supply power to grind wood pulp for a nearby paper mill in Sartell, Minn. That paper mill, owned most recently by Verso, caught fire and closed in 2012, but the hydroelectric plant was restarted and began operation by Eagle Creek Renewable Energy of New Jersey in December. Dairyland provides wholesale electricity to 25 cooperatives and 17 municipal utilities in Wisconsin, Minnesota, Iowa and Illinois. The cooperative was honored by Renew Wisconsin earlier this year for its renewable energy expansion in 2014, including a 517-kilowatt solar installation in Westby — a project of Vernon Electric Cooperative and Clean Energy Collective of Boulder, Colo.

(Love old mills cause they’re hydro’s roots.)

Lindsborg mill to recognize founder
More than 40 descendants of Charles “Kvarn” Johnson, founder of the original flour mill in Lindsborg, will attend a dedication ceremony.

Apr. 24, 2015, mcphersonsentinel.com

More than 40 descendants of Charles “Kvarn” Johnson, founder of the original flour mill in Lindsborg, Kansas will attend a dedication ceremony. Johnson will be recognized for his contributions to the early Swedish community in the Lindsborg area during the early beginnings of the wheat industry in Kansas. At the ceremony, to be held at Millfest at 10 a.m. May 2, a permanent memorial marker will be unveiled on the grounds of the McPherson County Old Mill Museum. In October 1871, Johnson, who emigrated to Lindsborg from Sweden, procured a permit to build a stone dam in the Smoky Hill River. With the help of his
brother, Otto, they built a dam and constructed a small wooden mill on the site where Smoky Valley Roller Mills stands today.

The original mill, called Lindsborg Mills, harnessed the energy of the rushing river and used traditional millstones to mill wheat for early Kansas pioneer farmers. Roller milling technology was later incorporated into the mill, which became Smoky Valley Roller Mills. After a fire in 1897, the mill was rebuilt and operated commercially until 1955. In 1972, the mill was added to the National Register of Historic Places. The now fully-restored mill is put into operation once a year for the annual celebration of Millfest, hosted by the McPherson County Old Mill Museum.

(It took a while and a lot of patience. This is what happens if you’re a Tribe that owns half the project land.)

Clock ticking down to Kerr Dam’s historic takeover by Indian tribes
By Vince Devlin, 4/26/15, missoulian.com

POLSON, MT – Tens of thousands of days – a lifetime’s worth – will stretch between two historic moments on the Flathead Indian Reservation. It was 31,019 days ago today that the construction of Kerr Dam started on the Flathead River below Polson. In one key way, it was an odd time for Rocky Mountain Power – a subsidiary of the Montana Power Company – to embark on such an ambitious project. The stock market crash of 1929 had occurred less than seven months earlier, and the Great Depression was just revving up. Still, they started building the dam on May 23, 1930. The growing demand for electricity to power the mining and smelting operations in Butte and Anaconda was the driving force. The Indian tribes on whose reservation the dam would be built – at an important religious and cultural site for them, no less – were not consulted. By the next year, the economy was so bad that construction was halted. For five long years, the massive project sat stalled. When the Montana Power Company re-started it in 1936, it must have been something to see. “Higher than Niagara Falls” (by 38 feet), as local promotional materials have long noted, the 205-foot-tall dam raised the level of the 30-mile-long lake behind it by 10 feet. Those 10 feet added another 1.2 million acre feet of storage. That’s an extra 391 billion gallons of water. More than 1,200 people were employed at the height of construction. Less-skilled workers were paid 40 cents an hour; those more skilled earned up to $2 an hour. Small rail lines that clung to both sides of the cliffs along the river were built to ferry workers and materials to the dam, which had no road access at the top. A tent city that seemed to know no end sprang up west of the site. Fourteen workers were killed in accidents before the dam was completed in 1938, many in a landslide, and several of them members of the Confederated Salish and Kootenai Tribes. And now, 132 days from today and more than 85 years since construction started, those tribes will take ownership of the dam.

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Brian Lipscomb has had a mental countdown to Sept. 5 – the day CSKT takes over ownership and operation of the dam from NorthWestern Energy – going in his head for a long time now. Lipscomb is the CEO of Energy Keepers, the tribally owned corporation tasked with overseeing acquisition of the dam and which – come Sept. 5 – will be responsible for running it, and selling the electricity it

Copy obtained from the National Performance of Dams Program: [http://npdp.stanford.edu](http://npdp.stanford.edu)
produces on the open market. On a recent April day, he showed a reporter and photographer around the hydroelectric plant where three units produce enough electricity to power more than 100,000 homes. Kerr Dam is somewhat unusual in that its powerhouse is not located in the dam itself. "At Hungry Horse and Libby (dams), it's right at the base," Lipscomb says. "At Hungry Horse, it's in the dam itself and you ride an elevator down to it." At Kerr Dam, the power plant is located just downstream from, but out of sight of, the dam – not far away at all, but around a sharp bend. The towering cliffs along this part of the Flathead River hide the dam and power plant from one another. So how does the rushing water that spins the 60-ton turbines get from the dam to the plant? Through rock.

Massive underground tunnels were blasted through the cliffs in the 1930s. The first, about two football fields long, started above the dam and came out below the power plant. It diverted the river during the eight years the dam and power plant were under construction. That tunnel was sealed off above the dam when construction was complete, but is still open down below. One of the other operators took a rowboat up in it once," says Rod VanNess, a tribal member and hydro operator who has completed his training and already is in the rotation for NorthWestern Energy. "He said he got in there a ways before it started to climb uphill. "And how was it? "Dark and spooky," VanNess says with a laugh.

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The other three tunnels – technically, penstocks – are more than 200 feet long, 27 feet in diameter, and carry water to the plant’s three units through the massive concrete-and-steel underground pipes. Making all four tunnels was a laborious project. "One guy would hold the drill, one guy would whack it with a sledgehammer," Lipscomb says. "They’d put the dynamite in the hole, blast it, clear the rocks and do it all again." Lipscomb says Unit 1 was installed in 1938, Unit 2 in 1939, and Unit 3 in 1954, a year after Hungry Horse Dam was completed. "Hungry Horse gave the system more storage, and more opportunity" to produce electricity, Lipscomb says. A Francis turbine rated at 78,500 horsepower that was retired from Unit 3 in 2006 sits near the entrance to the power plant to show visitors just how big they are.

Nearby is the picturesque little village – half a dozen homes near the river – that have historically been provided to dam employees and their families. These days, most employees have homes elsewhere, and only one operator has lived in the village full-time. Lipscomb says some of the houses may be utilized as office space after Energy Keepers takes over at the start of Labor Day weekend. Energy Keepers currently leases space in the Salish Building in Polson, but plans to eventually establish permanent offices. The tribal corporation will employ 21 to 22 people, several times the number NorthWestern Energy and its predecessor, PPL Montana, employed locally to run the dams. NorthWestern bought 11 hydroelectric facilities from PPL just five months ago, knowing that the federal license to operate Kerr Dam would be transferring to CSKT in September. Many of the positions have already been filled, and at least half of them will be held by tribal members. Travis Togo is the director of power management and Daniel Craig Howlett is power marketing manager. Lloyd Turnage, who has many years of experience working at Kerr Dam, is the operations supervisor. Billy Bryant is power plant maintenance engineer, Matthew Pruchnik the chief dam safety engineer and Dustin Shelby the compliance manager. Positions have been filled in finance, risk and administration. The Energy Keepers board of directors includes Chairman Thomas Farrell, vice chairman Daniel Decker, Secretary Robert Gauthier and members Thomas Babineau and Lon Topaz. The larger workforce isn’t an expansion, Lipscomb says, just a local consolidation of the number of positions required to operate and maintain the dam, and market and sell its electricity. Under the dam's previous owners, many of those jobs were located far from the reservation. "The functions that were taken care of in Butte, Great Falls, Billings and Allentown, Pennsylvania, we’re bringing them all here," Lipscomb says.

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Energy Keepers will differ from all other tribal corporations in some key aspects, Lipscomb says. "We’ll be the first tribal corporation to be managing a resource – Flathead Lake and the river – in its business," he says. By the foundational terms of its corporate charter, Energy Keepers has
also waived its sovereign immunity from lawsuits in order to assure its customers that any disputes that might arise from transactions of Kerr Project electricity can be resolved in courts available to all counterparties. And, Energy Keepers will not retain any of its earnings. Lipscomb says all profits will go directly to the CSKT government. That government long ago traded the potential of higher rental fees for the land the dam sits on – which now approaches $20 million annually – for the opportunity to one day buy the dam outright. CSKT has held a joint license for the dam from the Federal Energy Regulatory Commission since Sept. 5, 1985, first with Montana Power, then PPL Montana, and now NorthWestern Energy. Under the license's terms, the tribes have had the exclusive right to purchase the dam on the 30th anniversary of the issuance of that license. The license is good for another 20 years. Last year, an American Arbitration Association panel set the price at $18.3 million – about $3.5 million more than the tribes felt it was worth, but more than $30 million less than what PPL Montana had sought. Much of the difference was for potential mitigation costs associated with the dam, and Lipscomb has said the panel’s ruling “means we won’t have to pay for damages to our own resources.”

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Prior to 1930, when the Flathead River here flowed free, Lipscomb says the site where Kerr Dam sits was not a waterfall so much as a “series of intense drops” as the river made its way around the sharp bend. Translated from the Salish and Kootenai native languages, Indians called it the “Place of the Falling Waters.” The dam, named for the president of Montana Power when it was constructed, will get a new name before Sept. 5. Lipscomb says tribal members will be asked to suggest traditional names and the Tribal Council will make a final decision. Changing the name of a dam is an involved process, according to Lipscomb. “It's not just changing a sign,” he says. “The new name will send the message that the dam is tribally owned, and will have a unique perspective on our landscape.” Most tribal members opposed the dam's construction, but when it started in May of 1930, no tribal government existed. During the five years construction on the dam ceased because of the Great Depression, the federal government passed legislation – the Indian Reorganization Act – that allowed tribes to form their own governments. Lipscomb says the damming of the Flathead River, along with allotment and the ongoing Flathead Indian Irrigation Project, were all contributing factors to the Confederated Salish and Kootenai Tribes becoming the first in the nation to adopt their own constitution and form their own government in 1935. Now they’re on the verge of owning the very dam that played a role in the establishment of their tribal government. They will be the first Indian tribes in the nation to own a major hydroelectric facility. The countdown to the historic day has been on for decades for some tribal members. On Sunday, it clicks down to just 132 days.

(Hydro history)

Then and Now: Monroe Street Dam powerhouse
April 27, 2015, spokesman.com

Circa 1920-30: This image shows the former Monroe Street Dam powerhouse and the land that later became Huntington Park.

Present day: The generators of Avista Utilities now reside beneath the octagonal steel cover in the plaza at the bottom of Huntington Park, alongside the Lower Falls.

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
Only a few months before the Great Fire of 1889, Washington Water Power, now called Avista, was formed by a group of Spokane businessmen to make electricity from the Spokane River. The Edison Electric Illuminating Co. had formed a few years earlier. Even with both companies in operation, demand exceeded supply. Initially, all the power went to streetlights and a few businesses. After the fire, WWP began building the Monroe Street project, creating a spillway and an intake for a generator at the foot of the Monroe Street Bridge. Instead of a water wheel submerged in a roaring flume, the Lower Falls Generating Plant would have a penstock, an enclosed waterway leading to a generating turbine. The powerhouse sat on the south bank next to the bridge’s foundation. River water entered beneath the substation on Post Street and gravity built the pressure as the water sped toward the turbine below. During those early years, the small power company merged with the Edison Electric Illuminating Co., ran streetcar lines, operated Natatorium Park, built a high-voltage line to power mining operations in Idaho’s Silver Valley, sold electric appliances and built more dams.

The century-old Lower Falls building was removed in 1990 and the new generators moved underground. The machinery now sits below an octagonal steel cover in the plaza of Huntington Park. The original 1890 generator, after a century of service, was sent to the Henry Ford Museum in Dearborn, Michigan. In 2014, Avista renovated Huntington Park and created a new plaza between the Post Street substation and Spokane City Hall as part of the company’s 125th anniversary. The Monroe Street project can produce up to 15 megawatts, depending on demand and river flows. It represents about 2 percent of Avista’s generating capacity. Most of that power is used in the downtown core.

(Here’s what you’ve been waiting for!)

ORNL scientists generate landmark DOE hydropower report
4/26/15, phys.org

For the first time, industry and policymakers have a comprehensive report detailing the U.S. hydropower fleet’s 2,198 plants that provide about 7 percent of the nation’s electricity. The 98-page report by the Department of Energy’s Oak Ridge National Laboratory researchers Rocio Uria-Martinez, Patrick O’Connor and Megan Johnson is a resource that describes key features of the nation’s hydro resources and systematically tracks trends that have influenced the industry in recent years.

"The people who make critical decisions about U.S. hydropower can now turn to one place to find information that has broad implications," said Uria-Martinez, who noted that the existing fleet has been constructed over the course of an entire century. "Hydropower has a long history but also a promising future as it continues to grow and play a key role in the nation’s power system." People who access the report can easily search the database to make highly informed decisions that have a direct impact on the lives of potentially millions of people, Uria-Martinez said.

Report highlights include:

- with a total capacity of nearly 80 gigawatts, hydropower remains a major contributor to the power system;
- 42 pumped storage hydropower plants with a total rated capacity of 21.6 gigawatts account for 97 percent of utility-scale electrical energy storage;
- hydropower projects support more than just the power system as most, particularly the large dams, provide recreation, flood control, irrigation, navigation and/or water supply;
- with 176 plants, federal agencies, including Tennessee Valley Authority, own nearly half of the hydropower capacity. These facilities account for 49 percent of the capacity but only 8 percent of the plants;
- despite the retirement of some plants, hydropower capacity increased by almost 1.5 gigawatts from 2005 to 2013. Capacity additions to existing projects accounted for 86 percent of the increases;

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at the end of 2014 there were 16 new hydropower projects under construction. Those projects totaled 407 megawatts and their estimated construction cost is close to $2 billion; and, the permitting and licensing process for many smaller hydropower projects has changed in recent years, which could result in less cost and less time spent in federal permitting.

The report highlights the diversity of the hydropower fleet in terms of location, size, ownership and operational modes. The fleet includes high-flexibility pumped storage hydropower and peaking hydropower plants as well as run-of-river facilities with capacity factors as high as 80 percent. Additionally, there are many federal owned hydropower plants associated with large reservoirs where electricity generation is seen as a byproduct of other authorized purposes. This 2014 Hydropower Market Report complements existing annual reports such as the DOE Wind Technologies Market and Distributed Wind Market reports, which collectively provide a wealth of information about the nation's renewable power resources, Uria-Martinez said. The hydropower report is available at http://nhaap.ornl.gov/HMR/2014.

(Think they misspelled dam.)
This Kentucky Hydro-Power Damn Is a Beautiful Building Site
Attila Nagy-, Gawker MediaApr 28, 2015, gizmodo.i

There's something serene about this panoramic view of the large scale construction site lit by the morning sun. The Smithland hydroelectric facility in Kentucky has been under construction since 2010-but as of this year it will generate 72 MW of new, renewable energy for the region. This hydropower dam will be about the 30th major dam in the state when completed later this year. These are the brief technical details of the Smithland hydro project according to the builders: The Smithland project will divert water from the existing Corps Smithland Locks and Dam through bulb turbines to generate an average gross annual output of approximately 379 million kilowatt-hours (kWh). The site will include an intake approach channel, a reinforced concrete powerhouse and a tailrace channel. The powerhouse will house three horizontal FERC rated 24-MW bulb-type turbine and generating units with an estimated total rated capacity of 72 MW at a gross head of 22 feet. A 2.5-mile-long 161 kV transmission line interconnection is planned to connect to MISO. Smithland is located approximately 62 river miles upstream of the confluence of the Ohio and Mississippi rivers, in Livingston County, Ky.

MID officials criticize environmental proposals for dam relicensing
SUN-STAR STAFF, 04/28/2015, mercedsunstar.com

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
Merced Irrigation District officials are hoping for a good public turnout Thursday at the opening meeting over the relicensing of New Exchequer Dam, saying the final decisions will affect MID’s water supplies for “the next 50 years.” After years of studies and reviews, the Federal Energy Regulatory Commission has released the draft environmental document related to the relicensing of the dam and its hydroelectric operations. A public meeting with regulators will be held Thursday evening at the Merced County fairground. The 674-page draft Environmental Impact Statement summarizes environmental effects and the expected offset measures that would be part of MID’s application for a new license, district spokesman Mike Jensen said in a news release. MID General Manager John Sweigard said the proposed environmental mitigations would harm agriculture in Merced County by affecting water storage, groundwater recharging and, ultimately, the local economy.

He said the negative impacts stem from proposals to increase the flow of water down the Merced River and away from Lake McClure and eastern Merced County. “Worse, there is no substantial benefit to the environment to offset the enormous cost that the measures will have on our community,” Sweigard said. “The dire conditions we are experiencing in this fourth year of natural drought will become conditions faced every few years as a regulatory drought. “During the meeting, MID growers and others in the community will have the opportunity to address FERC regulators, providing oral and written comments. After Thursday’s meeting, the public will have until May 29 to provide the commission with written comments on the draft EIS. A final EIS is expected from FERC before the end of the year.

(What needs to be done!) Next steps for hydropower
By Bob Gallo, April 30, 2015, thehill.com

In 2013, Congress passed and the president signed groundbreaking - quite literally – legislation to boost American hydropower development. Now Public Laws 113-23 and 113-24, these reforms aim to produce more clean and job-producing American energy by streamlining an often costly, redundant, and uncertain federal licensing process, particularly for smaller hydro projects. This bipartisan collaboration has led to increased interest in new hydropower development, particularly for the small and low-impact facilities that make up a significant portion of the estimated 65,000 megawatts of hydropower potential in the U.S., according to a recent Department of Energy (DOE) study. While hydropower finds itself in a better regulatory environment, the federal government should continue to expand its partnership with private industry to boost the country’s largest renewable resource. Fortunately, the Departments of the Interior and Energy, as well as the U.S. Army Corps of Engineers (USACE), recently renewed a five-year Memorandum of Understanding (MOU) to strengthen their collaboration and align priorities for hydropower development. Originally signed in 2010, the MOU supports the Obama Administration’s previously stated goal of doubling renewable energy generation by 2020, in part by improving the federal permitting process. The MOU has already facilitated numerous breakthroughs, including an additional 70 non-federal hydropower projects in some stage of development. Over the next five years, the MOU will expand on its initial progress, with the goal of deploying more efficient and environmentally friendly hydropower across the country.

Congress should continue to show its support, too. At this week’s National Hydropower Association annual conference, industry leaders, developers, and many others will be discussing hydropower’s next steps. Our goal is to improve and shorten the licensing process for all projects – both new and relicenses – while preserving effective environmental and safety standards.

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
We are certainly pleased one of hydropower’s strongest champions in Congress – Rep. Cathy McMorris Rodgers (R-Wash.) – has released a draft bill that attempts to address many of the issues that have long slowed the growth of the industry. We hope her bill will be a starting point for a renewed legislative push for additional hydropower regulatory reforms. **Hydropower licensing can take 10 years or longer – by some measures, longer than a nuclear facility.** Perhaps more significantly, the drawn out regulatory time frame and redundant local, state, and federal regulations give developers and utilities little of the certainty all businesses need to invest in such a costly process. Considering over 11,000 MW of installed capacity will be up for relicensing over the next 10 years, timely regulatory reform is a pressing concern.

Funding levels also present challenges. For example, the draft House Energy and Water Appropriations Bill cuts FY2016 funding for DOE’s Water Power program by one-third, jeopardizing the critical research and development advanced by the program. As Congress works through the appropriations process, funding should at least be restored to current levels. Let’s not forget what’s at stake. While hydropower’s other attributes are numerous – support for the development of other renewables through baseload power generation, flood control, recreation, and irrigation, to name a few – it also creates jobs. By one estimate, with the right policies in place, hydropower could create 1.4 million cumulative jobs by 2025. Those are numbers no lawmaker can easily ignore. As the hydropower industry gathers in Washington, there is much to celebrate. We hope it’s also a call for our federal partners to continue to encourage and expand America’s largest renewable energy resource. **Gallo is president and CEO of Voith Hydro’s U.S. operations, based in York, Pennsylvania.**

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**Water:**

(They just don’t get it. Where would the 28 million people who get their water from it be without Oroville Dam?????)

**Assembly panel kills Republican bill to speed dam construction**

BY CHRISTOPHER CADELAGO, SACBEE.COM, 04/28/2015

Drought-inspired legislation to hasten the construction of water-storage facilities died in a California Assembly panel on Monday, Assembly Bill 311, by Assemblyman James Gallagher, R-Yuba City, would have streamlined environmental review for the Sites Reservoir in the Sacramento Valley and Temperance Flat on the San Joaquin River near Fresno. The measure is part of a Republican package of legislation designed to address infrastructure needs. After being sidelined by the Assembly Natural Resources Committee last month, it was revived for a second pass when Gallagher

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*The proposed Sites Reservoir would flood land shown here west of Maxwell. A bill to streamline environmental review for the dam and one other died Monday in an Assembly committee.*

Copy obtained from the National Performance of Dams Program: [http://npdp.stanford.edu](http://npdp.stanford.edu)
narrowed the focus to the two projects, increasing pressure on Democratic lawmakers and Gov. Jerry Brown to focus more on storage as the state suffers though a four-year dry spell. Gallagher, who held an earlier rally with farmers and business leaders, argued there should be no delays to building the facilities once funds from November’s successful $7.5 billion water bond are allocated beginning in December 2016. Sites Reservoir would hold 1.8 million acre-feet of water and Temperance Flat would add 1.26 million acre-feet, he said. For comparison, Folsom Lake holds about 1 million acre-feet.

He pointed out that lawmakers have been willing to grant expedited environmental reviews to professional sports facilities across the state. Recent examples were for the basketball arena in Sacramento and a football stadium outside Los Angeles. But Democrats, including Assemblyman Das Williams, D-Carpinteria, argued that the comparisons with recent successful legislation to fast-track environmental opposition were unfounded, mostly because those bills dealt with specific projects and included various ways to mitigate their impacts. “If people want to do bills that’s like the Sacramento Kings bill, what they would want to do is identify a specific project, go to the supporters and opposition, have them meet together and come up with the mitigation measures,” said Williams, the committee’s chairman. “This has not been done in either case.”

Environment
(Trying to mimic nature is expensive!)
Complex — and expensive — system transports Lewis River fish

An elaborate system of pipes and pulleys at Merwin Dam hoists buckets of salmon and steelhead 100 feet above the Lewis River, then sends the fish through an elevated tube for sorting. Upstream, just above Swift Dam, fishery workers sort juvenile fish in an imposing, 1,500-ton floating building. The two projects form the complex, $110 million fish passage system installed by PacifiCorp to give salmon and steelhead a high-tech ride around the three Lewis River dams. The goal is re-establishing runs of wild fish to 117 miles of spawning habitat that was cut off after the dams were built starting in the 1930s. The work, completed last year, was set in motion eight years ago. The Lewis fish transport system is one of the most extensive – and impressive – efforts in the regional quest to help endangered fish. “The whole concept is we’re building a (fish) run,” said Frank Shrier, PacifiCorp’s principal scientist. “We don’t cut it off at either end. Biology is driving it.” So are the Federal Energy Regulatory Commission and a host of other agencies that hammered out a relicensing agreement for the Lewis River dams. The fish transport system was required as part of the federal license granted to PacifiCorp and the Cowlitz PUD in 2008 to continue operating the dams.

Merwin Dam

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
PacifiCorp hung a new piping system and built a new fish-sorting building at Merwin Dam, which is a barrier to adult fish swimming up the Lewis. The total cost of the project, completed last year, was $65 million. A massive, 8-foot-diameter pipe was strung in front of the powerhouse, creating a water flow that mimics natural currents to attract fish. The fish swim into a trap that's about 40 feet below the powerhouse. Shrier said the new collection system has several advantages over the device in the same place that was once used to trap fish for the nearby hatchery. "We could only do it six months out of the year," because flows were too high at other times, he said. "Now, we can do it every day." From the trap, the fish are hoisted into a lift some 100 feet higher and shuttled into an 16-inch-diameter pipe that snakes several hundred feet to the sorting building. The tight spaces below the dam dictated the design. The new fish-sorting building was designed to blend in with the original architecture at Merwin, which was built in 1931. The adult fish enter tanks where they get an electric shock to anesthetize them before they exit onto shiny stainless steel trays, where James Samagaio and Tyler McClure are waiting. The two fisheries workers sort the fish by sex and species and whether they've been fitted with a wire that can be used to track their movements (antennas up and down on the record the fishes' movements). The fish exit into 3,000-gallon holding tanks the size of big hot tubs. They're released into tanker trucks. One day last week, 34 non-hatchery steelhead were recovered and carried upstream in a 2,000-gallon tanker truck. "We have to haul fish every day, even if it's just one," Shrier said, though that can be done in a smaller truck. The adult fish are released into the Lewis just above the Eagle Creek bridge, near Swift Forest Camp — above all the dams. In theory, adult fish will continue swimming upstream to the best spawning habitat, such as Pine Creek and the Muddy River. But there have been surprises. "It's not what we expected, but the coho and steelhead are going both ways," with some swimming back downstream into Swift Reservoir, Shrier said. "We're not sure what it is – disorientation?"

Swift Dam
Dam turbines are notorious shredders of downstream-bound juvenile salmon and steelhead. To bypass that problem, PacifiCorp built an odd-looking floating fish-collecting structure and anchored it just upstream of Swift Dam in 2012. The fish collector has to float so that it can stay on the surface, because the reservoir's level fluctuates as much as 100 feet. "This is like a ship," Shrier said as he walked onto the 170-by-60 foot structure. The fish collector is accessed over a 660-foot-long trestle that's wide enough for a truck that picks up the fish heading down Swift are funneled into a huge, 200-foot-deep net attached to orange floats. The fish collector contains a mini-river with a downstream flow that mimics a natural steam. "The concept is to create something like a river leaving a lake," Shrier said. "The only way out of the reservoir is here."

Last year, the utility had to add what has been dubbed a "cow-catcher," a boom to prevent debris from getting sucked into the intake along with the fish. Once inside the "ship," the fish are mostly sorted automatically by size, though Samagaio and McClure examine 10 percent of them more closely and record their lengths and species. The fish get a ride in tanker trucks downstream to be released into the Lewis below the dams. The Swift facility cost $45 million, with the cost shared by PacifiCorp and the Cowlitz PUD, which operates one of the powerhouses at Swift. The total cost of measures to protect fish and wildlife, flood management and recreational facilities such as new trails and improved campgrounds that were part of the relicensing agreement is $290 million for PacifiCorp and $19 million for the Cowlitz PUD. If the goal of 12,500 returning adult fish were met for 20 years, the capital cost of the project alone would amount to $440 per fish, an indication of how much utility customers are paying for fish mitigation work.

The upper Lewis
PacifiCorp also has built acclimation channels for smolts next to the Muddy River, a tributary of the upper Lewis that is actually a lovely clear color, and the more accurately named Clear Creek. Spring Chinook smolts will spend six weeks in the channels, increasing the chances that they'll return there as adults. The Muddy channel travels 1,200 feet underground and another 500 feet on the surface, though iron from volcanic rock has seeped into the water and made it unusable. The $300,000 channel will need to be modified before it can be used.

The goal
The goal of the Lewis project is to create annual return runs of 9,000 coho, 2,000 spring Chinook and 1,500 winter steelhead to the upper Lewis every year. That’s about the number of wild fish biologists believe spawned in the waters before the dams went in. For the most part, the system is working. The coho return last year exceeded the goal and steelhead was at goal. But only 550 springers returned. “We’re not meeting that goal at all,” Shrier said. The problem is that the lagging runs of hatchery and wild spring Chinook to the Lewis River hatchery don’t provide enough fish to transport upstream and spawn naturally. Already, fish have swum as far up as the Lower Falls on the Lewis, an impassible barrier even before people built towering dams.

**Other Stuff:**
(Imagine trying to survive on solar this past winter in MA.)

Environmental Advocates Push Back On Expanding Region’s Natural Gas Capacity
BY AMBAR ESPINOZA, ripr.org, 4/24/15

Five New England governors met yesterday in Hartford, Connecticut, to talk about increasing the region’s energy supply. No solutions are set in stone, but environmental advocates are concerned proposals rely too heavily on natural gas.

Gov. Gina Raimondo said this winter New England’s average wholesale electricity prices were significantly higher than neighboring regions. And those high prices are tough on consumers and businesses. Raimondo said at the regional meeting, the governors committed to provide relief. “You know, we have a problem,” said Raimondo. “We don’t have enough energy supply and our car prices are high and our volatility is high and there is no one solution. We have to focus on energy efficiency, as well as a move to renewables, as well as more energy infrastructure and expanded natural gas.”

The governors are pushing to expand natural gas pipelines and invest in Canadian hydropower. Environmental advocates say the governors are right to see this energy challenge as an opportunity to invest in the region. But they say expanding natural gas pipelines and supporting Canadian hydropower are not the right solutions for improving the economy or the environment.

Drew Grande, senior campaign organizer with the Sierra Club in New England, said Raimondo is following the wrong lead. “What she should be doing when she’s looking at Massachusetts is following the lead in solar with the 700 megawatts of solar that’s been installed there,” said Grande. “It’s put 12,000 people to work in the solar industry just in Massachusetts and that’s something that’s been lacking in Rhode Island.” Advocates with the Conservation Law Foundation are also concerned about what they consider is an oversized role of natural gas in the governors’ proposals. Energy companies like National Grid are commending the governors for considering natural gas and Canadian hydropower. Do you have insight or expertise on this topic? Please email us, we’d like to hear from you: news@ripr.org.
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