Dams:
(Doesn't think dams are needed. Doing otherwise is a problem.)

Editorial: More water storage doesn't mean build more dams

By Chronicle Editorial Board, May 2, 2018, sfchronicle.com

The California Water Commission has been meeting this week to discuss how to invest $2.7 billion in water storage funds approved by voters under Proposition 1. The commission — and all Californians — should bear in mind that water storage doesn’t necessarily mean a dam with water behind it. The commission’s charge is not to fund the biggest new dam but to fund projects with the greatest net benefits to California cities, farms and wildlife.

The commission is considering 12 projects, ranging from traditional surface storage projects, such as the proposed Sites and Temperance Flat reservoirs, to multiple use projects such as expanding Los Vaqueros Reservoir in Contra Costa County or the Inland Empire Utilities Agency’s project, which would time water releases for benefit of the native fish runs and farmers.
Under Prop. 1, the funds must go to "the public benefit aspects of water storage projects: specifically, ecosystem improvement, water quality improvement, flood control, recreation and emergency response." Controversy arose, however, when commission staff released assessments last month. State Sen. Andy Vidak, R-Hanford (Kings County), wrote in a news release that the commission would “stiff the Central Valley” by dedicaing less money to big dam projects.

There’s a reason no big dam has been built in the state since New Melones in 1978: there is no site left that would justify the enormous engineering and construction costs. More dams paid for with the public dime doesn’t mean more water for every Californian. It is the state’s complex water rights laws that determine who gets the water, assuming nature provides it. California is already dammed up. Over 55 years, California saw 800 new dams — more than one a month. The state has an inventory of close to 1,200 dams (plus another 200 under federal control) but no over-arching plan to maintain, monitor or remove them when they are past their engineered life span. The Oroville Dam spillway fracture, which forced the evacuation in February 2017 of nearly 200,000 people downstream, was a wake-up call.

Groundwater storage, storm water capture and recycled water are more efficient, less costly storage solutions that balance human and environmental needs, in part because the water can be stored closer to users. In the 20th century, big engineering projects — the Panama Canal, Hoover Dam and the Interstate Freeway system — embodied the can-do spirit Americans prize. Today, we must use that can-do spirit to engineer for the challenges of a changing climate — extended dry periods with intermittent torrential rains. It’s time to look beyond big dams. This commentary is from The Chronicle’s editorial board. We invite you to express your views in a letter to the editor. Please submit your letter via our online form: SFChronicle.com/letters.

(A picture is worth more than words.)

This one stretch of river could decide the future of Shasta Dam

BY RYAN SABALOW AND DALE KASLER, sacbee.com, May 07, 2018

SHASTA LAKE, CA - The final stretch of the McCloud River before it empties into the state’s largest reservoir is a place of raw beauty. On a recent morning, the river's icy water, flanked by flowering dogwood trees and jagged rock formations, flowed fast and clean. This part of the McCloud is off limits to almost everyone except a few Native Americans and some well-heeled fly fishermen. Its gatekeeper is an unlikely one, an organization that also happens to be a hugely controversial player in California water politics. Eleven years ago, Westlands Water District, headquartered in far-away Fresno, bought the land for a single purpose — to flood it.

Westlands’ property includes seven miles of the river. The district supports the federal government’s efforts to heighten Shasta Dam, about 30 miles away. A taller dam would increase the lake’s storage capacity during wet years. That, in turn, would provide more water for the farms and orchards Westlands serves in the perpetually parched San Joaquin Valley. A higher structure also would inundate parts of the McCloud, altering its current state. “This is unquestionably a beautiful stretch of river,” said Westlands general manager Tom Birgmingham, as he walked along its banks last month. “The river deserves to be protected in its current form, but that's going to have to give a little bit to raise the dam.” Opponents of the dam project, however, are refusing
to give at all. They include the state of California, a local Native American tribe and environmental and fishing groups. They say raising the dam by 18.5 feet, under the current federal proposal, would submerge sacred sites of the Winnemem Wintu Tribe and ruin a stretch of a river prized by recreational trout anglers. They say it also would be a violation of the 1972 Wild and Scenic Rivers act, which prohibits the state from supporting projects that alter certain natural waterways. Disagreement over raising Shasta Dam has been going on for decades. The Obama administration essentially tabled the issue over questions about who would foot the bill.

Now the $1.3 billion project has returned with force. Congress in March appropriated $20 million for pre-construction planning. The appropriation, part of a massive federal budget bill signed into law by President Donald Trump, was enough to touch off a political fracas stretching from Washington to Sacramento. Gov. Jerry Brown’s natural resources secretary, John Laird, sent a letter to congressional leaders saying raising Shasta Dam would be flat-out illegal under California’s Wild and Scenic Rivers Act. The law protects the McCloud against projects that would harm its "free-flowing condition," Laird argued. An 11th-hour intervention this spring by congressional Democratic leaders including Sen. Dianne Feinstein and House Minority Leader Nancy Pelosi, derailed a proposal by House Majority Leader Kevin McCarthy of Bakersfield that Feinstein’s office says would have exempted Westlands and other agricultural water districts from a requirement that they pay half the $1.3 billion cost. Feinstein said she supports the project in principal but she’s concerned about state law. In addition, water districts in line to benefit from having more water behind the dam shouldn’t be off the hook from the costs, she said. "Water agencies shouldn’t be allowed to avoid paying their fair share to raise the dam," Feinstein said recently in a statement emailed to The Sacramento Bee. Birmingham and Westlands Deputy General Manager Johnny Amaral said they knew nothing about McCarthy's efforts to exempt farm water districts from their funding requirements, even though Westlands is well connected in Washington.

(No dam failure is a good thing, no matter the size.)

Marysville dam collapses, doesn't affect Tuttle levels

Staff reports, 5/8/18, themercury.com

A dam on the Big Blue River northwest of Marysville collapsed late last week. Chunks of concrete broke from the structure, leaving a wide gap in the dam and lowering the river’s water levels, the Marysville Advocate reported on Friday. Marysville city administrator Austin St. John said the lower river levels resulting from the collapse could affect a well system run by Washington County Rural Water District No. 1 on the north side of the river. The district’s wells supply Breeding Heights on Marysville’s far west side and rural areas to the west of town.

The river runs into Tuttle Creek Lake. Brian McNulty, operations project manager for the U.S. Army Corps of Engineers Tuttle Creek Lake, said the collapse did not significantly affect the lake level. He said the dam is a low-head dam, meaning it only holds back some water, but water continuously flows over the dam and down the river. He said the lake was rising on Thursday and Friday because of rain, and there is no way to know how much of the increase in water level can
be attributed to the dam collapse. "Tuttle Creek just basically absorbed all the water that was in it," McNulty said.

(Dam failure is a disaster.)

Dozens Dead and Hundreds Displaced After a Dam Burst in Western Kenya
By Associated Press, 5/8/18, time.com

(NAIROBI, Kenya) — A dam burst its banks in Kenya’s Rift Valley, killing at least 38 people and forcing hundreds from their homes, officials said Thursday. Water burst through the banks of the Patel Dam in Solai, Nakuru County, on Wednesday night, sweeping away hundreds of homes, including those on the expansive Nyakinyua Farm, which borders the reservoir. "We have recovered 38 bodies and many people are missing. It is a disaster," said Rongai police chief Joseph Kioko. Almost an entire village was swept by silt and water, said Gideon Kibunja the county police chief in charge of criminal investigations.

Up to 40 people have been rescued from the mud and taken to hospital Thursday morning in rescue operations by the Kenya Red Cross and Nakuru County disaster management teams. Many more are feared still trapped. Officials said the dam water and mud spewed out of the reservoir and submerged homes over a radius of nearly 2 kilometers (1.2 miles). Interior Cabinet Secretary Fred Matiangi was set to visit the site Thursday. At least 132 people have died since March from floods caused by seasonal rains, Kenya’s government said Wednesday. The deaths from the dam burst raise the death toll to nearly 170 people. At least 225,436 people have been displaced from their homes, according to a government statement. Military helicopters and personnel have for the past week been organized to rescue people marooned by the flooding. The floods hit as this East African nation was recovering from a severe drought that had affected half of the country.

(Details on dam failure from Wikipedia. The spillway was probably too small.)

Patel Dam failure
From Wikipedia, the free encyclopedia, 5/11/18, en.wikipedia.org

This article documents a current event. Information may change rapidly as the event progresses, and initial news reports may be unreliable. The last updates to this article may not reflect the most current information. (May 2018). The Patel Milmet Dam near the township of Solai, Nakuru County, in Kenya’s Rift Valley burst during heavy rains on 9 May 2018, killing at least 47 people.[1][2]

Background
The dam was one of seven belonging to Mansukul Patel on the private property of his 3,500-acre (1,400 ha) commercial rose farm and business, Solai Roses.[3] The company produces large numbers of cut flowers for shipping to Germany and the Netherlands. The farm was responsible for the maintenance of the dam.[1] Investigators are trying to determine whether the Patel Dam and the others on the farm's property were properly licensed for installation by the owner of the farm.[4] Excessive rains since March have caused massive flooding in Kenya, Ethiopia, Uganda, and Somalia, affecting nearly a million people.[1] Nearly 170 people in Kenya were killed in the floods which preceded and led to the breaking of the dam.[5] The general manager of the farm stated that the rain had been particularly intense during the two
days preceding the dam’s failure, and that resulting flood waters carrying boulders and roots had
damaged the wall of the dam.\[1\] According to Koigi Wamwere, a former legislator from the area,
residents complained about leaks and cracks in the Patel Dam a few days before its failure.\[6\]

**Dam burst**
The dam burst in the evening of 9 May 2018, just as many families were sitting down for their
evening meals.\[1\] Residents reported hearing a loud bang immediately followed by the rushing in
of "a sea of water".\[4\] The resulting flood carved a chasm through a hill, washed away power
poles, destroyed buildings (including a school), and submerged two villages.\[1\] Homes over a
radius of nearly 2 kilometres (1.2 mi) were submerged\[5\] and authorities believe more than 2000
people are now homeless.\[2\] Of the 47 confirmed deaths, more than 20 were children.\[5\]
Forty people have been rescued and taken to hospitals operated by the Kenya Red Cross and
other local relief organizations.\[5\]

**Aftermath**
Kenya's Interior Secretary Fred Matiang’i arrived the day after the disaster and announced the
government’s investigation into the incident. There are six other dams in the area and initial work
of the investigation will focus on determining the stability of those other dams.\[5\] Local residents
claimed that two of the remaining dams were already leaking.\[5\] Matiang’i also stated that the
death toll could be higher as the rescue teams are likely to recover more bodies from the mud
and debris.\[7\] The United Nations Office for the Coordination of Humanitarian Affairs warned that
the flooding which contributed to the dam failure is expected to get worse with additional heavy
rains forecast in Nakuru over the coming weeks.\[1\]

**References**
1. \(^{\text{Jump up to: a b c d e f g Mukoya, Thomas (10 May 2018). "Kenyan rose-farm dam bursts, ‘sea of water’ kills 47“. Reuters. Retrieved 10 May 2018.}}\)
2. \(^{\text{Jump up to: a b "Kenya's Patel dam bursts, sweeping away homes in Solai". BBC. Retrieved 10 May 2018.}}\)
5. \(^{\text{Jump up to: a b c d e f Odula, Tom (10 May 2018). "At least 44 killed as dam bursts in Kenya, officials say". American Broadcasting Company. Retrieved 10 May 2018.}}\)
7. \(^{\text{Jump up ^ Vidija, Patrick (10 May 2018). "Nakuru dam death toll could be higher—Matiangi". The}}\)

(Cut it before it goes. You can see the value of a good EAP.)

**Crews will try fixing failing dam in Alpine Lakes Wilderness**
By: Graham Johnson, May 10, 2018 - kiro7.com

CHELAN COUNTY, Wash. - Chelan County sheriff's
deputies posted warning notices on 50 homes near
Icicle Creek on Thursday for potential evacuation
because of a compromised irrigation dam in the
Alpine Lakes Wilderness. Emergency management
officials say spring runoff is overtopping and eroding
the earthen portion of the Eightmile Dam, an
emergency drain is clogged, and logs are piling up
behind the dam in Eightmile Lake. While runoff
happens every year, Eightmile Lake is now
particularly vulnerable to flash floods because of
2017's Jack Creek Fire, which left a big burn scar.

"When you don't have the vegetation to keep
the water in the ground, it's going to flow into the lake and it's going to bring debris with it," said Sgt. Kent Sisson with the Chelan County Sheriff's Office.

Of the 50 homes that received notices to be ready to evacuate, about a dozen on Icicle Island are considered most at risk. Many Icicle Island homes appear not to be occupied full time, Sisson said that the irrigation district that manages the dam planned to use a helicopter on Friday to bring in a small excavator to shore up the structure. Because dry weather is predicted for the next week, Sisson is hopeful that there won't be a need for any evacuations. "If they could get the work done this weekend, I think we could be looking at some positive news by Monday or Tuesday, we're hoping," Sisson said. A meeting about the dam situation is scheduled for 7 p.m. Monday at the offices of Fire District 3 in Leavenworth. A spokeswoman for the U.S. Forest Service wrote, "Recreationists may want to choose different locations until the situation is resolved." Here's a statement from the Okanogan-Wenatchee National Forest: "The Forest Service is currently evaluating public safety in light of the risks posed by the dam using hydrologic analysis in consultation with dam safety experts. An Emergency Action Plan was developed with preset triggers that describe actions to be taken as the lake rises, currently we're in an awareness level two. If the lake level continues to rise and an emergency level three appears eminent, the campgrounds and trailheads will close to protect public safety concurrent with downstream evacuation notices. The Forest Service continues to monitor this situation closely."

Hydro:
(Fix it so I know what's going on!)

FERC inquiry into Reusens Dam near Lynchburg comes back inconclusive
By Margaret Carmel, 4/28/18, newsadvance.com

After an almost three-month inquiry into the operations of the Reusens hydroelectric plant on the James River that ended with inconclusive flow data, the Federal Energy Regulatory Commission has ordered dam owner Eagle Creek Renewable Energy to repair malfunctioning sensor equipment to ensure the company's operations are kept accountable in the future. According to the FERC filing detailing the results of the inquiry, the agency received an allegation of "low flows" on the James in late December 2017 that could be related to hydropower operations at Reusens, which is located about 4.5 miles upstream from downtown Lynchburg. In order to investigate if Eagle Creek was in violation of its license that outlines the minimum amount of water that must pass through the dam, FERC requested the company submit a record of flows 7½ miles upstream of the dam measured by the U.S. Geological Survey gauge located at Holcomb Rock, the amount of water flowing out of the dam and project generation output between June 1, 2017 and Jan. 25.

On March 28, Eagle Creek submitted a filing to FERC sharing that during the process of gathering the data, the company discovered the dam’s spillway gate monitor that measures how high the flood gates are open “drifts over time” and shows inaccurate information. Despite the malfunctioning equipment, Eagle Creek affirmed flows through the dam always have been continuous and have met the required minimums set by the federal government when the license originally was issued in 1994. Eagle Creek Executive Vice President of Operations Robert Gates said the company has been in the process of learning the equipment at the plant and now that the issue of the faulty sensor has been discovered, it will be corrected. "Eagle Creek purchased this
last year and we have been rehabilitating the plant and bringing the machines back online, learning all about everything that has to do with the plant as far as operations and while we were doing that one of the things we have found is that the instrumentation isn’t up to par with other plants that we own and operate,” Gates said.

“There was a complaint that was filed, FERC followed up into the complaint and we will comply with their request to upgrade the equipment so we won’t have any future issues,” Rob Campbell, a community conservationist with the James River Association, and some other local river lovers view it differently. Shortly after Eagle Creek purchased the Reusens hydroelectric plant from Appalachian Power Company in April 2017 and completed the necessary renovations to begin generating power in July, Campbell said he began observing low water levels on the James River near Lynchburg that were interfering with excursions and other activities.

“As we got into September, we were noticing that the river was dropping to levels we had never seen before, and it wasn’t necessarily because of a lack of rain,” he said. “We had seen the water the way we were used to seeing it, and then the bottom fell out of that. We had rocks showing here that we had never seen before, and we had folks that started on the river and the water levels were fine and then they’d get halfway through the trip and the levels would just completely disappear on them.”

As soon as he began seeing low water levels, Campbell notified FERC and told the agency he believed Eagle Creek was holding back too much water behind the dam in order to make more electricity. Over the next several weeks, he worked with other James River sportsmen and advocates to try and capture photos of the dam with all of its gates closed, holding water behind it, so FERC could have evidence of the low flows to open an official inquiry. “We were finally able to catch them in the act with drone footage [in October],” Campbell said. “We caught a beautiful, terrible picture of them holding all of the water back. They say there’s still current coming through somewhere, but I don’t believe it at all because if you look at that footage, the water all across the dam was just glassy smooth.” APCo Maintenance Supervisor David Agee, who worked at Reusens dam when it was owned by the company prior to the sale to Eagle Creek, examined a still photo from the drone footage captured by Campbell that was submitted to FERC. He said that while this photo appears to shows no water flowing through the dam, Eagle Creek could have passed enough water through any one of its roughly 1,100 cubic feet-per-second capacity turbines for a brief period of time and still met the hourly average mandated by the federal government. “That’s only a second in time and it doesn’t indicate what they did for that entire hour,” Agee said. “Typically all of our plants, which are operated in a similar fashion, it’s like turning on the kitchen sink so you come in at the top of the hour and turn it on for 20 minutes to generate power and then you cut it off and you average that flow over the entire hour and you meet your requirement.”

Hydroelectric dams must be licensed to operate by FERC, which sets a requirement for the average hourly flow of water that must pass through the dam depending on the level of the river. The license for Reusens, which has a power generation capacity of 12.5 megawatts, was issued in 1994 and is set to expire in 2024. In order to stay in compliance, when there is less than 3,300 cubic feet per second flowing into the dam, the operators of Reusens must release a minimum of 333 cubic feet per second of water on average over each hour. If flows are less than 333 cubic feet per second, Reusens must release the same amount of water through the dam that is flowing in on average over each hour. APCo first took ownership of the dam in 1924. The company generated power there for decades until a series of mechanical and electrical issues made it too expensive for the company to maintain, and operations stopped in 2011, according Agee. In his time working at Reusens, Agee said the dam experienced high levels of fluctuation of how much power could be generated depending on the level of rainfall. “It was a little volatile as far as what we could produce out of that site,” Agee said. “It was like the farmer because we were dependent on rain. If it didn’t rain, our [power] generation suffered.” In addition to the requirements of how much water must pass through the dam depending on the water level in the river, Agee said FERC also regulates how much the water levels behind the dam can rise and fall to meet the demand for power. Although the license allowed for water levels to rise and fall
upriver of the dam by approximately 3½ feet, Agee said APCo rarely moved the water levels in large amounts to minimize the effect to the river and keep water levels constant.

"From an operational perspective, it would have been a short-sighted gain for us," he said. "We may have done well at that one point in time, but especially in drought conditions, if you draw the water down, it will take you forever to get the water back up again." In an April 11, 2018, filing in response to the data submitted by Eagle Creek, FERC’s Division of Hydropower Administration and Compliance’s Aquatic Resources Branch Chief Thomas LoVullo said while the damaged equipment means FERC cannot prove or deny any wrongdoing, the problems will go into the federal government’s records for the dam in case there are more reports. "While we will not consider your inconclusive data to be a violation of [Eagle Creek’s license], this incident will be made a part of the compliance history for the project and taken into consideration regarding any future similar events," the filing said. "Please be aware that we expect you to maintain adequate and accurate data to ensure compliance with your license, and any future inadequate or inaccurate data reports could be considered a violation of your project license.” Due to the compliance investigation, FERC is requiring Eagle Creek to repair the faulty sensors by May 11 and update its operations plan by Aug. 9. Mason Basten, a local sportsman and owner of River Road Jet Boats in Madison Heights, said he is frustrated the system for compliance relies on self-reported data, which makes it difficult for FERC to punish offenders who are operating hydroelectric dams improperly if there is wrongdoing. "God bless FERC," he said. "They’ve got their hands tied because the system is set up to be inefficient, and FERC has run headlong into one of their own inefficiencies. I hope that [FERC’s] ability to follow up and keep an eye on them means something because having the property owners be responsible for that burden of proof is a cop out." Basten describes himself as a strong supporter of hydroelectric power, but he would like to see companies operate their facilities in a way that has minimal effect on the area. "If you want to run a hydroelectric plant, then do it the way Appalachian Power did for 30 years," he said. "You abide by the same laws and operating standards that they abided by, and if you’re going to keep doing it another way, then I hope the federal government just absolutely rakes you over the coals.”

(Wanna buy a hydro project?)

PG&E PLANS TO AUCTION OFF THE POTTER VALLEY HYDROELECTRIC PROJECT

May 10, 2018, Kym Kemp, kymkemp.com

PG&E has decided to put the Potter Valley Hydroelectric Project, the dam that diverts water from the Eel River and gives it to the Russian River, up for auction. They sent the following letter to the Eel and Russian River Commissioners:

Dear Eel-Russian River Commissioners:

During my February 23, 2018 presentation to the Eel-Russian River Commission, I informed you that Pacific Gas and Electric Company (PG&E) was evaluating several options for the Potter Valley Hydroelectric Project. I’m writing to let you know that after very careful consideration, PG&E has decided to put the project up for auction this fall. This decision to begin the auction process ultimately reflects that continuing to operate the facility
is not in the long-term best interests of PG&E’s electric customers. However, PG&E fully realizes that the project has key environmental attributes and provides important regional benefits including recreation opportunities and a significant contribution to the Russian River water supply.

With this in mind, as we prepare for the auction PG&E is open to exploring with local, county and/or state governmental entities that have an interest in the continued operation of the project the possibility of transferring it to a local or regional entity as an alternative to the auction. PG&E will assess the progress of such transfer negotiations as they proceed, and based on meaningful progress, will either continue direct negotiations or proceed with the auction.

Participation in the auction will be open to any qualified entity. Qualifications will include being able to meet the Federal Energy Regulatory Commission’s (FERC) requirements for a hydroelectric project licensee. We anticipate interest in acquiring the project by electric power interests, water supply interests, potential combinations of these two groups and possibly by others. Transfer of the project will require approval of both the FERC and the California Public Utilities Commission. The entire process could take one-and-a-half to two years to complete. PG&E plans to continue the ongoing FERC relicensing proceeding throughout the auction process with the expectation that the new project owner will “step into PG&E’s shoes” relative to the relicensing once regulatory approval of project transfer has been obtained. Due to its relatively small electric generation capacity, divesting the Potter Valley Project will not impact PG&E’s delivery of safe, clean, affordable and reliable electricity to our customers. The divestiture is expected to have a negligible impact on PG&E’s overall portfolio of renewable power.

Throughout the divestiture process, PG&E will continue to operate the Potter Valley Project as a hydroelectric facility in full compliance with our FERC license and all applicable environmental laws and regulations. Best regards, David Moller, Director, Power Generation

(They see this as another opportunity to remove a dam. They’ll render the project worthless. Dam safety is an all the time issue, it has nothing to do with licensing or relicensing time frames. It may not be economic for PG&E, but it may be for someone else.)

‘WE NEED TO TALK ABOUT REMOVING SCOTT DAM,” SAY FRIENDS OF THE EEL RIVER

May 11, 2018, Kym Kemp, kymkemp.com

Press release from Friends of the Eel River:

Pacific Gas and Electric (PG&E), the utility that owns Scott and Cape Horn Dams on the upper Eel River, announced yesterday that the company is moving to auction the dams to buyers who would want to keep them in place to maintain the diversion of Eel River water into the Russian River. Friends of the Eel River Conservation Director Scott Greacen said, “We welcome PG&E’s recognition of the fact that the Eel River dams don’t make economic sense, and we’re encouraged the company is moving to accelerate a process that could too easily be subject to almost endless delays. But what’s good for PG&E is not necessarily what’s best for the Eel River or for the region. There’s room to talk, but we really need to talk about removing Scott Dam.”

In its letter to the Eel-Russian River Commission announcing its plans, PG&E states that “the project has key environmental attributes and provides important regional benefits including recreation opportunities and a significant contribution to the Russian River water supply.” Here, PG&E is doing what any rational seller would – seeking the highest possible price for its property by emphasizing its notional benefits, while playing down its many drawbacks. Potential buyers
would be wise to carefully investigate these claimed benefits, as well as the costs PG&E is less eager to discuss.

PG&E's acknowledgment that the Eel River dams are not an economic asset for the company is the most significant fact to emerge from this announcement. If the dams made money, PG&E would be keeping them. The Eel River dams are in fact not assets, but environmental and economic liabilities. The math on both ledgers is only going to get worse over time. Similarly, while diversions from the Eel River have been convenient for managers of the over-appropriated Russian River, they are very likely to continue to decline in volume, and very unlikely to ever return to the last century's levels. Though the dams do provide benefits to Russian River interests in the form of water diversions, those benefits pale against significant costs to Eel River fisheries.

PG&E is doing what we expect any American corporation to do – seeking both to protect its shareholders from reasonably foreseeable risks and to maintain the value of its assets over time. Having recognized that the Eel River dams don’t make economic sense as a way to produce electric power, PG&E has suggested that entities interested in both electrical power production and water supply may want to continue operating the dams and diversion to the Russian River. However, any new owner will have to shoulder the same burdens PG&E has decided are not worth the trouble. These liabilities include the relicensing process now underway before the Federal Energy Regulatory Commission (FERC). A new license is likely to result in additional reductions in the volume of Eel River diversions, as well as substantial costs to comply with mandatory license conditions for fish passage over Scott Dam and water quality protection – not to mention the costs of relicensing itself.

Any potential buyer will also face significant risks and costs associated with dam safety. FERC is refusing to address dam safety issues in relicensing, but that only increases the uncertainty associated with seismic and geotechnical threats, particularly to Scott Dam, which will be a century old when its current license expires in 2022. PG&E has been investing for years now in geologists' investigations of the Bartlett Springs Fault, a branch of the San Andreas Fault system which runs only miles east of Scott Dam, but was completely unknown when the dam was built. This work shows the Bartlett Springs Fault is larger and more active than previously thought – and that the area around Gravelly Valley, now the Lake Pillsbury reservoir, shows the most evidence of recent activity along the entire fault. This information only adds to longstanding concerns about the construction of Scott Dam itself and the stability of the southern bank above and behind the dam. We will be interested to see whether potential purchasers will be provided full access to PG&E's internal assessments of the seismic and geotechnical threats to Scott Dam.

(Small is not a bad thing.)

A revolution in hydropower makes waves in rural Colorado
Big dams were the hydro giants of yesteryear. The future of hydropower is small.

By Carl Segerstrom, May 11, 2018, hcn.org

This story is a part of the ongoing Back 40 series, where HCN reporters look at national trends and their impacts close to home. On the Western Slope of the Colorado Rockies, winter opens the door to spring as fruit tree buds flit away and green shoots emerge from their slumber — that fish-dark sound of slow-moving water returns to the hillsides. Moving water is how the arid West has been brought to bear fruit.

Now people are eyeing the irrigation works of the past as clean electricity sources for the future. Around three thousand years ago the San Pedro people brought water from nearby streams to maize fields near modern-day Tucson, Arizona. As waves of European settlers pushed west they introduced different technologies to irrigate the thirsty land. Beginning in 1909, canal projects in the Uncompahgre Valley, of southwest Colorado, moved water from the mighty Rockies, greening the arid lands below. For a century these canals made agriculture possible in the high desert. But
only in the last five years have they started to bring electricity to the communities of Delta and Montrose.

The big hydroelectric dams of the 20th century put the rivers of the West under their imposing concrete thumbs, but their unintended consequences have water managers and entrepreneurs thinking the future of hydroelectric power is small. Advances in technology, federal reforms and Colorado’s ideal geography and friendly policies are paving the way for a new wave of small hydropower projects in the state that could be the template for a new generation of hydroelectric power.

In Montrose, Colorado, in the shadows of the Elk and San Juan mountain ranges, five small hydroelectric facilities are now incorporated into a canal system that delivers water to more than 83,000 acres of farmland for the Uncompahgre Valley Water Users Association. The hydroelectric generators combine a diversion from the canal with metal gates and a large metal pipe that carries water into what from the outside looks like an average metal storage shed. Inside the shed the deafening drone of the turbine equipment hums along during the seven months of the year when water moves through these irrigation canals. One of the major selling points of this technology is that it takes advantage of the power generating potential of water that is already moving through man-made infrastructure. “It’s the same amount of water as if (the turbines) weren’t there,” says Steve Anderson, who was born about 30 miles from Montrose and is following in his father’s footsteps as the manager of the UVWUA. Anderson, who is in his sixties, wears overalls, a long-sleeved maroon shirt and a black baseball hat and “loves showing off our hydros.” He says that if for some reason the hydroelectric facilities stopped working, it wouldn’t affect the delivery of irrigation water that the surrounding communities depend on. For the stakeholders in the irrigation association, the projects have become a source of income without any sacrifice of water delivery.

Projects like the hydroelectric facilities in Montrose are popping up across the West --- in part thanks to a lobbying effort by hydroelectric interests and the advocacy group American Rivers. These groups came together in support of a 2013 bill, the Hydropower Regulatory Efficiency Act, which passed the house by a unanimous vote and was signed into law by President Barack Obama. The bill encourages new projects by lessening the regulatory and permitting hurdles for hydroelectric installations. In the past small projects like these were subject to a lengthy Federal Energy Regulatory Commission permitting process that, according to small hydro advocate Kurt Johnson, could be more expensive than the hydroelectric hardware itself. He says the new law is a “game changing improvement” for developing these projects on private water infrastructure. The Montrose hydroelectric facilities, which are part of a Bureau of Reclamation water system, have different permitting requirements. Anderson says that the permits for their hydro projects went through in about two months and were a simple process because they only affect man-made infrastructure.

Small hydroelectric installations, like the ones in Montrose, hit a sweet spot for water managers and conservationists. These so-called conduit hydropower projects don’t inherently disrupt natural river systems and instead use existing off-stream infrastructure. Conduit hydropower can take different forms, from diversion and turbine systems on irrigation canals to micro-hydro installations that are inserted in the place of pressure-reducing valves, which are a necessary and ubiquitous component of water delivery and treatment infrastructure. Kelly Catlett, with the advocacy group Hydropower Reform Coalition, says that from an ecosystem and watershed health standpoint the only real worries are making sure that diversion points from rivers have proper fish screens and that new conduit hydropower projects aren’t used to justify larger diversions of water. Catlett says that as long as those issues are addressed, “this is one area a lot of us can agree on and be supportive of.” But not all of the small hydro projects promoted by the 2013 law hit this sweet spot, because the law also allows the electrification of on-stream dams that don’t already have turbines. American Rivers, which lobbied for the bill but also promotes the removal of some dams, got pushback in the conservation community for supporting the bill. Matt Rice, the program director for American Rivers in the Colorado Basin, says updating
old dams and adding energy producing turbines can ultimately help improve ecosystem conditions like dissolved oxygen and stream flow, and in some cases prevent the building of additional dams on free-flowing rivers. Other river advocates see the powering of unpowered dams as a potential roadblock to restoration. Eric Wesselman, the executive director of the California-based advocacy group Friends of the River, says he’s concerned about expedited reviews of small hydropower projects because “the influence of power production could delay dam removal in the future.”

The combination of extensive irrigation works, mountainous terrain and friendly state policies make Colorado an epicenter for the growth of small hydroelectric projects in the United States. The state is second only to California in small hydro installations and is pushing to expand in the future. Colorado Energy Office analyst Samantha Reifer says that the state is promoting small hydro projects through a combination of outreach, assistance with navigating regulatory barriers and low-interest finance programs. “Hydropower isn’t people’s first idea because in the past it’s been giant dams,” Reifer says. “We are working to raise awareness that this is an opportunity on existing water infrastructure.” Kurt Johnson has been at the forefront of lobbying for regulatory reform, advising Colorado on hydropower policies, and facilitating small hydropower projects as the president of the Colorado Small Hydro Association and CEO of Telluride Energy. He foresees the future of hydropower being in smaller installations more akin to rooftop solar than the large dams of the past. “It’s a political slam dunk because the industry and the environment are hand-in-hand,” Johnson says. Small hydropower is not a silver bullet to sate our energy appetite. But in places like Montrose and Delta counties it is already playing an important role. The five hydropower projects of the UVWUA are generating about half a million dollars of annual profit for the water users association, which it uses to keep rates low and reinvest in improving water infrastructure. The facilities, which the association is eyeing to add to in the future, account for about 13 percent of the power used by the roughly 70,000 people served by the Delta-Montrose Electric Association. “An old cowboy once told me every blade of grass is important,” Anderson says. “Well, every electron is, too.” Carl Segerstrom is an editorial intern at High Country News.

(Pumped Storage in the works. It's always about the money.)

Companies show interest in McPhee hydropower project

Two companies contact water district on potential

By Jim Mimiaga, Journal Staff Writer, May 11, 2018, the-journal.com

Two companies have recently expressed interest in exploring building a pump-back hydroelectric power facility at McPhee Reservoir. Pump-back storage systems utilize two reservoirs at different elevations. To generate power, water is released from the upper reservoir to the lower, powering a turbine on the way down that is connected to the grid. In 2014, the Dolores Water Conservancy District released an investor’s memorandum on the potential for a project at Plateau Creek to inform energy companies and investors of the opportunity. The canyon’s steep vertical drop in a short distance makes it a good location. District General Manager Mike Preston, speaking at Thursday’s board meeting, described pump-back storage plant idea as giant battery that is part of a green energy power grid. When electric prices are high, the water is released from the upper reservoir through a turbine, and the power is sold to the grid to meet demand. When electric prices are low, the water is pumped back to the upper reservoir through a tunnel, recharging the battery. Preston recently toured the Plateau Creek site by plane with Carl Borquist, president of Absaroka Energy, of Montana. The company proposed to build a pump-back hydroelectric facility at Gordon Butte, northwest of Billings, Montana. “It was a very preliminary scouting mission,” Preston said.
The Dolores Water Conservancy District holds the water rights for the potential Plateau Creek project, estimated to cost $1 billion, based on the 2014 study. It would require environmental reviews and approval because it would be on San Juan National Forest land. McPhee could be used as the lower reservoir, with a small reservoir built above Plateau Canyon. The project needs investors before it could get off the ground, but once online, it would generate an estimated $100 million per year in electricity sales. As the holder of the water rights, the district could benefit financially from the deal. “We have the site, and if we could realize a revenue stream, it would help the district financially,” Preston said.

Shortly after Absaroka Energy’s visit, the district received a letter from Matthew Shapiro, CEO of Gridflex Energy, based in Boise, Idaho, expressing interest in exploring a pump-back storage system at McPhee. “We recently developed a concept for this site that the district may not have considered before, one which we believe would have greater viability than the prior concept,” he stated. “We believe that the timing for this particular project is promising.” Pump-back hydroelectric storage is considered a nonconsumptive, green energy power source. Energy companies are potential investors in hydro projects as they expand their portfolios to include green energy. They need supplemental sources to meet demand when the sun does not shine or the wind does not blow. The Dolores Water Conservancy District had obtained a preliminary permit for a facility at Plateau Creek from the Federal Energy Regulatory Commission, but it was not renewed in 2016 because the project had not moved forward enough.

Water:
(It’s flood season in Montana.)

Water gushes over Diversion Dam near Gibson Reservoir
By: MTN News, May 14, 2018, krtv.com

Flooding season is in full swing in Montana and many regions are grappling with floodwaters. Conrad resident Sondra Habets captured a video of the Sun River Diversion Dam on Saturday that showed water pouring over the dam. Diversion Dam is located three miles downstream from Gibson Dam. It is a concrete arch structure with a structural height of 132 feet and a crest length of 261 feet. According to the Bureau of Reclamation, the dam contains 6,500 cubic yards of concrete and is equipped with an overflow crest for a spillway. The outlet works tunnel runs through the canal wall of the right abutment and the capacity of the outlet works feeding the Pishkun Supply Canal is 1,400 feet per second.

The water flowing over Diversion Dam comes from Gibson Dam, which stands 199 feet high with a crest length of 960 feet. Gibson Dam is able to store 99,000 acre feet of water in its reservoir. According to the National Park Service, an acre foot is enough to cover one acre a foot deep or 325,851 gallons. A gallon of water weighs 8.33 pounds and an acre foot of water weighs 1,357 tons. As of May 12, Gibson Reservoir was 87.4 percent full and pool elevation was recorded at 4,714.4 feet. The reservoir flood control pool was zero percent filled; Gibson Dam is on the Sun River and Sun River is a tributary of the Missouri River. For more information or a history of Gibson Dam and Reservoir, please visit the National Park Service’s website.
Environment:
(Gotta have my fishing timed.)

A million salmon were released into the Sacramento River. So why are anglers unhappy?
BY RYAN SABALOW, sacbee.com, May 02, 2018

VERONA, CA - Standing next to a Department of Fish and Wildlife tanker on Wednesday morning, Scott Hambelton pulled a long lever. Tens of thousands of four-inch silver fish gushed from a connected pipe and into the Sacramento River. "That's hundreds of hours (of work) behind that pull," said Hambelton, a retired fishing guide from Roseville who was on hand to commemorate the release. The tanker was the first of eight truckloads of juvenile Chinook salmon that California fisheries officials were bringing to the Elkhorn Boat Launch north of Sacramento throughout the day. In total, 1 million Chinook raised by biologists at a hatchery near the base of Oroville Dam were to be released into the river.

The fish now have to make the long journey to the Pacific Ocean. A small percentage of them will survive to adulthood and return to the river in two or three years to spawn. For the anglers such as Hambelton who will try catch the Chinook when they return, Wednesday’s salmon release was viewed with mixed emotions. The NOR-CAL Guides and Sportsmen’s Association and other fishing groups had spent more than a year pressuring state dam and fish-hatchery managers to raise extra fish to make up for the ones the fishing groups say were lost after the Oroville Dam spillway collapsed in February 2017. The failure of the spillway was followed by a seesawing of levels in the Feather River as dam managers turned flows from the spillway off and on to assess the damage, make repairs and release water from the rapidly filling Oroville Lake. The fluctuations in the river damaged huge stretches of spawning habitat below the dam, covering them in silt and spillway debris. At one point, thousands of fish were unable to follow receding water back into the main channel; they became stranded in shallow pools along the flood plain. Spillway debris also killed tens of thousands of juvenile salmon at the Feather River hatchery below the dam. The anglers say the river and its salmon runs haven’t recovered; neither has salmon fishing, which brings money into towns and cities along the Feather. After months of pressure, the anglers got what they wanted, at least in part. The Department of Water Resources, the state agency that manages Oroville, agreed to pay Fish and Wildlife around $350,000 to raise an additional 2 million salmon at the Feather River Hatchery below the dam. The first batch of 1 million fish were released into the Feather earlier this spring, under ideal conditions. Water Resources had sent what is known as a “pulse flow” into the Feather River from the Oroville dam, ensuring currents were high and the river was cloudy, exactly the sort of cover that biologists say gives the fish the best chance of making the long journey to the Pacific. Murky, fast-moving water allows small Chinook to escape the hungry jaws of predatory fish such as striped bass. Because salmon have the uncanny ability to return to exactly where they hatched, the first release into the Feather, close to the hatchery, also ensures more fish will be available to catch in Feather River towns, such as Yuba City and Oroville, when the fish return as adults. But Wednesday’s release went into the Sacramento River, just downstream from the confluence with the Feather. Anglers
say they’re worried the returning fish will get lost in the Sacramento River or its other tributaries and won’t be able to find their spawning grounds in the Feather.

**Voters OK’d billions for new reservoirs in 2014; California is about to start spending.** It's a well-founded concern. Lost fish recently have become an issue. The reason: Hatchery managers moved and released juvenile fish via tanker truck several times during the worst of California’s five-year drought because river conditions were so poor. These released fish often struggle to locate the right places to deposit their eggs when they return from the Pacific Ocean.

For the 1 million fish released Wednesday, anglers had asked the state to discharge the salmon weeks earlier when the Feather was flowing faster. They also had sought another pulse flow. State officials declined, partly because they said the fish weren’t ready to be released, and partly to protect the water supply in Oroville Lake, which provides water to much of California.

"Although a pulse for a hatchery release in early March was a success, it was not possible this week because Lake Oroville is currently being operated to conserve water in light of the low snowpack with low water content," DWR spokeswoman Erin Mellon said in an email. "As a result, (fisheries officials) decided the best adaptive approach for this week would be to move the release downstream."

Ron Kelly, an angler from Yuba City, said it was yet another example of how, when it comes to managing Oroville Dam, the state has one priority: protecting the water supply for farms, towns and cities as far south as San Diego. Locals, he said, are given the short shrift. "It's all about the water mongers down south and taking care of them," Kelly said. Similar allegations were raised by the forensic team investigating the spillway failure at Oroville Dam. Earlier this year, the team said the DWR was so worried about protecting the water stored behind the dam that officials made crucial missteps that made the crisis worse. The spillway failure eventually triggered the two-day evacuation of 188,000 people. State officials refute that section of the forensic team's report, saying that safety of downstream residents was their only priority. Despite Wednesday’s salmon release being less than ideal, the fishing groups said they will take what they can get. Due to the drought and other woes, Central Valley anglers are facing one of the worst salmon seasons in years when fishing opens this summer. "We're just happy to get any fish we can back into the water,” said Hambelton, the retired guide

*(Like the title.)*

**Dam those fish: human-environment interaction on the Androscoggin River**

By Jessica Piper, Orient Staff, May 9, 2018, bowdoinorient.com

Any north-facing windows at Fort Andross, Maine provide a full view of the Brunswick dam, a massive concrete structure on the Androscoggin River with a capacity 19,000 kilowatt-hours, according to the Maine Governor's Energy Office. Today's dam is hydroelectric, owned by Brookfield Renewable, a subsidiary of the international asset management company, but dams have shaped Brunswick's development for centuries—the first was built in 1753 to serve the town's sawmills. Although dams sparked Brunswick’s economic development, they haven’t been as kind to the fish that inhabit the Androscoggin. Migratory fish find it difficult to circumvent dams, making it difficult to reach their spawning grounds up river. Professor of Biology and Environmental Studies John Lichter is well-versed in the river's history.

"The first dam in Brunswick was in 1753. Now people back then knew that if they didn't let the fish get by, they would lose the fish, and they needed the fish. And so there was a river warden appointed who would just say, 'It's time to let the alewives through. It's time to let the shad through,'” Lichter said.
While Brunswick’s original dam was made from natural materials, later dams were constructed out of concrete, eliminating the possibility for fish to move upstream. As the centuries progressed, other environmental harms proved just as detrimental. “Dams were the first thing, then land clearance, then the pollution from industry in the twentieth century was off the charts. Raw sewage. Fish didn’t like that either,” Lichter said. The same textile and paper mills that powered Brunswick’s growth proved disastrous for its fish. By the 1930s, the Androscoggin’s population of sea-run fish was virtually gone, according to the Maine Department of Marine Resources (DMR). Still, with time and intensive pollution abatement efforts, populations began to return in the 1970s. In the 1980s, the DMR introduced a fish restoration program in the Androscoggin. Complementing these efforts in 1982, Central Maine Power added a new concept to the dam—a fish ladder, designed to help species cross over the dam so they could continue their spawning patterns further upstream. The fish ladder and a viewing room are open to the public during the summer, giving visitors the chance to see some fish migration in action. Unfortunately, the effectiveness of the ladder is hotly contested. Lichter’s research has shown that the ladder only helps a few fish species. “It doesn’t work at all for shad,” Lichter said. “Very few shad get up there, numbering a few dozen.”

Meera Prasad ’19 spent last summer studying shad movements on the Androscoggin. While her sonar instruments documented several thousand shad each day below the dam, DMR employees and volunteers observed only one shad make it to the top of the river ladder. Lichter has found that the ladder is effective only for alewives. He noted that salmon are sometimes able to make it up the ladder, but are often beaten or injured along the way. Since technology has improved since the fish ladder was constructed nearly 40 years ago, Lichter is hopeful that changing the mechanism could help fish populations. He suggested a fish elevator, which would essentially bring up fish in a bucket in certain time intervals, as a potential alternative. In the present moment, there remains little impetus for change. The lease on the Brunswick dam will come up in 2029, at which point the fish ladder—as well as other aspects of the dam—may be reevaluated. “It would mean less fish would be getting beat to hell on the side walls—you can quote me on that,” Lichter said.

Other Stuff:
(Hope you don’t live there.)

The Most Dangerous City, State May Surprise You
Analysis finds the most violent city in every state
By Janet Cromley, Newser Staff, May 9, 2018, newser.com

(NEWSER) – The rate of violent crime in the US has been steadily declining and is about half of what it was in 1991 when it peaked at 758 crimes for every 100,000 people. But that may be scant consolation for people living in the cities that have not benefited from the trend. 24/7 Wall St has identified the most dangerous city in every state, and some of the results are surprising. For example, the most violent city in the country is possibly one you’ve never heard of. “Violent crime” includes murder, aggravated assault, robbery, and rape. A sampling:

- Anniston, Alabama: City violent crime rate: 3,310 per 100,000 (the worst in the country); state violent crime rate: 532 per 100,000
- Anchorage, Alaska: City violent crime rate: 1,144 per 100,000; state violent crime rate: 804 per 100,000 (the worst in the country)
- Tucson, Arizona: City violent crime rate: 795 per 100,000; state violent crime rate: 470 per 100,000:
West Memphis, Arkansas: City violent crime rate: 1,858 per 100,000; state violent crime rate: 551 per 100,000
Barstow, California: City violent crime rate: 1,511 per 100,000; state violent crime rate: 445 per 100,000
Pueblo, Colorado: City violent crime rate: 983 per 100,000; state violent crime rate: 343 per 100,000
Hartford, Connecticut: City violent crime rate: 1,093 per 100,000; state violent crime rate: 227 per 100,000
Wilmington, Delaware: City violent crime rate: 1,780 per 100,000; state violent crime rate: 509 per 100,000

Click for the complete list and more information on each city: https://247wallst.com/special-report/2018/05/08/the-most-dangerous-city-in-every-state-2/

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